OBD II Group System Description
Porsche Cayenne V6 MY11

This description applies for the following OBD groups/ test groups:

Durability Group	**BPRXGPGNNCB6**	**Cayenne V6**
Evaporative/Refuling Family	**BPRXR0230RED**	
Test Group	**BPRXT03.6CBD**	
Model Year	2011	
Models:	Cayenne V6	
Controller:	Bosch ME(D)17	

General statements:

- The sections “enable conditions” describe typical enable condition for the monitoring functions. All specific enable conditions for each monitor are described in the summary table, see chapter D.
- Disabling symptoms are described in the disabling list, see chapter F.

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1 CATALYST MONITORING

There is one diagnostic function which is used for the monitoring of the catalyst efficiency. This is based on measuring the oxygen within the catalyst determined by at least two oxygen sensors. The oxygen storage capacity correlates with the NMHC or NOx emissions. Depending on which one of these two emission components reaches its OBD threshold first, the relevant threshold corresponds to either the NMHC or the NOx emissions.

The catalyst system may consist of two separated catalyst bricks, with the oxygen sensors mounted before and after the primary catalyst.

The diagnostic routine is executed once per driving cycle.

1.1 Active measurement of OSC

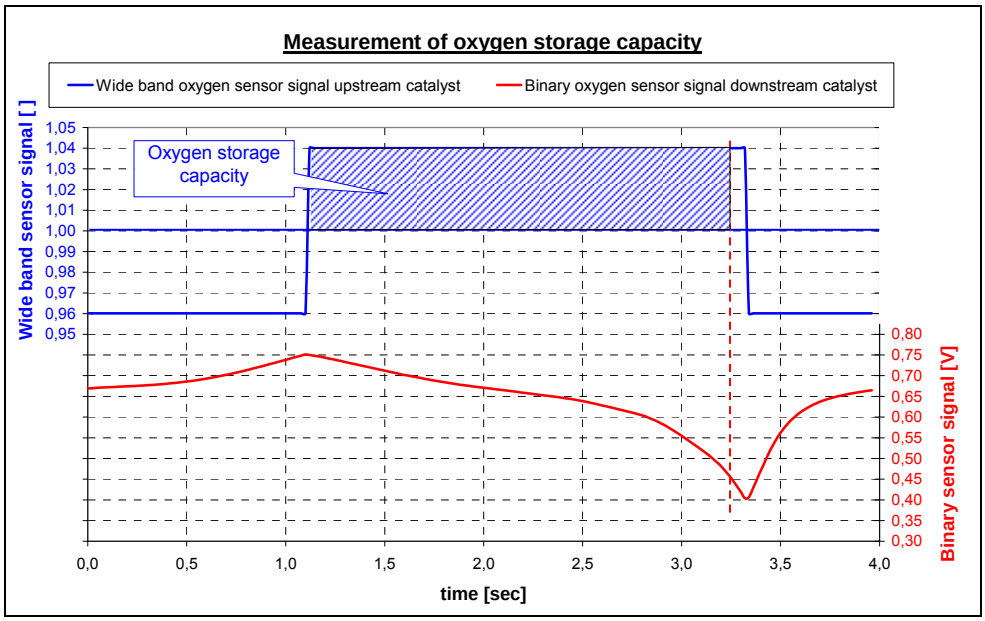
1.1.1 General description

The catalyst monitor is based on the determination of the oxygen storage capacity (OSC). The correlation between the conversion efficiency and the OSC has been investigated on catalysts with various characteristics specifically concerning stages of aging correlated to exhaust emissions (HC/NOx). Therefore, the catalyst is diagnosed by comparing its storage capability against the storage capability of a borderline catalyst.
The oxygen storage capacity (OSC) can be determined by the following method:

1. Determination of the Oxygen storage state (active test)
For the purpose of monitoring, the ECM cycles the A/F ratio by commanding a rich and a lean fuel mixture as follows.

- First, a rich A/F ratio is commanded by the ECM until a minimum of oxygen has been removed (cumulated rich gas > threshold - This threshold is derived from the Oxygen Storage Capacity of the borderline catalyst for the current operating point taken from the corresponding look-up table and typically multiplied with a factor between 1.3 and 2.5).
- Then, the catalyst is operated with a lean A/F ratio commanded by the ECM and the Oxygen Storage Capacity is calculated from the oxygen mass stored in the catalyst as follows:
- OSC = ∫ air mass flow * lean mixture (λ-1) * dt
- The catalyst is operated in this mode until the oxygen stored in the catalyst exceeds a calibrated limit or the downstream oxygen sensor indicates that the catalyst is completely saturated with oxygen (typically 450-550mV), or when the measured OSC value is higher than the x-fold (x =1.5-2.5) Oxygen Storage Capacity of the borderline catalyst for the current operating point.
- The catalyst is then diagnosed by comparing its oxygen storage capacity to the calibrated threshold of a borderline catalyst. A normalized OSC value is calculated from the quotient of the actual OSC value and borderline OSC value.
- After each completion of a measuring cycle a cycle counter is incremented
- Measuring cycles are run until the cycle counter reaches a certain number (typically 3 to 5 without EWMA and 1 with EWMA), then the diagnostic is finished.
- Calculation of the normalized mean value from the single measurements
- Comparison of the filtered normalized value with the fault threshold

The following picture shows an example of an OSC measurement:



1.1.2 Monitoring function description

According to the operating principle described above the following main parts of the monitor can be distinguished:

- Check of monitoring conditions for active test
- Lambda request (interface to lambda controller)
- Mixture enrichment in order to remove any stored oxygen
- Measurement of oxygen storage capacity (OSC) by lean A/F ratio operation
- Processing
- Fault detection

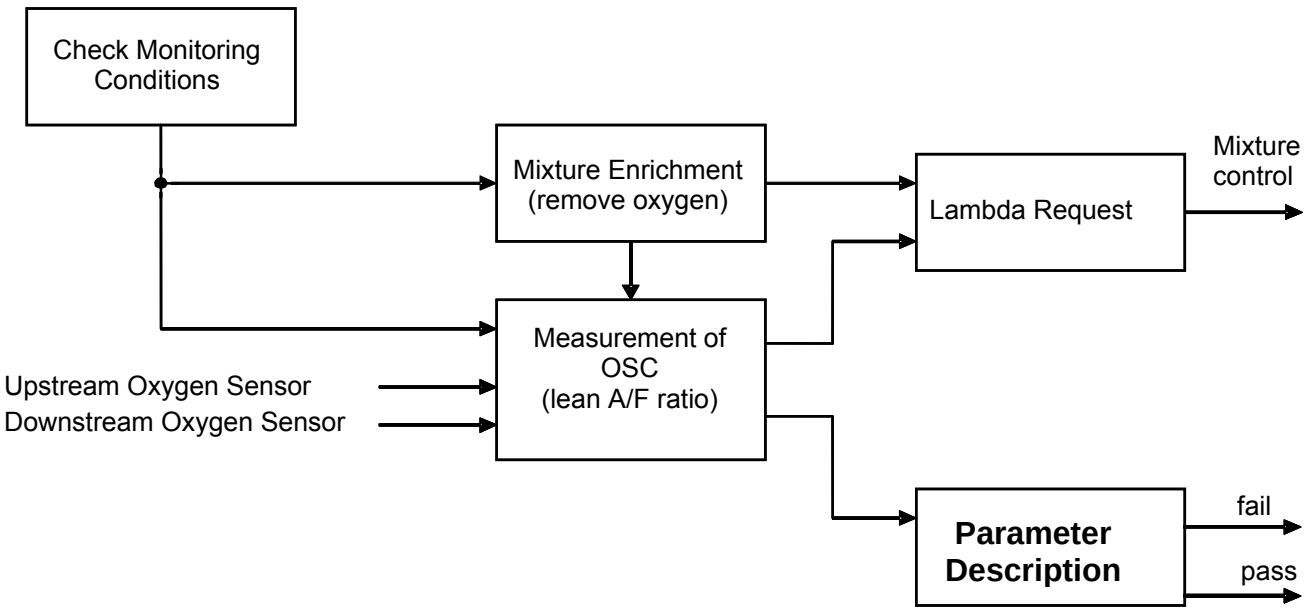


Figure 1: Active measurement of OSC – monitoring structure

Processing:

After the measurement of the OSC, the OSC value is normalized to the OSC value of the borderline catalyst, which is taken from a map, depending on the exhaust gas mass flow and catalyst temperature.

The final diagnostic result is calculated by averaging several, normalized OSC values and compared to the threshold. The measurement of the OSC can be carried out consecutively or stepwise.

Flow chart catalyst monitoring

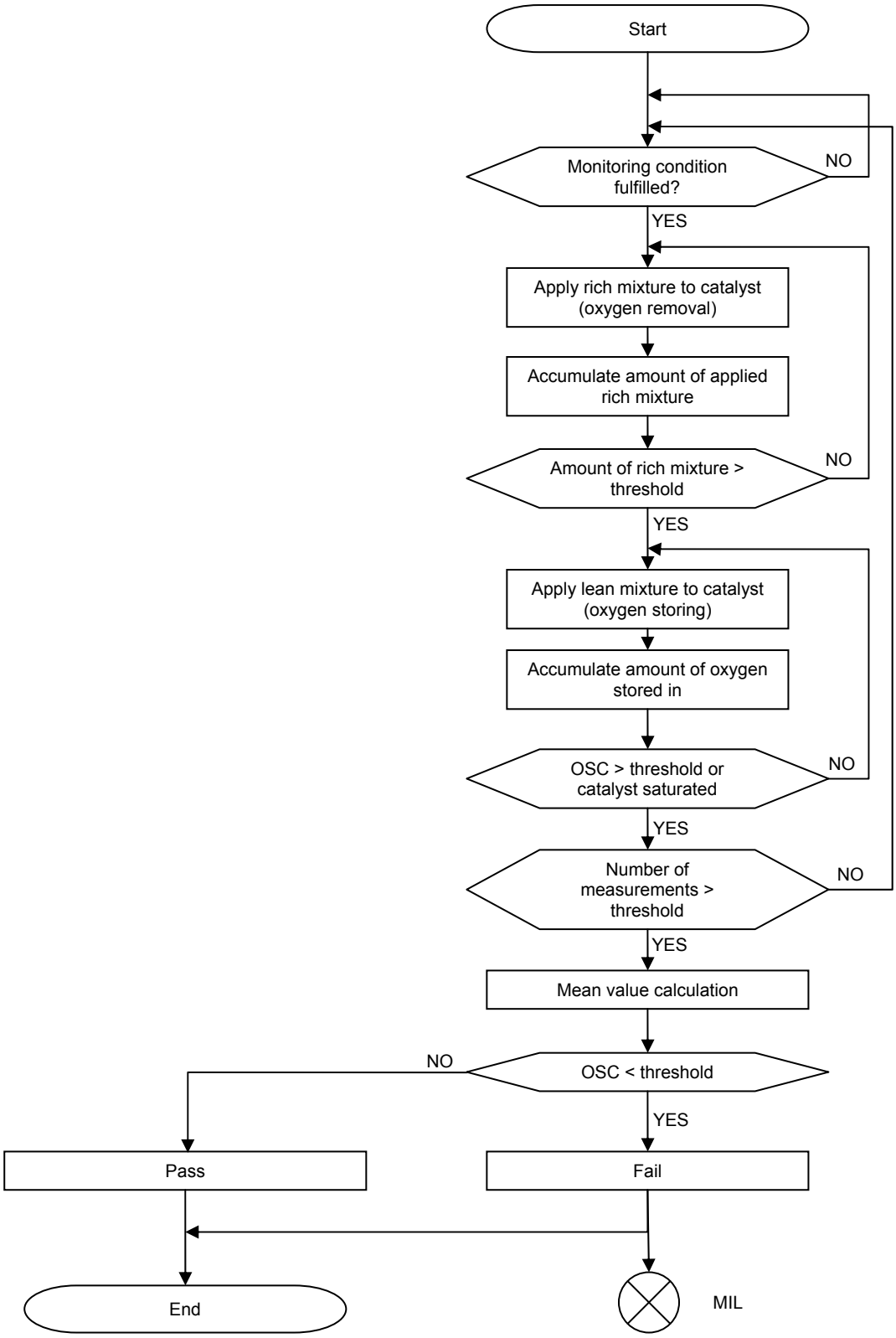


Figure 2: Flow chart catalyst monitoring

1.2 Monitoring of front catalyst and catalyst system

1.2.1 General description

The catalyst monitor is based on the determination of the oxygen storage capacity (OSC). The correlation between the conversion efficiency and the OSC has been investigated on catalysts with various characteristics, specifically concerning stages of aging correlated to exhaust emissions (HC/NOx). Therefore, the catalyst is monitored by comparing its storage capability against the storage capability of a borderline catalyst.

In this special application, the exhaust gas system consists of a close coupled catalyst (primary catalyst) and an underfloor catalyst (main catalyst).

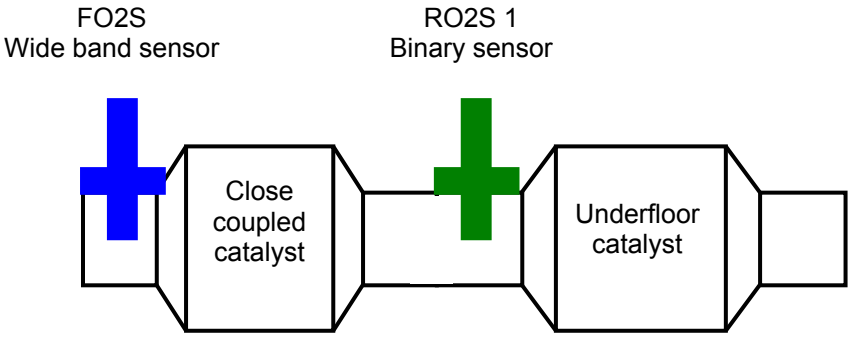


Figure 3: Overview front and main catalyst, one spare part only

This diagnostic function determines the OSC of the primary catalyst and the OSC of the catalyst system, (close coupled and underfloor catalyst), and depending on the results, a malfunction of the cat system is detected.

The diagnosis only depends on the measured OSC of the close coupled catalyst, if the oxygen storage capacity of the close coupled catalyst is greater then a first threshold. In this case the OSC of the catalyst system will not be measured.

If the oxygen storage capacity of the close couple catalyst is smaller than a first threshold, the OSC of the catalyst system will also be measured.

Malfunction criteria:
The exhaust gas aftertreatment system is recorded defective, if the OSC of the complete catalyst system is smaller than a second threshold.
Based on the following hardware configurations and the corresponding diagnostic concepts the following methods are applied to receive a diagnostic result:

1. System with total volume catalyst monitoring (ULEV II/Bin5, 1 brick or 2 bricks):

- Determination of a normalized mean overall catalyst diagnostic value, system without EWMA
- Determination of a normalized, EWMA filtered overall catalyst diagnostic value, system with EWMA

- Determination of a normalized mean total volume catalyst diagnostic value,
- Generation of the product from the primary catalyst diagnostic value and the total volume diagnostic value and comparison of the result with a fault threshold

➡ In the case of the above described switching of the diagnostic routine, two calibrated look-up tables will be referenced to alter the values of the individual partial and total volume catalyst values and export them as factors, which allows the quantified assessment of the individual catalysts within the complete system
Depending on the calibration of the look-up tables the following methods are applied:

In case the measurement of the primary cat delivers a very positive result (value exceeds a threshold), the main cat is not measured, which means that in this case only the primary cat factor is compared with a fault threshold.

Primary cat factor > threshold → Pass Result

However, measuring of the main cat is simulated for the IUMPR creation.

In case the result of the primary cat measurement remains below the threshold, the additional measurement of the total volume catalyst monitoring is activated.

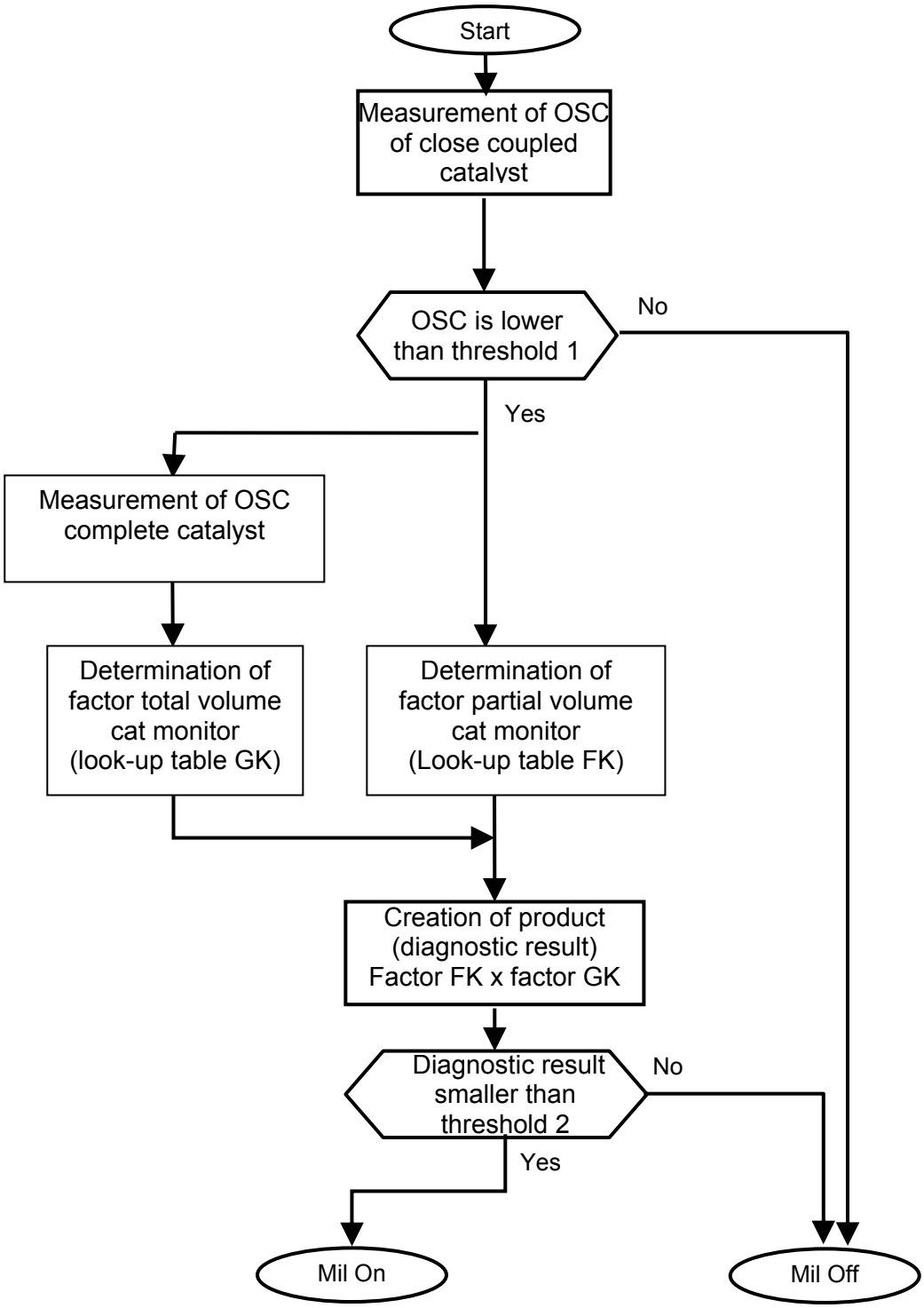


Figure 4: Flow chart front and main catalyst monitoring

Processing:

After the measurement of the OSC, the OSC value is normalized to the OSC value of the borderline catalyst, which is taken from a map, depending on the exhaust gas mass flow and catalyst temperature.

The final diagnostic result is calculated by averaging several normalized OSC values and comparing the result to the threshold. The measurement of OSC can be carried out consecutively or stepwise.

1.2.2 Secondary parameters

All secondary parameters listed below have to be fulfilled for a calibrated duration:

- O2 Sensors ready for operation
- Catalyst temperature in calibrated range
- Maximum permissible catalyst temperature change < threshold
- Axial temperature distribution of catalyst within range (the catalyst temperatures are modeled in several layers)
- In case the lowest temperature of all the layers falls below a threshold for a certain time (cool down time), this temperature must be exceeded for another time period (re-heatup time) before the diagnostic is re-enabled (radial warming after cooling-down must be ensured)
- The low-pass filtered minimum temperature > threshold (ensures thorough radial warming in warm-up phases even after cooling down caused by overrun fuel cut-off phases)
- Delta exhaust mass flow < threshold
- Exhaust gas mass flow in calibrated range
- Deviation of actual lambda from setpoint lambda < threshold
- Lambda controller not at minimum or maximum
- Requested lambda value for diagnostic routine is achieved
- Engine speed in calibrated range
- Engine load in calibrated range
- SAS not active
- Canister purge flow is low

1.2.3 In-Use Monitor Performance Ratio

The incrementing of the numerator, the denominator and the ratio calculation for the catalyst monitoring is executed by the IUMPR kernel function. Like all monitors, for which a standardized track and report of the in-use performance is required, the catalyst monitor reports to the IUMPR kernel function via status flags - see the description of the IUMPR kernel function.

Incrementing the numerator

In determining the numerator we must differentiate between the exhaust systems and the diagnostic strategies.

For the system with the total volume catalyst monitoring as well as for the system with partial volume catalyst monitoring with only two oxygen sensors available for the diagnostic concept (one before the overall catalyst volume and one after the overall catalyst volume), only the OSC of the overall catalyst system can be measured.
This is why the PASS result is not faster than a FAIL result for the catalyst diagnostic. Hence, this is a symmetric diagnostic and the numerator can be incremented after the required number of diagnostic cycles.

For the PASS result, the measured primary catalyst OSC only needs to exceed a first threshold.
For the FAIL result, additionally to the primary catalyst OSC measurement the OSC measurement of the overall catalyst volume is activated. Hence the time required for the FAIL result is longer than the time required for the PASS result and is actually prolonged by the time necessary for the overall catalyst volume measurement. Therefore, in case a PASS result for the primary catalyst is achieved, the numerator is not incremented before the time, that would have been necessary for the FAIL result of the total volume catalyst monitor has passed after the primary catalyst PASS result.
This time period is calculated such that the 3-fold rich mixture charge of the borderline catalyst and the 1.65-fold lean mixture charge of the borderline catalyst into the actual catalyst would have occurred with a lambda adjustment of a fictive conditioning phase and an oxygen charge phase, based on the subsequent exhaust gas mass flow.

Hence, the numerator for the measurement of the primary catalyst cannot be incremented before the above described time period has passed.

When measuring both the primary and the overall catalyst volumes the numerator is incremented immediately after the diagnostic has finished.

Incrementing the denominator

The denominator is incremented when the monitor is not inhibited due to stored faults and the general denominator conditions have been fulfilled for the current driving cycle.

2 HEATED CATALYST MONITORING

not applicable

3 MISFIRE MONITORING

3.1 General description

The method of engine misfire detection is based on evaluating the engine speed fluctuations.

One crankshaft segment can be assigned to the combustion event of one cylinder. A combustion event that has not occurred or has not occurred completely leads to a drop in engine speed and engine torque compared to normal operation. As a result, the segment times of the crankshaft increase. The segment times are measured using a sensor at the crankshaft and the engine speed fluctuations are determined. The following figure illustrates the example of misfire due to missing spark.

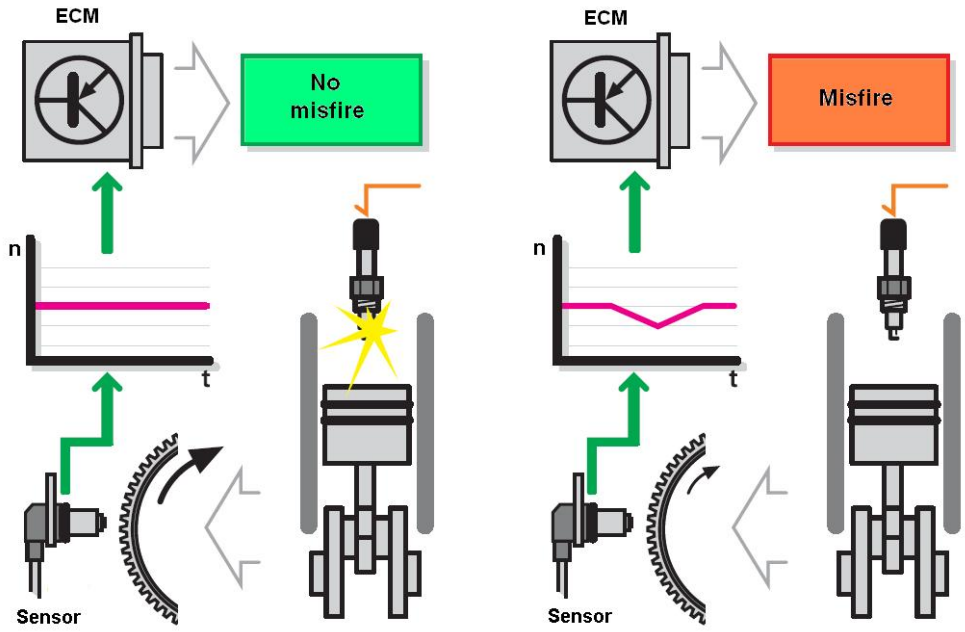


Figure 5: principle of misfire detection

3.2 Monitoring strategy

To detect a misfire, the engine speed fluctuations are assessed. The number of misfire events is counted and compared against a defined threshold value.

3.3 Enable conditions

- After engine start: the number of combustion events exceeds a defined threshold (2 crankshaft revolutions)
- (2 crankshaft revolutions)
- Engine speed within a defined range
- Engine torque >= threshold value (taking the positive torque condition according to the regulations into account)
- Intake air temperature > threshold value (this enable condition is disabled)
- Engine temperature at engine start > threshold value (this enable condition is disabled)
- Deceleration fuel cut-off not active
- Rough road condition not detected

3.4 Malfunction criteria

The crankshaft segment times are measured and these measurements are used to calculate the engine roughness values. If the engine roughness value is greater than a calculated threshold value, a misfire fault is detected. The threshold value for the engine roughness consists of a base value determined by means of gear-dependent characteristic engine-speed and load maps. According to the currently selected gear, the corresponding characteristic map is used (this applies to manual and automatic transmissions). During the engine warm-up a correction value, which depends on the engine temperature, is added to the base value.

If misfiring is present in more than one cylinder (e. g. a combustion and a misfire alternately), due to the respective engine roughness criterion, the detection capability based on the engine roughness value can decrease compared to single misfiring cylinders. For this reason the periodicity of the engine roughness values is used as additional information. The engine roughness values are filtered and a new multiple filter value is generated. In this way, multiple misfire events can be detected reliably.

The adaptation of the sensor wheel tolerances and the characteristic engine behavior are interpreted for defined engine-speed and load ranges, if no misfire has been detected. The robustness of the misfire monitor increases with the adaptation progress. The adaptation values are stored in a non-volatile memory and are included in the calculation of the engine roughness.
If the enable conditions are fulfilled, two counters are incremented when misfiring has been detected. This serves to distinguish between emission relevant misfiring and catalyst-damaging misfiring.
During intervals of 1,000 crankshaft revolutions the detected misfire events are counted for each cylinder. If the total sum of the detected misfire events is greater than a defined threshold, the fault “emission relevant misfire” is detected.
During intervals of 200 crankshaft revolutions the detected misfire events are counted and weighted for each cylinder. The weighting factor is determined by a characteristic map which is dependent on engine load and speed. If the total sum of the detected misfire events is greater than a defined threshold, the fault “catalyst-damaging misfire” is detected.
After each interval, the misfire counters are reset.

3.5 Flow chart

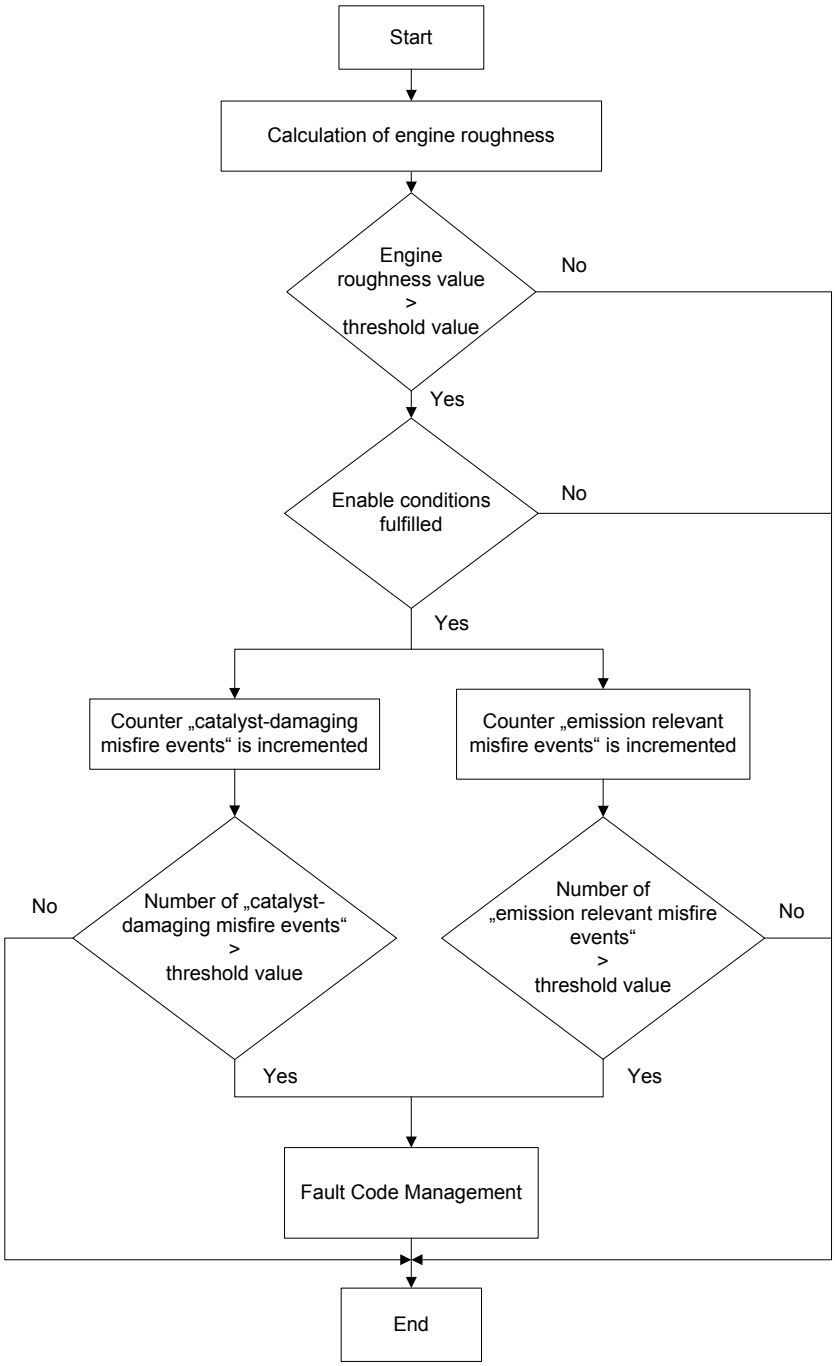


Figure 6: Flowchart Misfire detection

The flowchart represents one combustion event.

4 EVAPORATIVE SYSTEM DIAGNOSIS

4.1 Leakage check

4.1.1 General description

The leakage diagnosis procedure is a pressure check of the EVAP system. In order to perform the check, the EVAP system will be sealed and pressure applied by the leakage diagnosis pump (LDP). The pressure variation time is analyzed by the ECM.

4.1.2 Monitoring function description

The diagnosis procedure consists of the following steps:

1. Tank pressure check

The first step of leakage diagnostics is the pressure check of fuel tank system by testing the reed switch. In case of an open reed switch, the fuel tank system has sufficient pressure for the sealed check and no further pressure has to be supplied to the fuel tank system by the LDP.
The diagnosis is waiting until the EVAP purge valve is opened in order to purge the carbon canister. In case the reed switch remains open or the reed switch stuck open, the reed switch is defective.

In the case the reed switch is closed, the LDP is switched on in order to supply pressure to the fuel tank system and the diagnostic is continued with the step 2 to 3 (as described below).

2. LDP Self-check procedure

Closed check
LDP control is disabled and the reed switch has to be closed otherwise the reed switch is defective.
Close to open check
LDP control is switched on once and the diaphragm has to move to the upper position. The time is measured between closed and open position of diaphragm detected by the reed switch. When the final upper position of diaphragm is reached in a certain time, then the check will be passed.

3. Leak check of EVAP system

Fast pulse
After the self check procedure, the LDP control supplies pressure to the fuel tank system with a pressure dependent number of compression strokes in a certain time. In order to supply pressure to the fuel tank system, the LDP can perform compression strokes in several attempts.
EVAP system sealed check, measure stroke and measure phase
The decrease of fuel tank pressure is measured via time of diaphragm movement followed by a compression stroke. Within a certain time, the LDP control is determined within at least four measurement strokes. The averaged time is a measure for the tightness of fuel tank system.

4.1.3 Flow chart leakage check

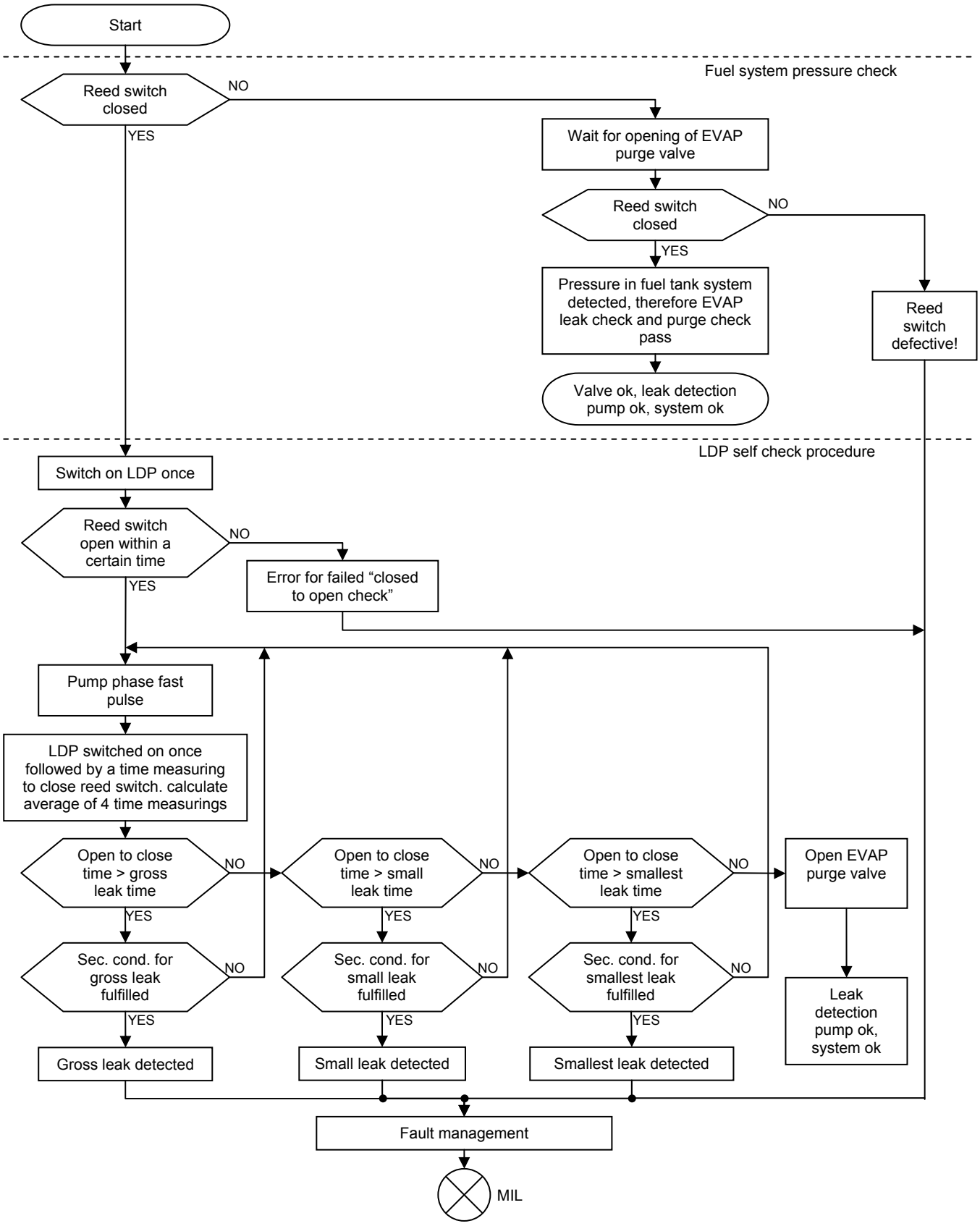


Figure 7: Flow chart leakage check

4.2 Purge Check

4.2.1 General description

The fuel tank has an integrated ventilation system in order to enable a pressure equalization between the tank and the environment when temperature variations occur or when fuel is added to or extracted from the tank. To prevent fuel evaporation to the atmosphere, a charcoal canister is installed between the tank and the atmosphere, which absorbs discharged hydrocarbons contained in the fuel vapor. As the charcoal canister has a limited storage capacity, it has to be discharged after defined time intervals. This is realized by temporarily opening a connection between the charcoal canister and the intake manifold for a short period of time. After the canister purge valve is opened, ambient air is drawn in through the charcoal canister due to the vacuum in the intake manifold. The stored hydrocarbons are discharged and enter the combustion chamber together with the ambient air. The additional air and fuel charges during the canister purge phases lead to a mixture deviation, which is compensated by the ECM.

The evaporative system monitor is carried out once per driving cycle. During part load conditions, the purge valve is commanded open and the response of the lambda control is monitored. If no clear mixture response can be detected after the majority of a defined number of checks has been run, a fault is suspected and an air check is carried out in the next idle speed situation. If no clear response of the idle speed control on the additional air charge occurs after the switch-open command of the canister purge valve at idle speed, a faulty flow rate in the evaporative system is detected and the corresponding entry in the fault memory is set.

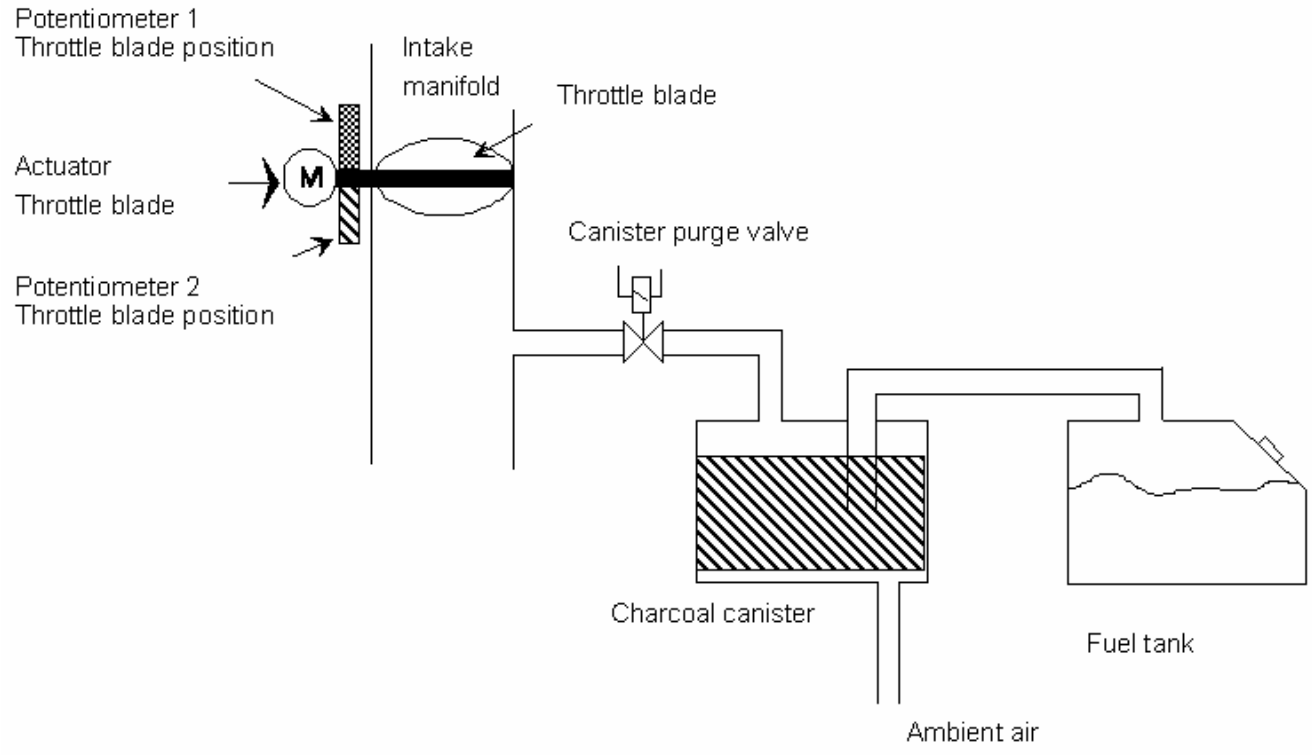


Figure 8: Operating principle of the Evaporative system

4.2.2 Monitoring Strategy

The part load check is the comparison between the mixture deviation that is present during the opening process of the canister purge valve and a threshold value. The idle speed check is the comparison between the ratio of expected mass air flow/actual mass air flow and a threshold value, performed while the purge valve is open.

4.2.3 Enable Conditions

- Canister purge integral greater than threshold value (depending on engine start temperature)
- Integrated air mass greater than threshold value (depending on engine start temperature)
- Engine coolant temperature and limp-home mode temperature greater than threshold value
- Altitude less than 2700 m above sea level
- Ambient temperature greater than threshold value
- Lambda control in a closed control loop condition
- Engine speed deviation less than threshold value

4.2.4 Malfunction Criteria

Depending on the load condition of the engine and the charge state of the charcoal canister, opening the canister purge valve leads to a mixture deviation (lean or rich), which is detected and compensated by the ECM.

If all enable conditions are fulfilled at part load, the current mixture value is stored as a reference value and the canister purge valve is commanded open according to a given characteristic curve. During the opening process, the current mixture value of the lambda control system is continuously compared with the reference value. If the absolute value of the mixture deviation does not reach a defined threshold value, the canister purge valve may be defective, or the mixture composition currently coming from the charcoal canister does not lead to response in the lambda control. Thus, initially a fault suspicion is generated and an air check is requested for the next idle speed situation. To avoid unnecessary idle speed phases in vehicles with a start/stop system, a fault suspicion is generated not before a defined number of mixture checks without a PASS result have been carried out.

At idle speed, the additional air charge caused by the open canister purge valve leads to an increase in engine speed, which is compensated by the idle speed control by means of closing the throttle valve.

At idle speed, the canister purge valve is commanded open according to a given characteristic curve. When a sufficient opening percentage of the purge valve is reached, a relative mass air flow value is generated from the expected mass air flow values without any canister purge valve activity and the actual mass air flow value. If the relative mass air flow value does not reach a defined threshold value, a faulty flow rate in the evaporative system is detected.

4.2.5 Flow charts

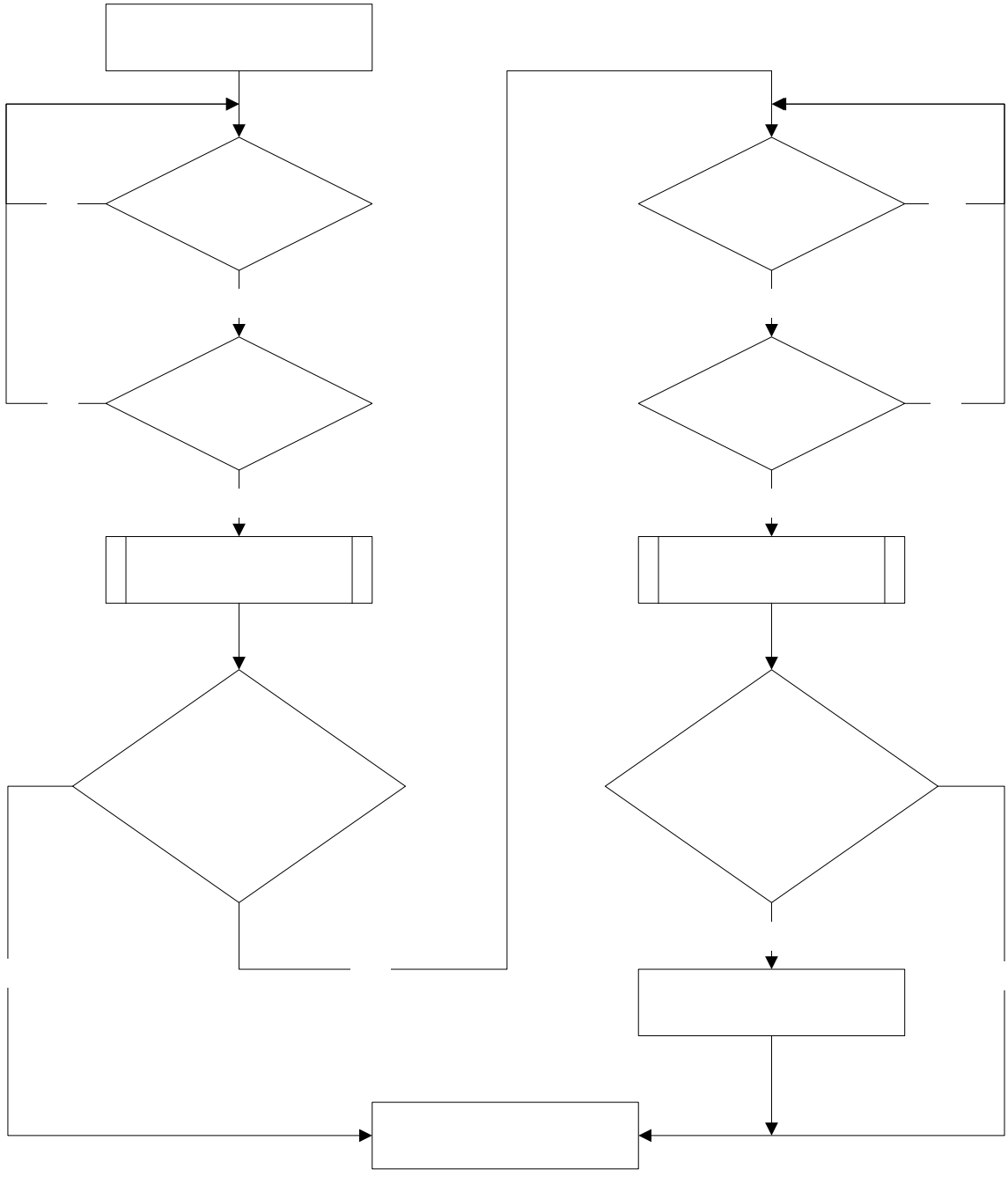


Figure 9: Overview of the Evaporative System Monitoring

For details of the Mixture check and the Air check see the following two flowcharts.

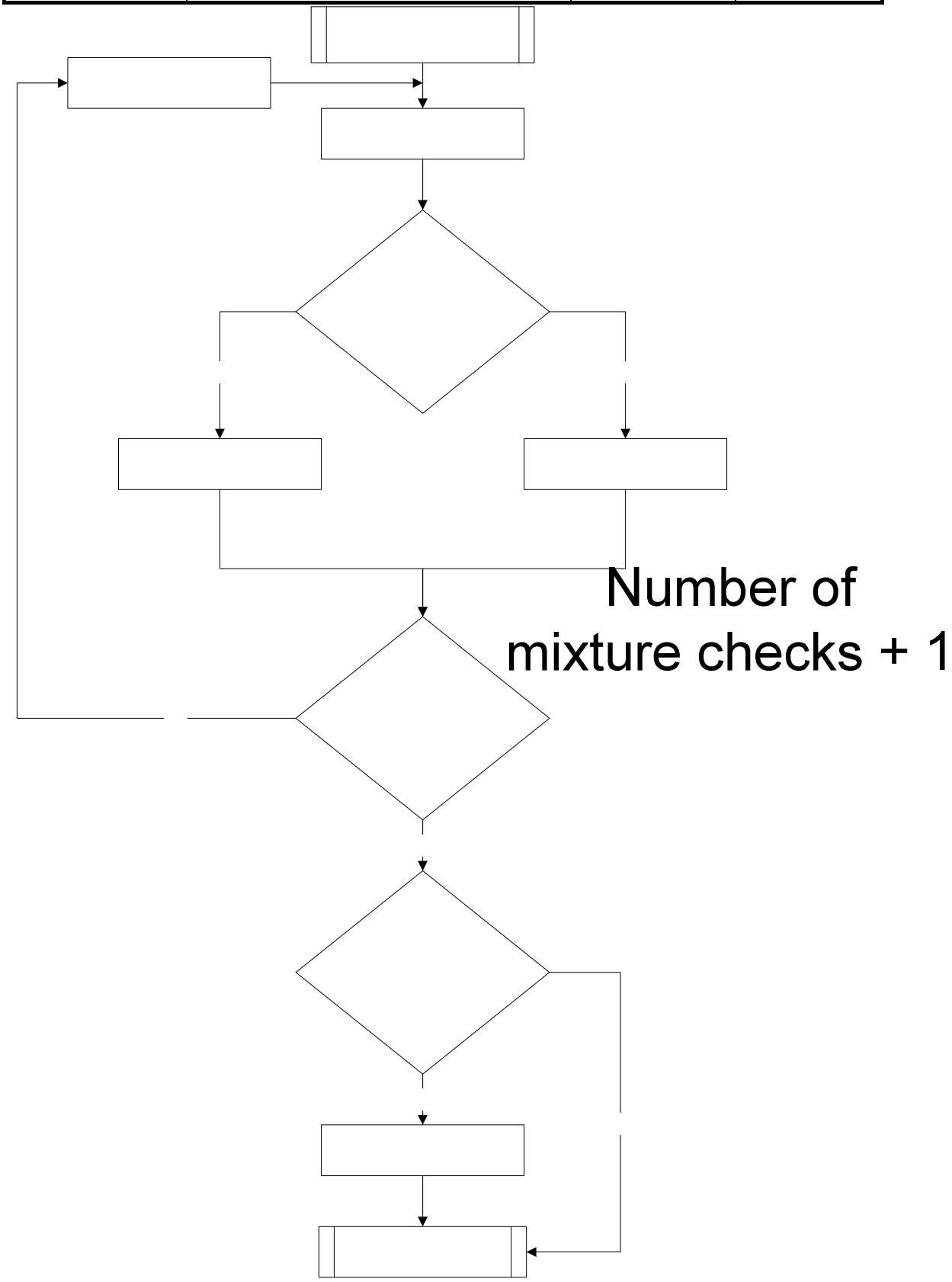


Figure 10: Mixture check (Part load check)

Yes

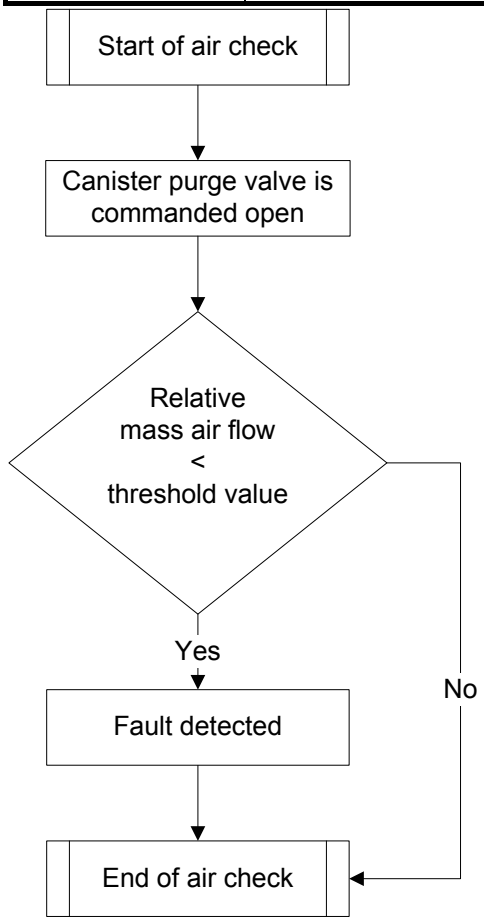


Figure 11: Air check (Idle speed check)

4.2.6 In-Use Monitor Performance Ratio

Incrementing the numerator:
The numerator is incremented by one when the diagnostic has ended and a fault could have been detected. The enable conditions are monitored by a shadow counter, which causes the numerator to increment whenever the diagnostic could have run.

Incrementing the denominator:
The denominator is incremented by one when the conditions for incrementing the denominator according to CCR (d) (4.3.2) (D) „Evaporative System Denominator“ are fulfilled

5 SECONDARY AIR SYSTEM MONITORING

Not applicable.

6 FUEL SYSTEM MONITORING

6.1 General specific description of lambda control strategies

To minimize the emissions of motor vehicles, an exhaust gas aftertreatment system is installed after the combustion engine.

This system consists primarily of the following components: oxygen sensors, which measure the exhaust gas composition in the gas phase, and the catalytic converters, which ensure the active conversion of the combustion residues emitted by the engine.

Additionally to these hardware components, a control system is required.
The purpose of this control system is to ensure an exhaust gas composition that enables a maximum conversion rate of the released emissions by the exhaust gas aftertreatment system that is installed after the combustion engine.

As shown in the illustration below, the signals from the oxygen sensors are transmitted to the engine control module (ECM) and serve for further engine management calculation.
As an example, the following figure shows a system with one catalyst near the engine and one underfloor catalyst.

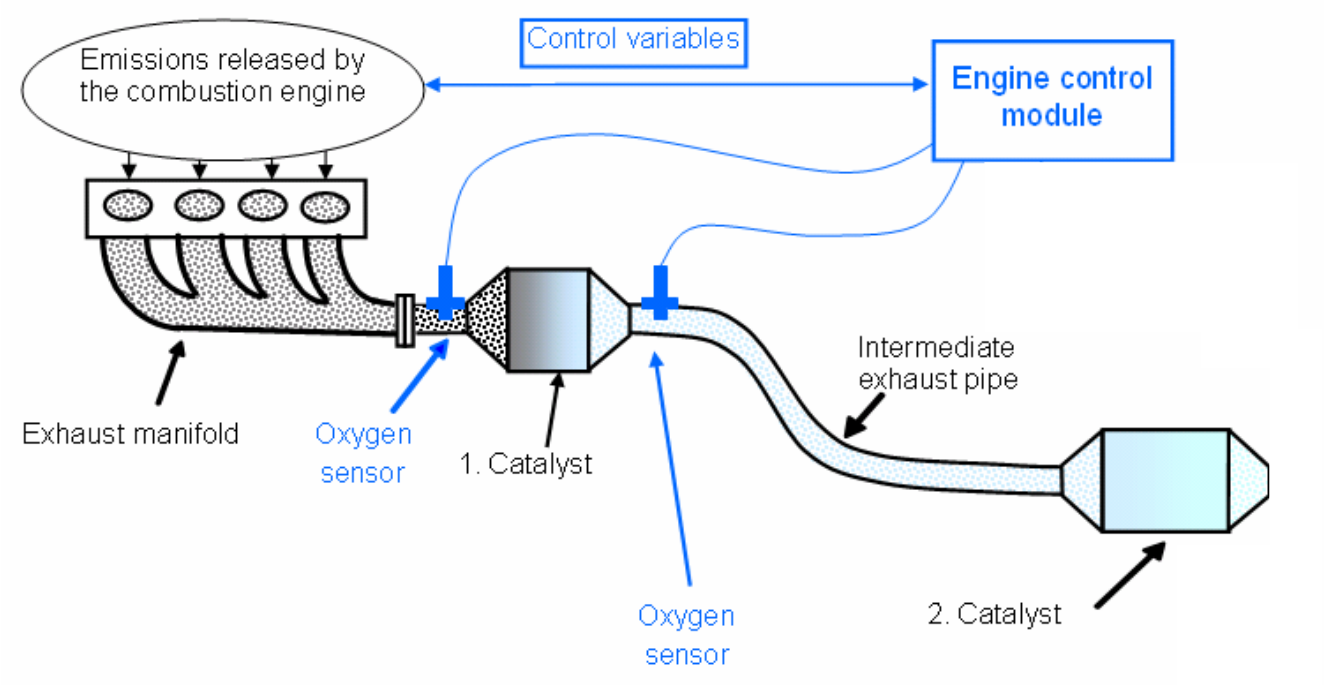


Figure 12: Exhaust gas aftertreatment components

As mentioned before, the purpose of the lambda control system is to adjust the fuel injected to the engine. This produces an exhaust gas composition that enables an optimum conversion rate to be achieved by the hardware configuration of the exhaust gas aftertreatment system.

The adjustment of the exhaust gas composition is achieved by slightly varying the amount of fuel injected into the combustion chambers of the engine.

Due to the chemical reactions, the achievable conversion rate of the catalyst is subject to several limitations. Considering the functional principle of the lambda control system, the restrictions that must be considered for a catalyst with operational temperature, must be taken into account.

One of the main influencing criteria that must be considered is that a catalytic converter (catalyst) can only enable the chemical conversion of the exhaust gas components contained in the exhaust gas flow.
The chemical reactions are the OXIDATION of carbon monoxide (CO) and hydrocarbons (HC) and the REDUCTION of nitrogen oxides (NOx).

Due to the reaction process, oxygen is used during the oxidation, and it is released during the reduction. Hence, the effect of the carbon monoxide (CO) and the hydrocarbon (HC) conversion rate will be reduced drastically when the exhaust gas composition lacks oxygen (lambda < 1).

With a surplus of oxygen in the exhaust gas (lambda > 1), the conversation rate of nitrogen oxides (NOx) reduces, accordingly.
See this behavior in the following figure.

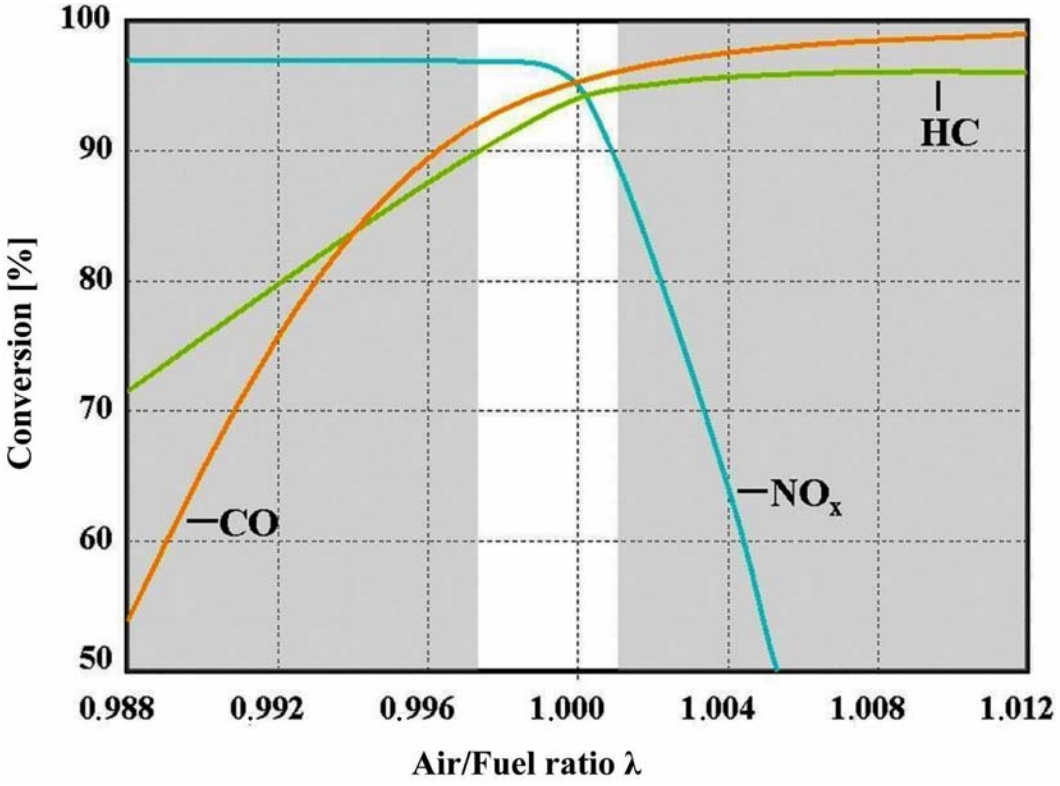


Figure 13: Conversion rate with respect to air/fuel ratio

Additionally, insufficient or excessive oxygen resulting from temporary deviations of the optimum exhaust gas composition can be compensated by taking oxygen from the oxygen stored within the catalyst or storing it there, correspondingly.

This process, however, is only feasible within the maximum Oxygen Storage Capacity (OSC) of the catalyst.
The corresponding correlation is shown on the next page.

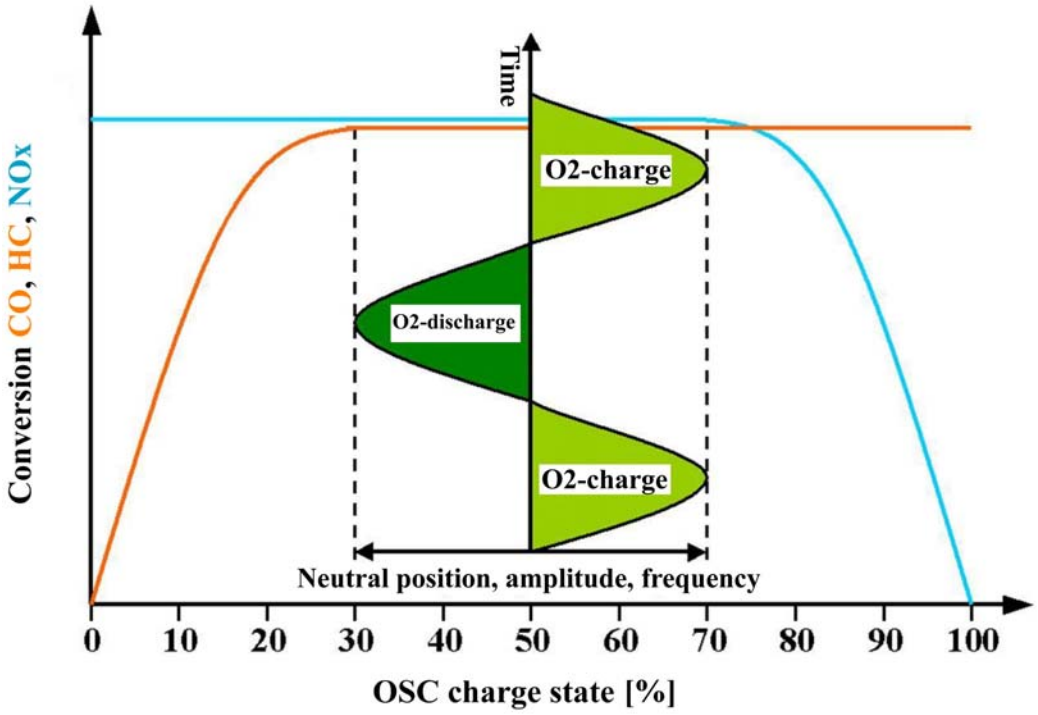


Figure 14: Conversion rate with respect to OSC oxygen storage state

To summarize, the task of the lambda control, which leads to a mixture control eventually, can be described as the provision of the catalyst with a mixture composition that ensures the maximum conversion of the exhaust gas components even with varying engine conditions (varying loads and speeds).

The exhaust gas composition post the catalyst is measured by a binary oxygen sensor.
See the following corresponding characteristic sensor curve.

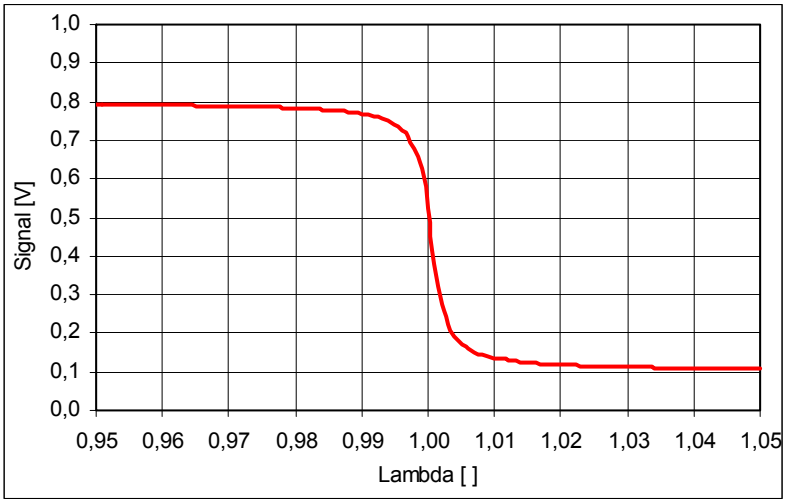


Figure 15: Signal of the binary oxygen sensor with respect to lambda

The next figure illustrates the response of the oxygen storage, by showing the lambda signal downstream of the catalyst with respect to the charge state of the oxygen storage.

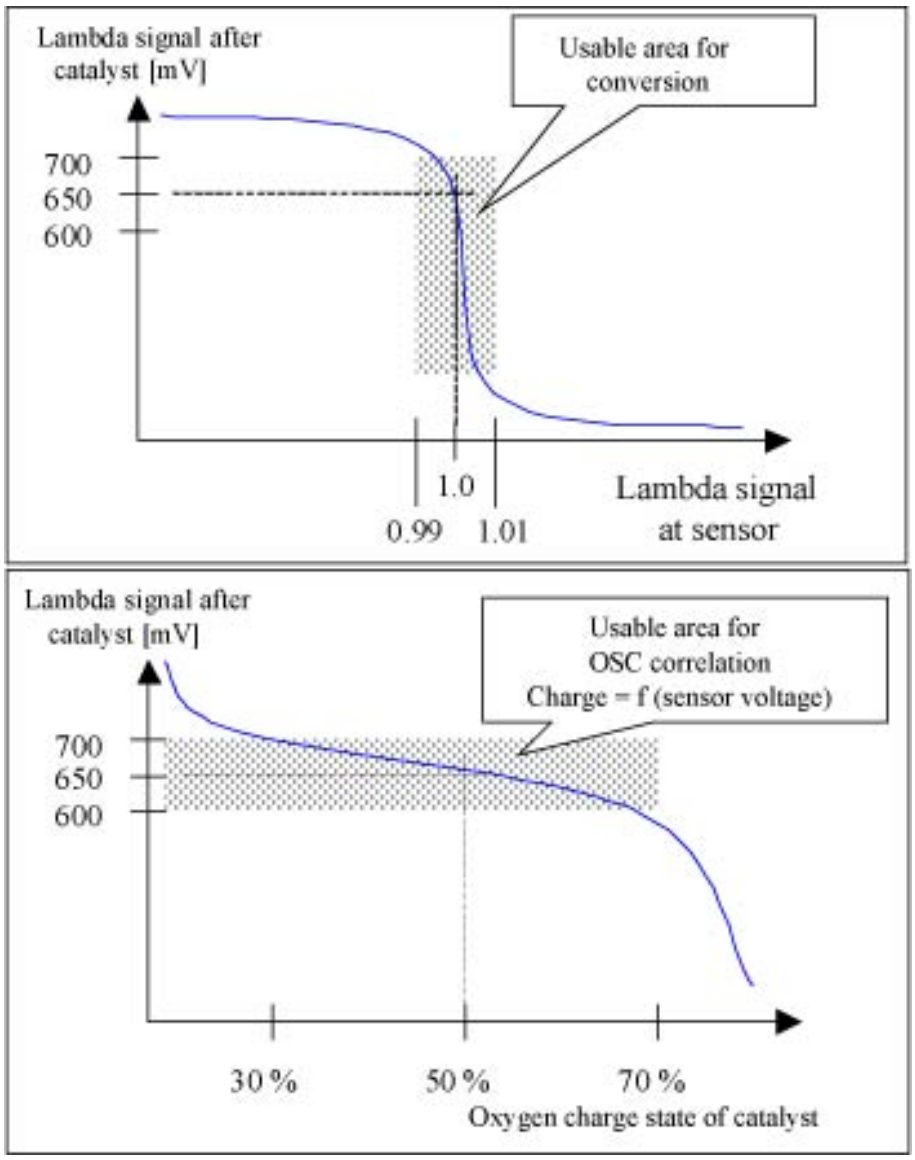


Figure 16: Signal of the binary oxygen sensor with respect to lambda and with respect to the oxygen storage state of the catalyst

6.1.1 Principle of Operation of a Balanced Modulation Control

One disadvantage of a fixed frequency control is that it can only respond to a change of the oxygen charge state by means of the control loop downstream of the catalyst, the so-called trim control.

The correlation between the sensor voltage and the oxygen charge state of the catalyst can also be seen from the graph of Figure 16: Signal of the binary oxygen sensor with respect to lambda and with respect to the oxygen storage state of the catalyst

Hence, a disturbance in the charge state of the catalyst oxygen storage cannot be adjusted before the conversion performance of the catalyst is affected, and thus not before the binary oxygen sensor downstream of the catalyst has detected a deviation from the setpoint lambda value downstream of the catalyst.

Using balanced modulation control, the disadvantage of the fixed frequency control, that it can only respond to a deviation of the oxygen charge state with a delay by adjusting the oxygen sensor voltage downstream of the catalyst, is compensated by the balancing of the charge state of the oxygen storage. This means that a disturbance in the charge state of the oxygen storage can be adjusted before the catalyst's conversion performance decreases, which would cause a change of the sensor voltage downstream of the catalyst.

Hence, the difference between the balanced modulation control and the fixed frequency control is that in the case of the balanced modulation control, the control variable is the charge state of the catalyst oxygen storage, rather than the lambda value upstream of the catalyst.
Therefore, after a disturbance, the control does not immediately adjust the lambda value to 1, but the charge state of the oxygen storage is adjusted to the setpoint value.
This behavior is illustrated in the following figures

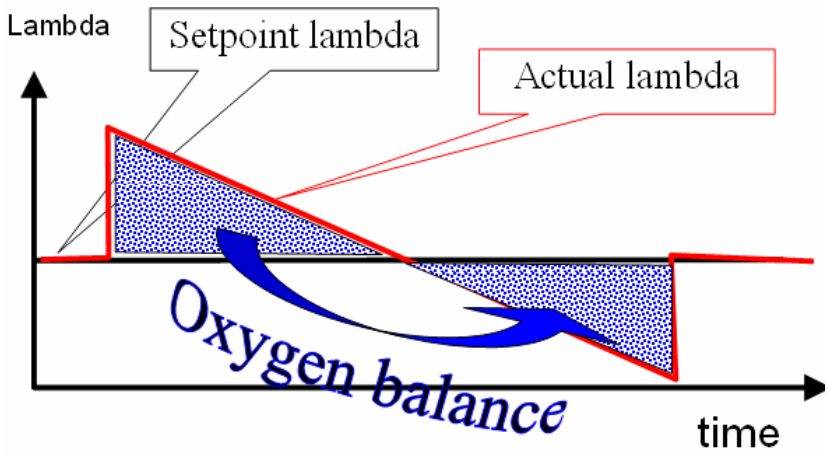


Figure 17: Control parameters for the control variable "oxygen charge state"

Figure 17 shows the principle that, after a disturbance the lambda value is not immediately re-adjusted to 1, but in the present case of a lambda deviation to "lean", the oxygen charge is first adjusted to "rich" with an oxygen discharge of the same amount.

In this way it can be guaranteed that the charge state of the oxygen storage after the disturbance and after the adjustment is identical to the state before the disturbance, owing to the balanced lambda control, see following figure

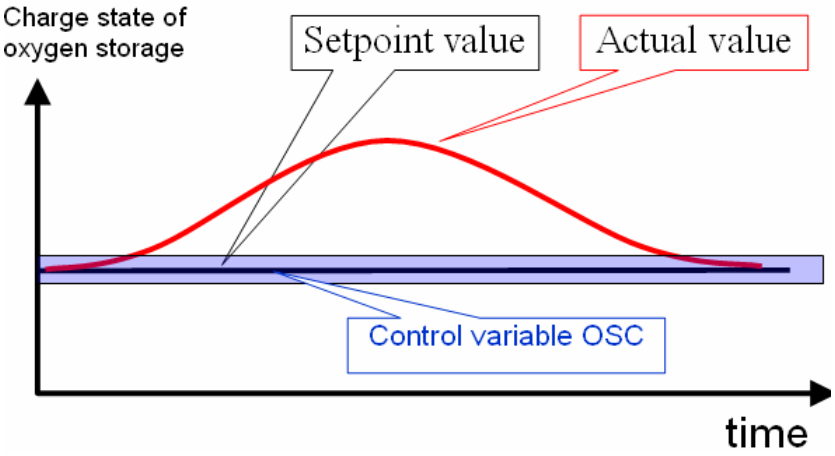


Figure 18: Influence on the charge state of the oxygen storage for the control variable "oxygen charge state"

Figure 18 also shows that the control variable is defined by a setpoint charge state of the oxygen storage.

This given setpoint charge state of the catalyst can be stored in a characteristic map, with respect to the exhaust gas mass and the aging state of the catalyst.

Exhaust gas mass / Catalyst aging	10 kg/h	50 kg/h	100 kg/h	150 kg/h
OSC 100 %	50	48	45	42
OSC 50 %	45	40	38	35
OSC 25 %	40	38	35	30
OSC 10 %	35	30	25	20

Figure 19: Characteristic map: setpoint oxygen charge state of catalyst with respect to the exhaust gas mass and the catalyst aging

The advantage of such a control is, that with a more precise adjustment of the charge state of the oxygen storage, a reduced NOx conversion of the catalyst can be prevented, especially when the oxygen storage is overcharged.

The comparison of the illustrations with and without OSC balancing shows this behavior.

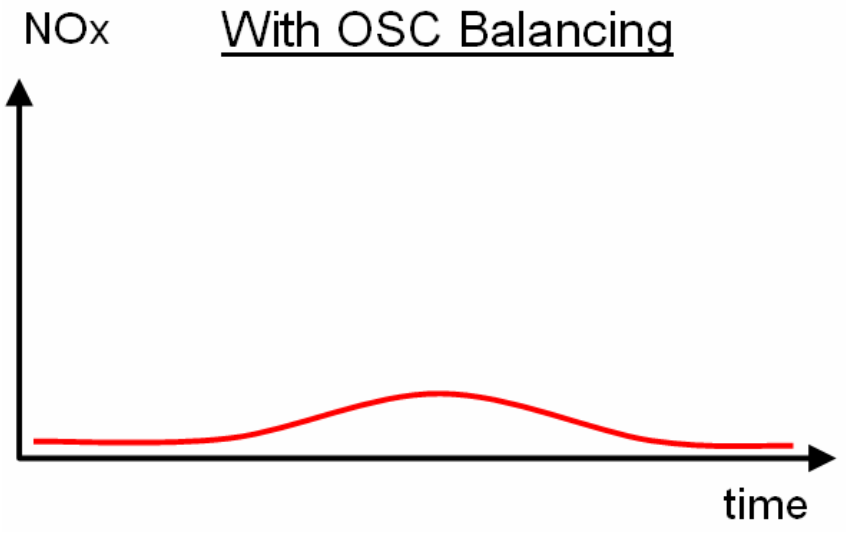


Figure 20: Influence of the change of the oxygen storage charge state on the NOx emissions for control variable "oxygen charge state"

The comparison of the deviation of the sensor voltage downstream of the catalyst shows that the effect of the disturbance of the exhaust gas composition upstream of the catalyst can be adjusted faster with the balancing and that as a result, the rear oxygen sensor signal reaches the setpoint value earlier.

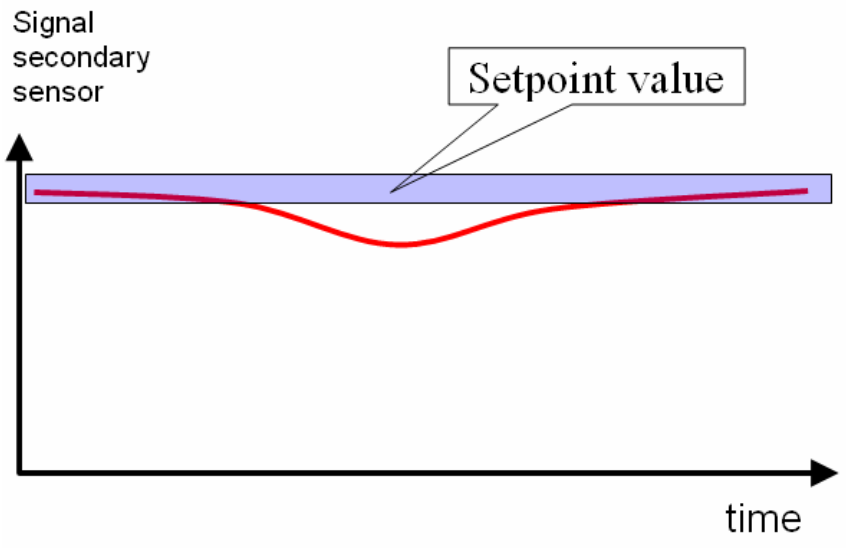


Figure 21: Deviation of the sensor voltage downstream of the catalyst with oxygen balancing

Hence, by generating a state observer which models the charge state of the oxygen storage, a disturbance can be adjusted, before the catalyst conversion is affected.

In the following figure, the state observer is represented by the catalyst model integrator.
The charging level of the catalyst model integrator is compared to a setpoint value, and subsequently, the control difference is fed to the balance controller.
The output of the balance controller, in turn has an influence on the setpoint lambda value.

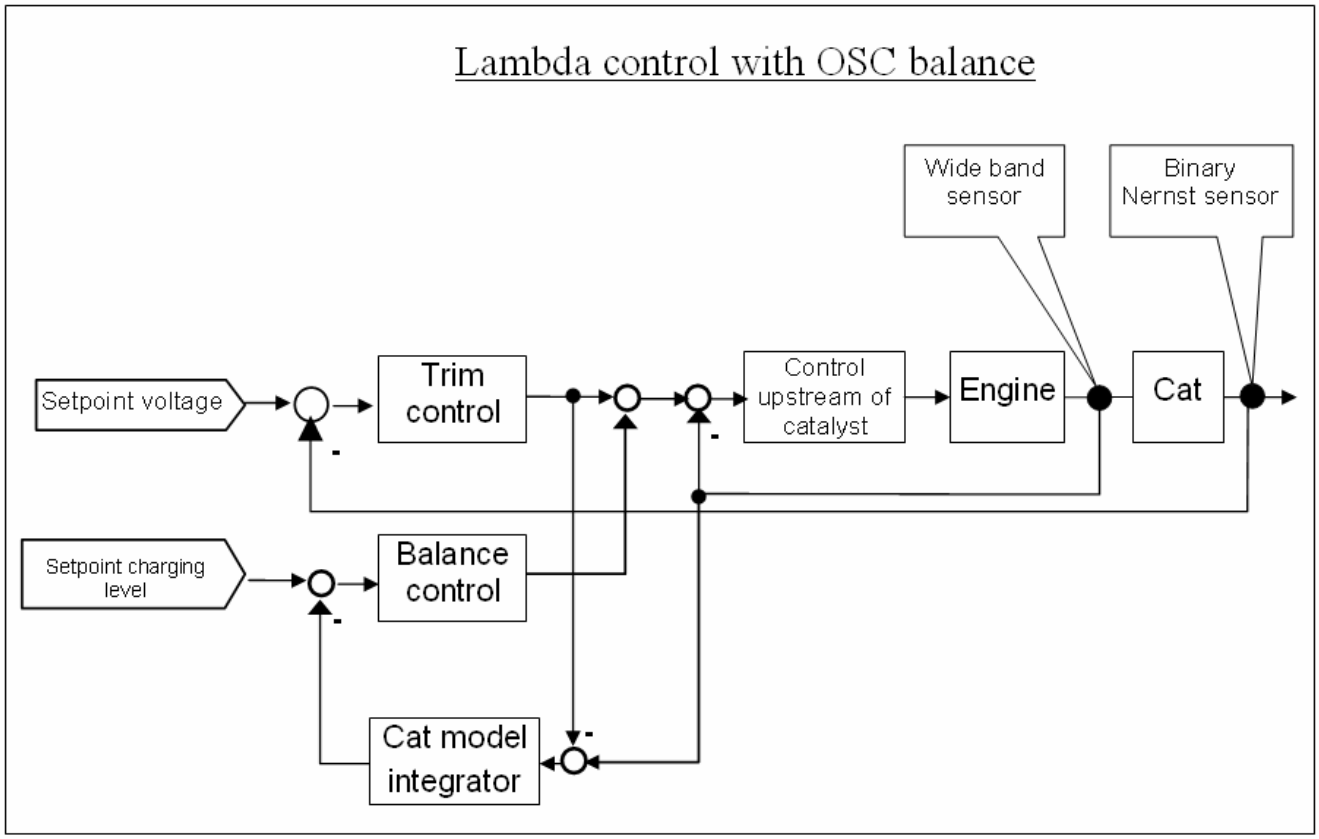


Figure 22: Control with balancing

6.1.2 Influence of the Oxygen Charge State of the Catalyst on the Conversion

The following diagrams explain the correlation between the oxygen charge state of the catalyst and the conversion of the exhaust gas components.
The oxygen storage contained in the catalyst is symbolically illustrated in the catalyst drawings.

The big red “balls” in the catalyst drawings of the following illustrations represent a completely charged oxygen storage state, while the big grey “balls” represent a completely discharged oxygen storage state.
The oxygen storage is represented in the illustration by different oxidation levels of the ceroxide, being CeO2 and Ce2O3.

The oxidation of carbon monoxide and of unburnt hydrocarbon compounds results in a discharge of the oxygen storage, while the reduction of nitrogen oxides results in a charge of the oxygen storage.

The following figure shows the state of the catalyst when it is charged with 50 percent of oxygen and when a stoichiometric exhaust gas mixture (lambda = 1) is supplied to it.
Both the conversion rates of the exhaust gas components that are oxidized (HC, CO), and the conversion of the exhaust gas components that are reduced (NOx), are very high, and the exhaust gas mixture leaving the catalyst is stoichiometric.

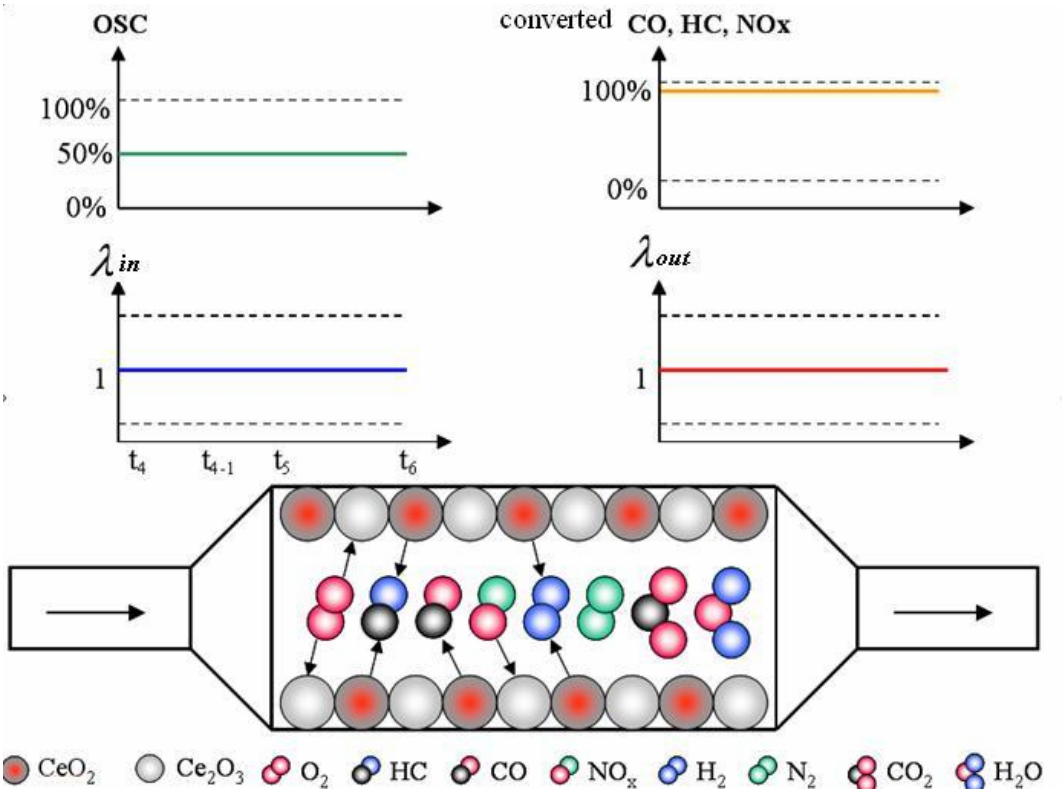


Figure 23: Catalyst state with lambda = 1 applied

The next figure shows the state of the catalyst when a rich exhaust gas mixture was supplied to it, and subsequently a lean exhaust gas mixture is supplied to it.
Until the time t1, the catalyst was supplied with a rich exhaust gas mixture, which is why the oxygen storage was empty at the time t1.
The more lean exhaust gas mixture that is supplied to the catalyst, the more the oxygen storage is charged, starting at the gas entrance location.
As long as the oxygen storage is not completely charged, the exhaust gas composition downstream of the catalyst is lambda = 1, in spite of being supplied with lean exhaust gas.

In addition to that, a good NOx conversion is present when the oxygen storage is partially charged, despite being supplied with lean exhaust gas.

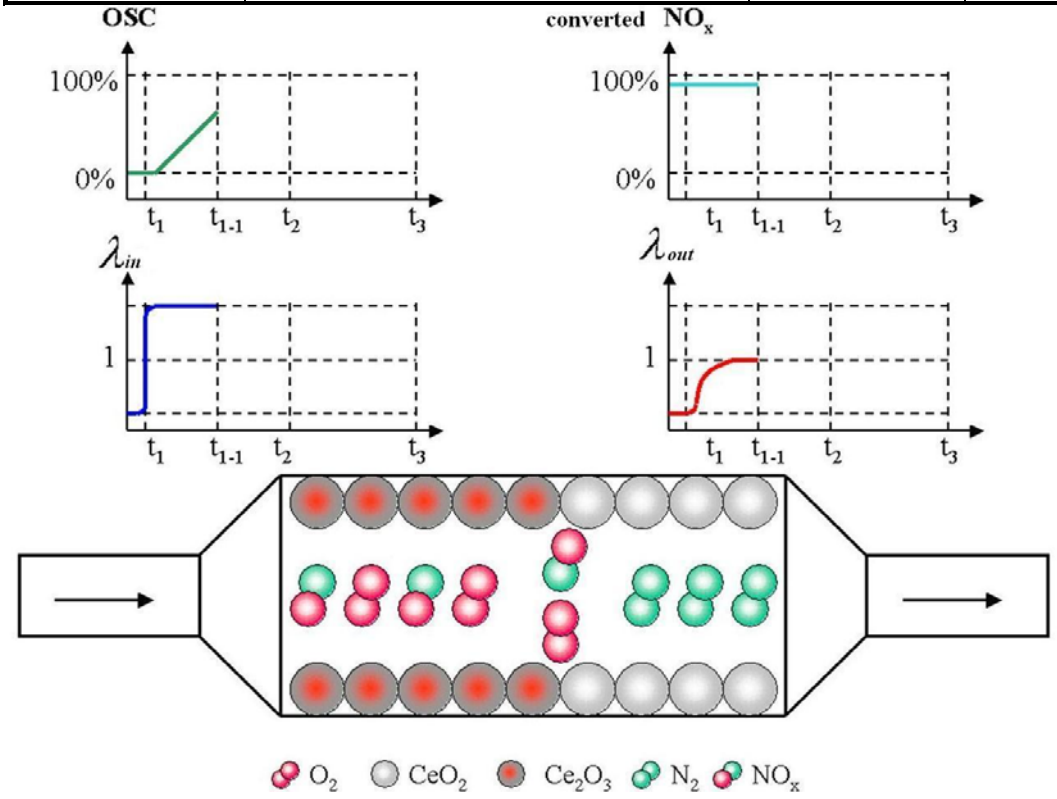


Figure 24: Catalyst state at start R2L

From the time t_2 onwards, the oxygen storage of the catalyst is completely charged with oxygen (see figure below). At the time t_2, a lean exhaust gas composition is present downstream of the catalyst, and a drastic drop in the NOx conversion occurs.

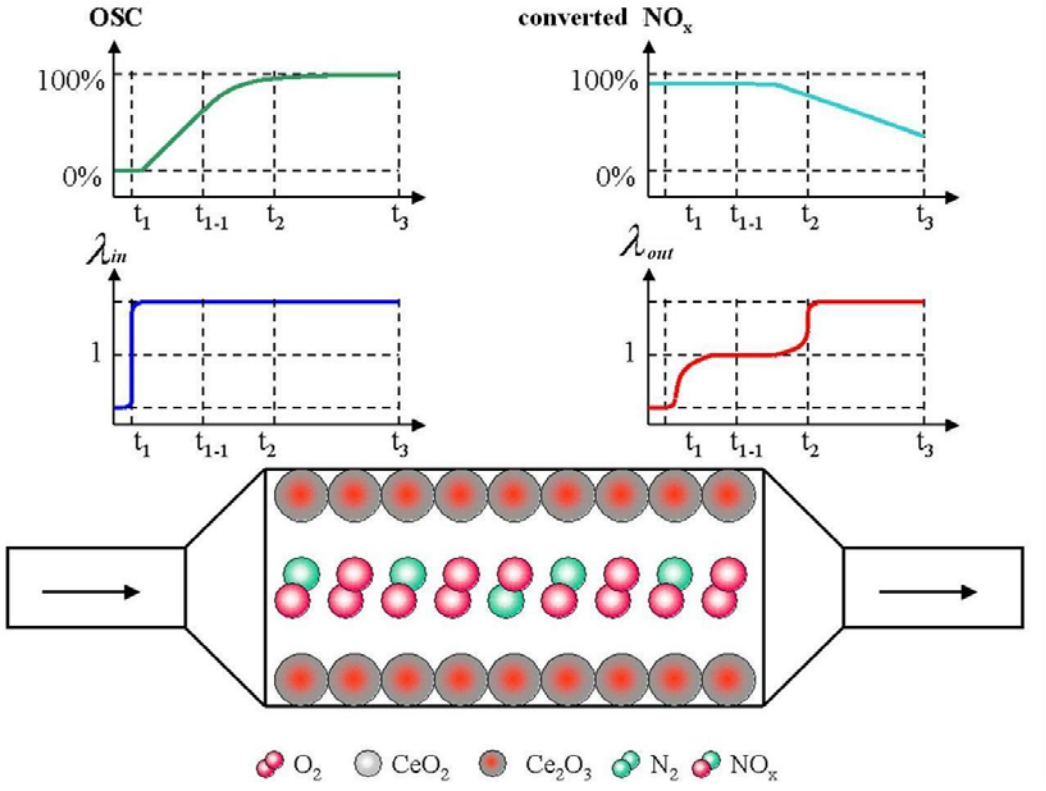


Figure 25: Catalyst state at end of lean phase

The transition from lean to rich corresponds to the transition from rich to lean (see figure below).

At the start of the changeover, a stoichiometric exhaust gas composition is present, in spite of the supply of a rich exhaust gas mixture to the catalyst.
This is due to the fact that the oxygen required for the oxidation of the unburnt hydrocarbon compounds and the carbon monoxide can be extracted from the oxygen storage of the catalyst.
This is why a constant discharging of the oxygen storage can be observed.
During this phase, the conversion rate of the unburnt hydrocarbon compounds and the carbon monoxide is at a high level.

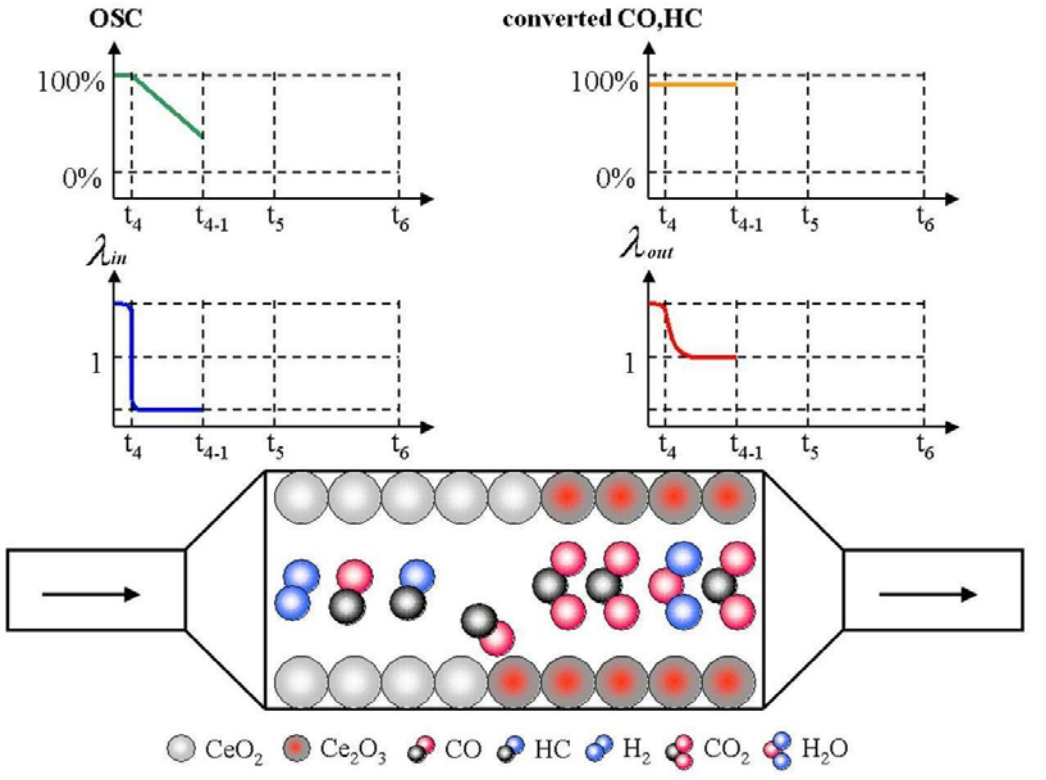


Figure 26: Catalyst state at start L2R

An increasing oxygen storage discharge results in a decrease of the conversion performance, and a rich lambda signal downstream of the catalyst.
As the oxygen storage of the catalyst is discharged, it is no longer possible to extract the oxygen required for the oxidation from the oxygen storage, and as a result, the conversion performance of the catalyst, concerning the components which have to be oxidized, decreases.
The following figure shows the respective processes.

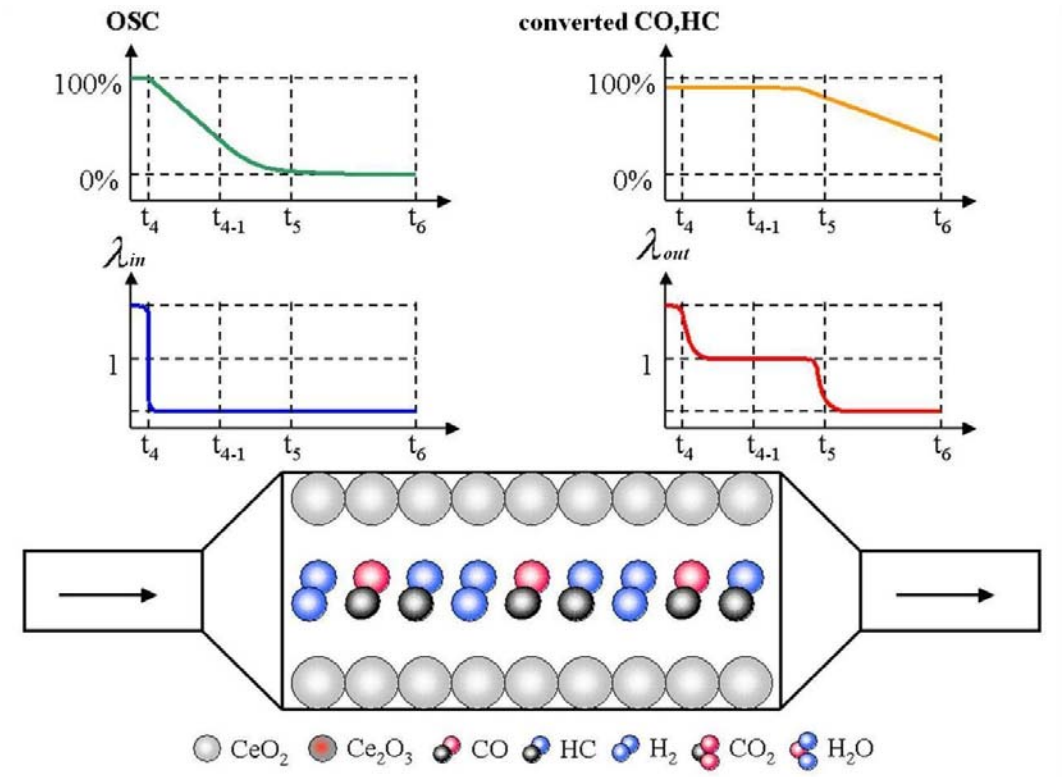


Figure 27: Catalyst state at end of rich phase

The aim of the balanced lambda control is to prevent the oxygen storage from being completely charged or discharged, and thus to prevent the conversion rate from being reduced.

6.2 Air / fuel system monitoring

6.2.1 General description

Fuel Injection System
In comparison to conventional systems the gasoline is not injected into the intake manifold but directly into the combustion chamber.
Due to the higher pressure level in the combustion chamber, e.g. during the compression stroke, a high pressure fuel injection system is used.

Mixture Pilot Control
The air flow sucked in by the engine the engine speed and fuel pressure are measured. These signals are used to calculate an injection signal. This mixture pilot control follows fast load and speed changes.

Lambda-controller
The ECM compares the oxygen sensor signal upstream the catalyst with a reference value and calculates a correction factor for the pilot control.

6.2.2 Monitoring function description

Adaptive pilot control
Drifts and faults in sensors and actuators of the fuel delivery system as well as unmeasured air leakage influence the pilot control. The controller corrects amplitudes increases. If there are different correction values needed in different load speed ranges, a certain time passes until the correction is complete. The correction values will be determined in three different ranges.

Fuel trim
The basic air/fuel ratio control using the signal from the front O2 sensors(s) is corrected by an adaptation calculation. This adaptation results in a factor which is applicable for the whole working range. (e.g. 20%)
A further trim control based on the signal(s) from the rear O2 sensor(s) is correcting the adaptation factor. Therefore this trim control is working in the same way in the whole range.
If the trim control reaches the allowed limit (e.g. 2%) the fault code for fuel delivery trim control is set.
Any deviation from the characteristic curve of oxygen sensor upstream catalyst due to poison will be detected by the control loop downstream catalyst.

6.2.3 Chart and flow charts air / fuel system monitoring

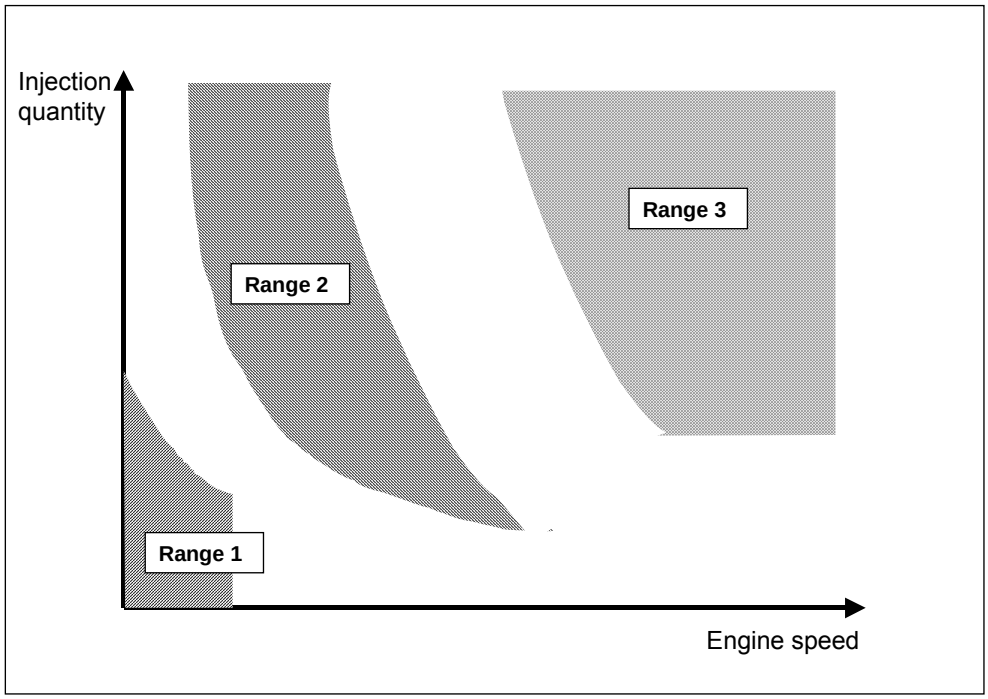


Figure 28: Fuel trim – injection quantity / engine speed

Lambda deviations in **range 1** are compensated by an additive correction value multiplied by an engine speed term. This creates an additive correction per time unit.

Lambda deviations in **range 2** are compensated by multiplication of a factor.

Lambda deviations in **range 3** are compensated by multiplication of a factor (optional depending on individual calibration).

A combination of all two (three) ranges will be correctly separated and compensated.

Each value is adapted in its corresponding range only. But each adaptive value corrects the pilot control within the whole load/speed range by using a linear interpolation formula. The stored adaptive values are included in the calculation of the pilot control just before the closed loop control is active.

Diagnosis of the fuel delivery system
Faults in the fuel delivery system can occur which cannot be compensated for by the adaptive pilot control.
In this case, the adaptive values exceed a predetermined range.
If the adaptive values exceed their plausible ranges, then the MIL is illuminated and the fault is stored.

Flow chart: fuel trim

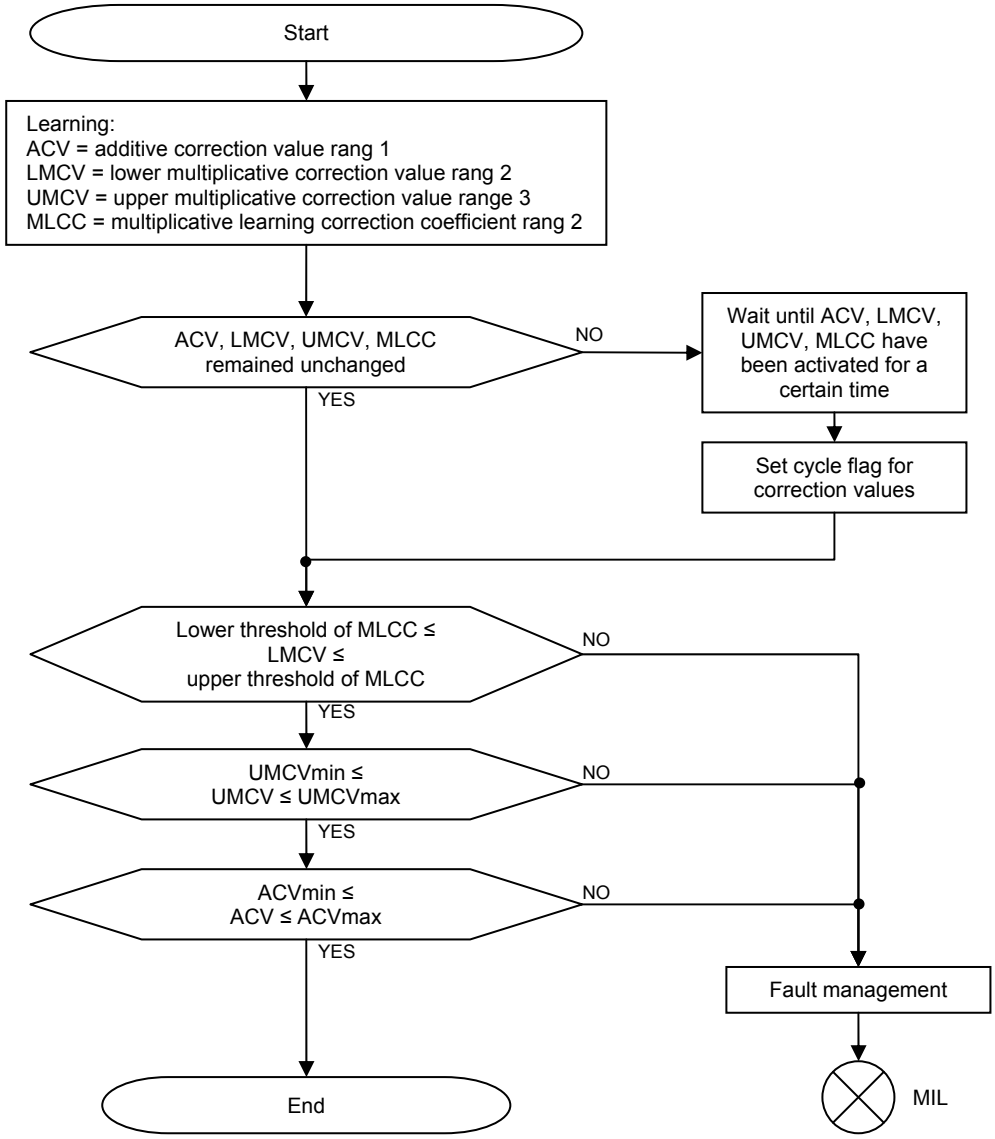


Figure 29: Flow chart fuel trim (part 1)

Flow chart: fuel trim (part 2)

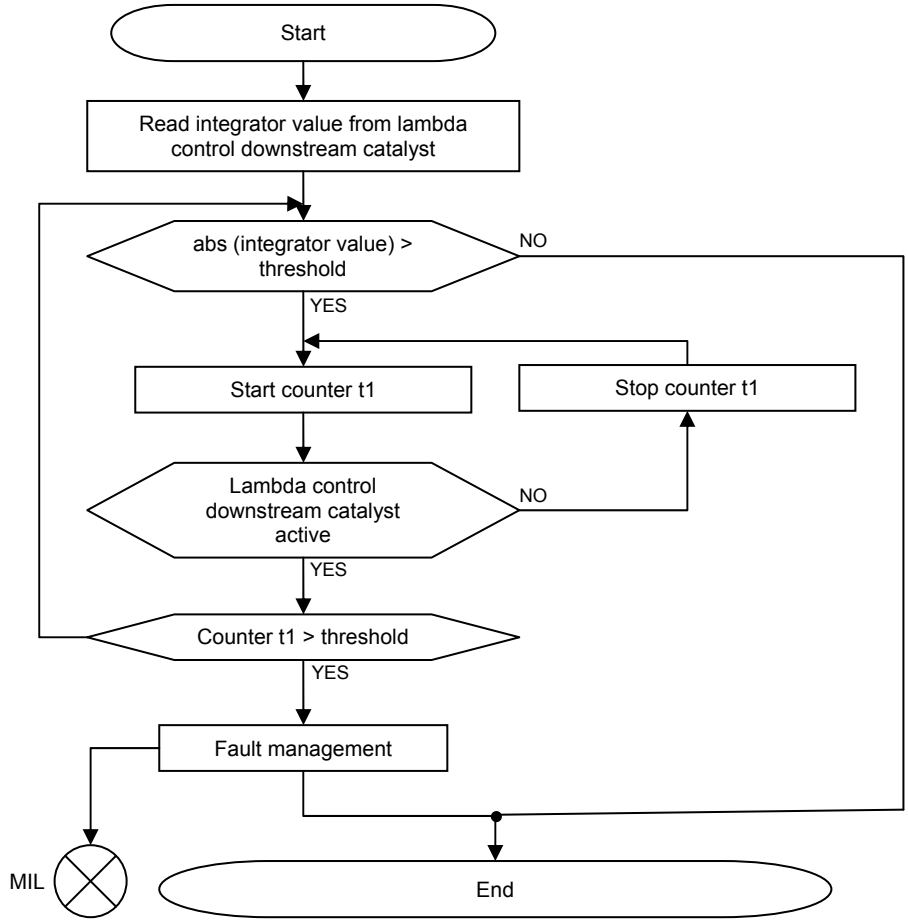


Figure 30: Flow chart fuel trim (part 2)

6.2.4 Similar conditions for fuel system

The fuel system monitor runs in different ranges of the engine map. Faults at idle are detected in the Range 1, faults off idle in the Range 2 and if applicable faults at higher load in a Range 3. It depends on the engine type whether it is necessary to use a third range.

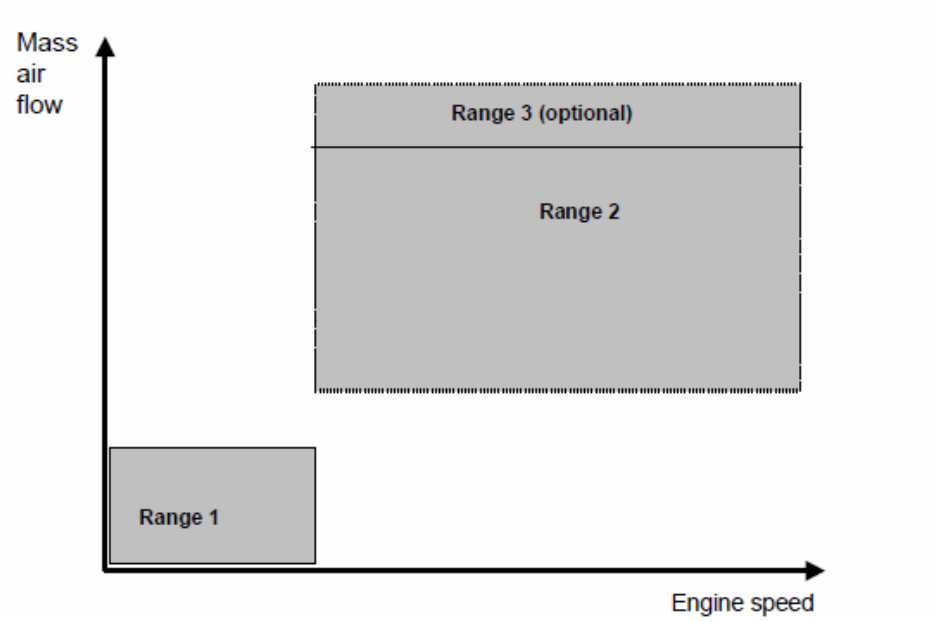


Figure 31: Similar conditions – mass air flow / engine speed ranges

The OBD system uses two ranges, Range 1 and Range 2. Although monitoring runs only within the two ranges the results are not independent from each other.
A pending code found in one of the ranges would be confirmed in either of the ranges. Healing of a pending or confirmed code needs pass results in both ranges.
Consequently any decision leads to the same P-code, valid in the whole working range:

- P0171 System too lean
- P0172 System too rich

Extended monitoring range for fuel delivery system trim control DTC

The basic air / fuel ratio control using the signal from the front oxygen sensor is corrected by an adaptation calculation. This adaptation results in a facto that is applicable for the whole working range of the fuel adaptation, e.g. 24% - 65% load and 1500 – 4000rpm engine speed.

A further trim control based on the signal from the rear oxygen sensor is correcting the adaptation factor. Therefore, this trim control is working in the same way in the whole range. If the trim control reaches the allowed limit the fault code for fuel delivery trim control is set.

Applying the whole range would allow to confirm or erase a fault code under different conditions than first detected and thus come to a faster decision. Using this whole range for monitoring this function rather than the limits given in sect (c)(33), as seen in the following graph:

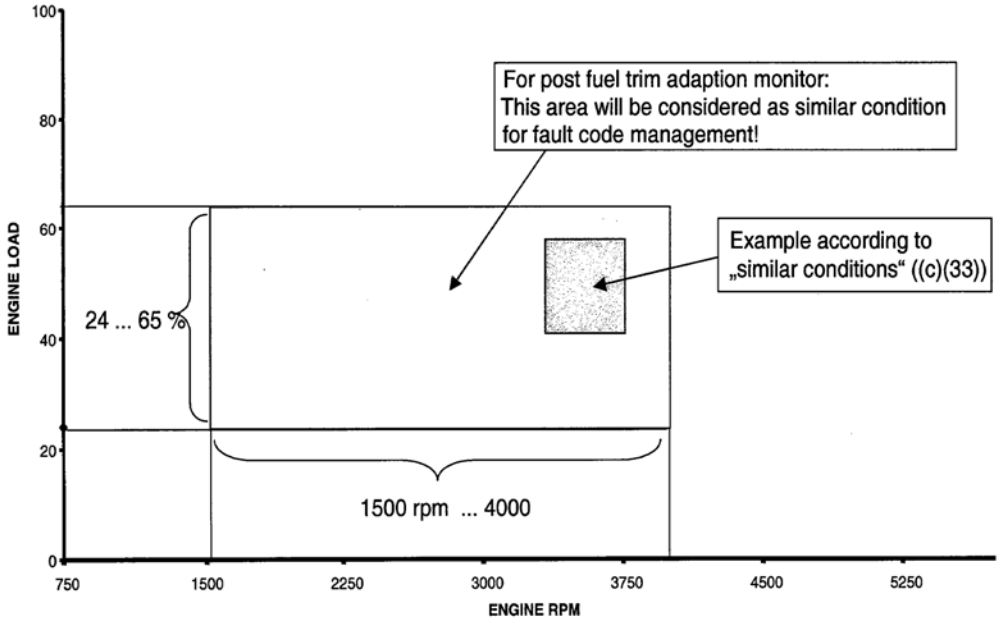


Figure 32: Monitor window – post fuel trim adaptation

7 EXHAUST GAS SENSOR MONITORING

General description

The Lambda control loop consists of a linear oxygen sensor upstream catalyst and one or two binary oxygen sensors downstream front catalyst (and post main catalyst). The secondary control loop (downstream of the catalysts) corrects deviations of the upstream oxygen sensor.

Upstream oxygen sensor (wide band sensor)

The wide band oxygen sensor (other commonly used names are LSU or UEGO) measures the oxygen content and the lambda value of the exhaust gas. Because of its continuous characteristic line the wide band sensor is applicable for the upstream catalyst position. This kind of sensor is able to measure a wide range of lambda (e.g. 0.65 … λ … air).
The wide band oxygen sensor has an integrated sensor heater. The heater performance is controlled by the ECM in order to maintain a certain sensor temperature. The sensor temperature is measured indirectly by the internal resistance.

The relevant output signal of a wide band sensor is the pump current (Ip). It is proportional to the lambda value.

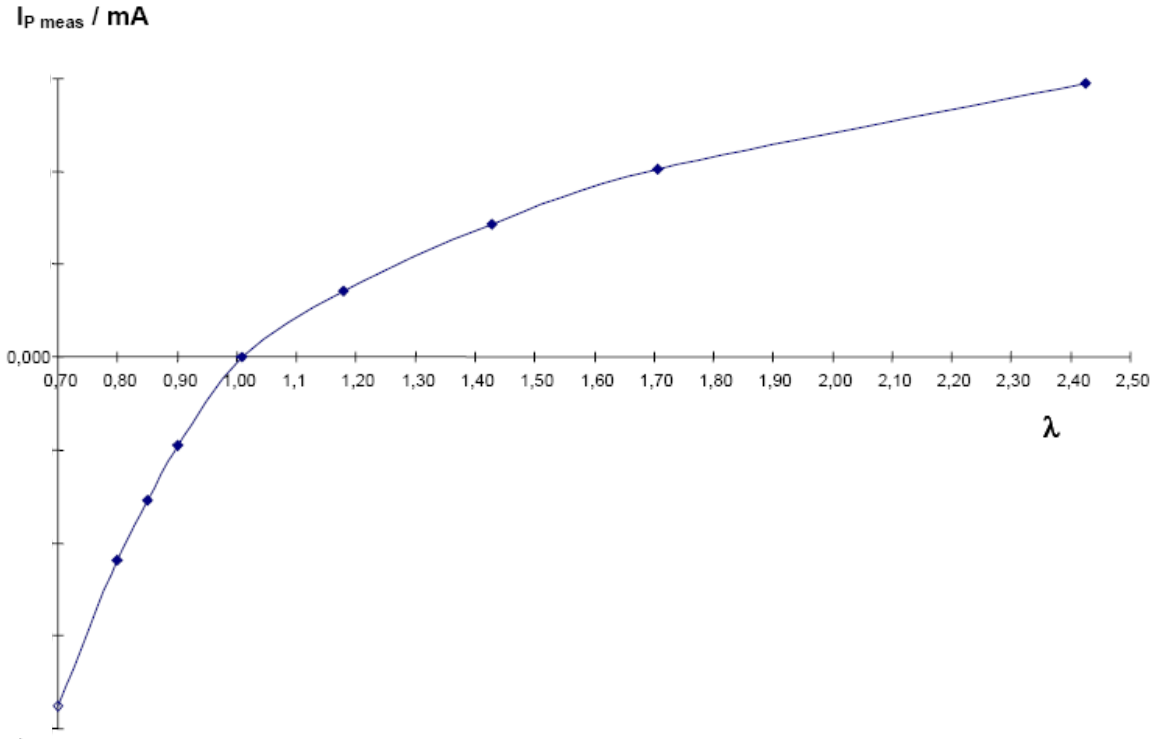


Figure 33: characteristic line of wide band sensors

Downstream oxygen sensor (binary sensor)
The binary oxygen sensor (other commonly used names are LSF or HEGO) measures also the oxygen content of the exhaust gas. The output voltage of this sensor is reading a level of > 0.45 V for a rich exhaust gas constitution. In case of a lean exhaust gas constitution, the sensor reads voltages < 0.45 V. For stoichiometric mixture (Lambda = 1) the characteristic line of the binary sensor has a steep gradient.

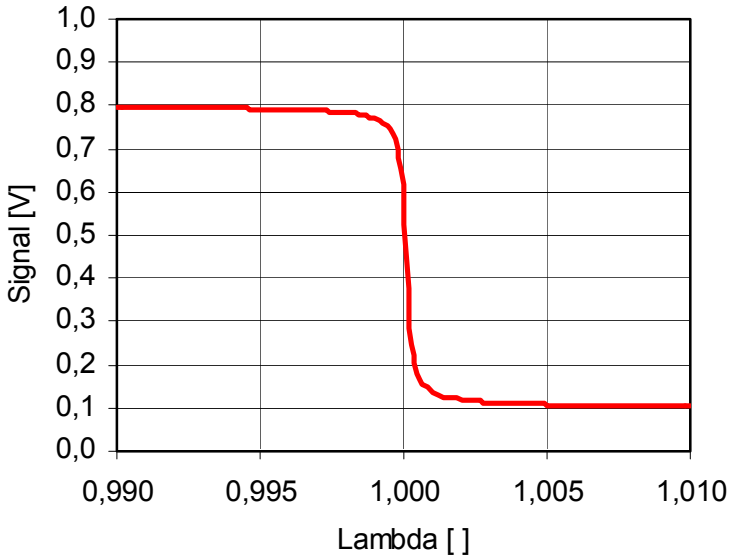


Figure 34: characteristic line of binary sensors

The binary sensor is located downstream the catalyst and is used for catalyst monitoring, monitoring of the upstream oxygen sensor and secondary fuel trim. There is also a sensor heater integrated to ensure a sufficiently high operating temperature.

All sensors are monitored by several single monitoring procedures as follows.

7.1 FO2 Sensor dynamic

Different failure types of wideband oxygen sensors may affect the sensor characteristics:

- **Clogged protection tube:**
  diffusion of exhaust gas into measurement chamber is being slowed down
  → slower sensor signal transition, being detected by front O2 Sensor dynamic
- **Crack in pumping cell:**
  typically results in rich shift of the signal
  → being detected during fuel cut-off
- **Crack in reference cell:**
  typically results in lean shift of the signal
  → being detected by rear fuel trim monitoring
- **Poisoning of sensor ceramic surface:**
  diffusion of exhaust gas into ceramic element is being slowed down
  → slower sensor signal transition, being detected by front O2 Sensor dynamic check

7.1.1 Oxygen sensor, signal too slow, P0133, P0153,

bank 1: P0133, bank 2: P0153;

This function monitors the dynamic behavior (responding properties) of a continuous wideband LSU oxygen sensor, which is located upstream of the catalyst (primary oxygen sensor). Slow dynamic sensor behavior may lead to a rise of exhaust gas emissions, and, on the other hand, the results of other monitoring functions that use the signal of the primary sensor (such as the catalyst monitor) may be falsified, or the corresponding monitoring function disabled.

7.1.1.1 Monitoring Strategy

The monitoring function detects symmetrical and asymmetrical faults in the primary oxygen sensor that may be caused by either slow transition or delayed response. The area ratios for each direction and the ratios of the maximum gradients of the actual signal and the setpoint signal for each direction are used as evaluation criteria.

7.1.1.2 Enable Conditions

- Oxygen sensor has reached operating temperature (typically 720 °C)
- A calibratable waiting period is exceeded after the operational readiness was set
- Relative fuel quantity from transition compensation < threshold value
- Volume flow rate of carbon canister purge < threshold value
- Canister purge diagnostic is inactive
- Tank leakage diagnostic is inactive
- Catalyst temperature > threshold value
- No fuel cut-off to any cylinder, all injection valves are activated
- Engine coolant temperature > threshold value
- Engine speed, load, and exhaust gas delay time constant in defined range
- Evaporative system not active, or time of activation > threshold value
- Currently no gear change in process
  This enable condition is optionally calibratable, i. e. it is only active when it is required. For details, see the Summary Table
- Gradient of the engine load ≤ threshold value
- “Open circuit in the pump current circuit” monitoring function is completed
- Second lambda control loop not active
- Forced lambda modulation not active

7.1.1.3 Malfunction Criteria

The monitoring function utilizes surges in the amount of fuel injected, and compares the actual oxygen sensor signal with the expected oxygen sensor signal. For this purpose, two corresponding, comparable areas and maximum gradients are calculated. One of the areas and the respective maximum gradient are determined on the basis of the actual sensor signal, the other area and the respective maximum gradient are determined on the basis of the expected sensor signal.

Starting with the response to a fuel surge, the area between the inverted signal and a horizontal line, which begins at the point of the start value, is calculated during a defined time period. Within the same time frame the maximum gradient of the signal is calculated.

Then a quotient from the actual area and the expected area and a quotient from the maximum gradients are calculated. The slower the oxygen sensor responds, the lower the absolute value of the quotient value calculated from these values and/or the two gradients will be. While the area ratio and the gradient ratio are reduced in the case of a slowly rising signal, only the area ratio is reduced in the case of a delayed signal rise. The gradient ratio remains largely unaffected as long as the response of the actual signal occurs within the measurement window. If no response within the measurement window occurs, as in the case of very large faults, both ratios equal zero.
Typically, the monitoring function utilizes an active modification of the setpoint lambda value.
There are two kinds of surges, R2L surges and L2R surges. Single uni-directional surges with a calibratable waiting period between two surges, are applied.

Several options are generally possible when using the fuel surges as a means of activation:

- The monitoring function executes its own lambda modification. This enables double surges with R2L and L2R modifications or single uni-directional surges with a calibratable waiting period between two surges (this strategy is applied starting with MY 2010).
- Measuring the two flanks during the lambda modification of the active catalyst monitoring function (this strategy is planned for future model years)
- Measuring the R2L flank during overrun fuel cut-off and measuring the L2R flank during catalyst purge (rich operation) after overrun fuel cut-off (currently not taken into account)

The options listed above may be applied individually by coding.

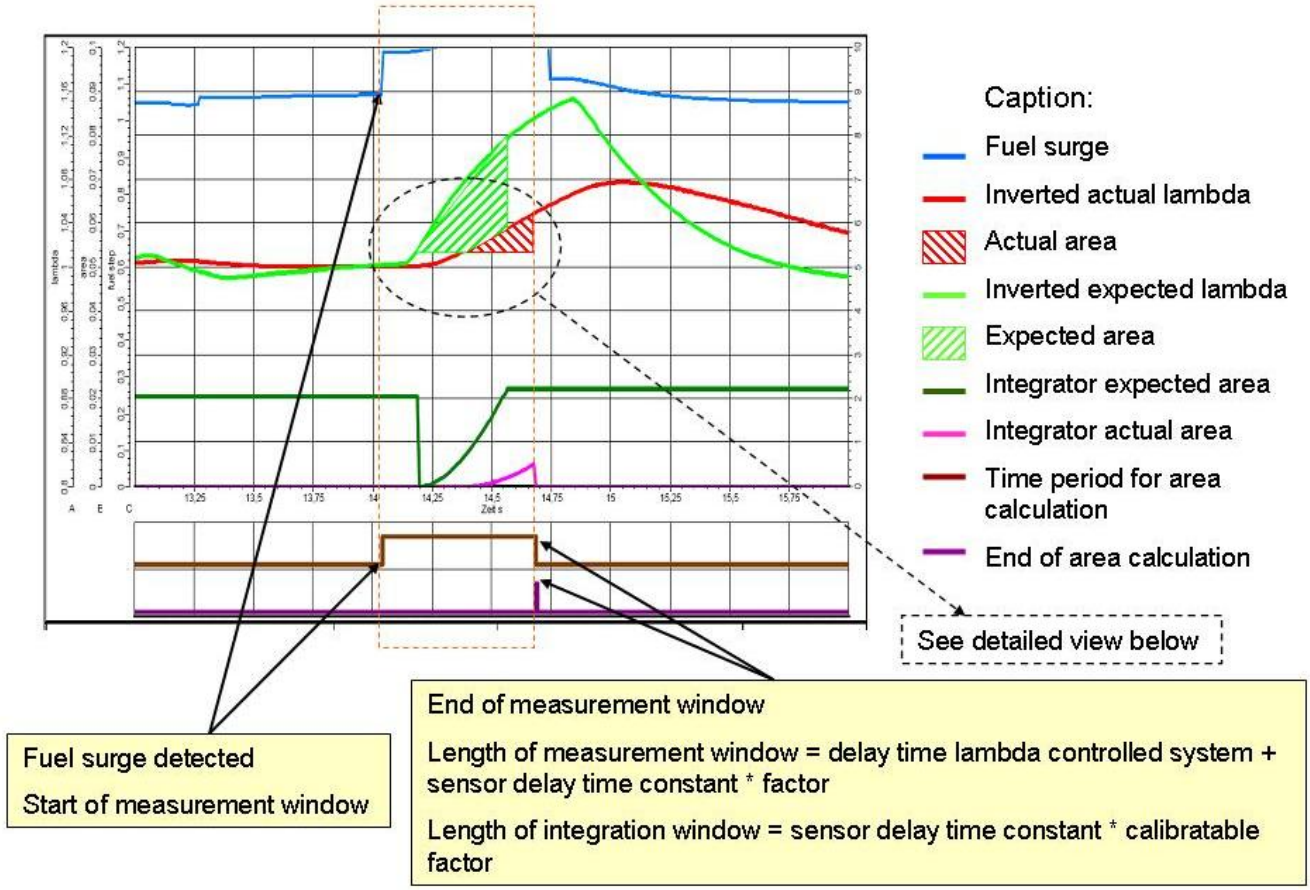


Figure 35: Principle of the response rate integral calculation

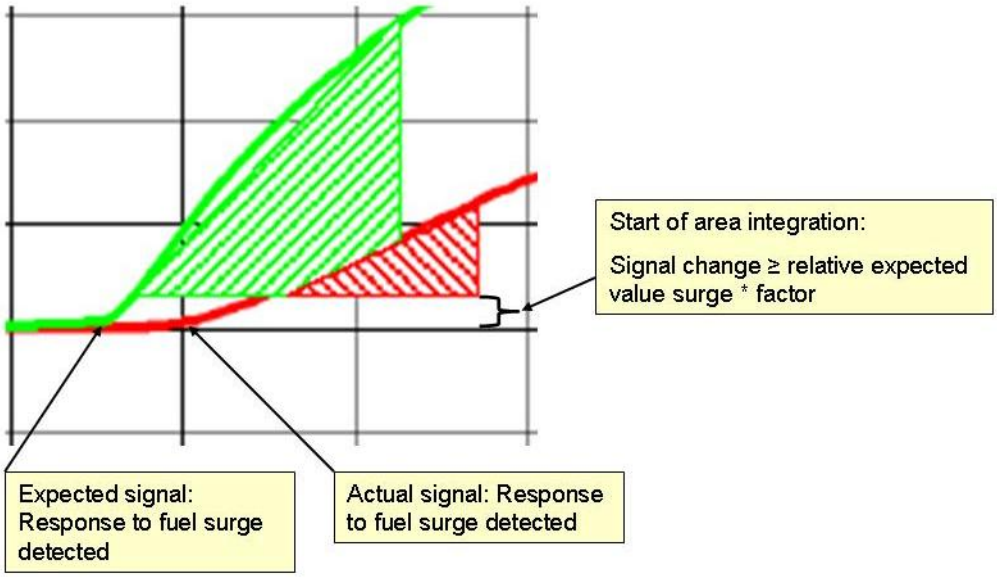


Figure 36: Detailed view

The figure shows a fault case where the length of the integration window of the setpoint signal is calculated according to the formula above. The length of the integration window of the actual signal, however, is defined by the end of the common measurement window for both areas as seen in Figure 35: Principle of the response rate integral calculation(brown line).

The Active Modification of the Setpoint Lambda Value and its Marginal Conditions

When the enable conditions are fulfilled, the monitoring function requests a modification of the setpoint lambda value. First, a negative Δλ value is requested (enrichment). When the areas and the gradients are calculated, a positive Δλ value is requested (enleanment). The lambda value is conditioned prior to each surge of the setpoint lambda value. Prior to a L2R surge, a lambda value of approximately 1 is applied. Prior to a R2L surge, a rich pre-conditioning is carried out, i. e. the mixture is set to slightly rich (λ = 0.98 to 0.99). This reduces the NOx exhaust emissions caused by the R2L modification.

Important Marginal Conditions for a Surge of the Setpoint Value
A slow oxygen sensor may cause the lambda controller to oscillate. When this occurs, the L2R modification is done when the slope moves towards "rich", anyway. When an R2L modification is done, the slope of the control action also has to move in the same direction, i. e. towards "lean" (synchronization).

Explanation
Due to the enleanment caused by the control action, the requested enrichment may not achieve the injection of the desired fuel quantity, when the modification of the setpoint lambda value is not synchronized with the control action. As a result, the necessary modification to measure the dynamic response of the sensor cannot be achieved. In case a slow oxygen sensor causes the lambda controller to oscillate, the falling slope of the control action line shows that the delayed sensor signal is responding to a preceding enrichment, i. e. the signal is moving towards "rich". The sensor signal is moving in the right direction, but not as a result of the previously initiated surge. Therefore a dynamic measurement may lead to a false result (e. g. an unjustified pass result).

Further Marginal Conditions for a Surge of the Setpoint Value

- The forced modulation of the continuous lambda control and the second control loop are disabled.
- The current control difference does not exceed a threshold value.
- The intensity of control action has increased several times in succession
  or
  The intensity of control action has not exceeded a threshold value for longer than a time threshold.
- The total effect of the setpoint lambda value modification and/plus the operational control action must not exceed the maximum permissible enrichment or enleanment for the corresponding control action
- When the L2R modification starts, the difference between the current lambda value and the minimum permissible lambda value must be 1.5 x Δλ of the setpoint value surge L2R. When the R2L modification starts, the difference between the current lambda value and the maximum permissible lambda value must be 1.5 x Δλ of the setpoint value surge R2L.

Calculating the Setpoint Value and the Actual Value of the Inverted Lambda Signal

The area integrals and the maximum gradients are calculated by inverting the setpoint and the actual values of the sensor signal. A low pass filter, which uses a calibratable time constant, is applied to the inverted measured oxygen sensor signal. The filter protects against high-frequency disturbances, which might distort the area integral triggering and the gradient calculation triggering. The setpoint value signal is initially delayed by an exhaust gas delay time element. Subsequently, a low pass filter, which uses the sensor delay time constant, is applied to the setpoint signal. As with the actual signal, a low pass filter, which uses a filter constant, is applied to the setpoint signal again, in order to guarantee its comparability with the actual signal.

Calculating the Area Integrals and the Area Ratio (Dynamic Raw Values)

This describes the calculation of the R2L surge. The L2R surge is calculated in the same manner. For a single measurement, the extent of the surge has to be large enough to measure and thereby to initiate the integration of the setpoint and the actual area.

Detecting a Fuel Surge

To initiate the calculation of the area integrals and the gradients, a relative fuel surge has to be detected. This fuel surge is detected when the difference between the current value and the previous fuel factor value exceeds a calibratable threshold value. Once a fuel surge is detected, both the setpoint and the actual value must respond within a certain time frame.
The time frame for the area integration is calculated when the fuel surge starts. This time frame is calculated from the exhaust gas delay time (gas travel time to the location of the oxygen sensor). The delay time is multiplied with a factor that depends on the sensor delay time constant, which depends on the operating point (engine speed and load / exhaust gas mass flow). The time constant corresponds to the signal increase of an error-free sensor.
The oxygen sensor signal can be expected to react shortly after the end of the exhaust gas delay time. Integration is subsequently started and it continues for the duration of the time constant. This process occurs in both the setpoint and the actual signal. When the actual signal does not respond at the expected time, the integration cannot be executed throughout the entire time frame of the time constant. The area and consequently the dynamic value, decrease.
Due to tolerances in the exhaust gas delay time parameters of the lambda control, the measurement window does not start after the end of the total delay time, but when 80 percent of the current delay time has passed. Tolerances in the sensor delay time constant have to be compensated for by varying the length of the measurement window, using the multiplication factor.

Area Integration of the Expected Inverted Oxygen Sensor Signal (Setpoint Value)
The area integration of the expected inverted signal is initiated when the first response to a fuel surge is detected. For this purpose, the maximum and the minimum values (depending on the direction of the flank change) of the inverted setpoint lambda signal are continuously calculated. These calculations are made after a fuel surge is detected from the lambda controller's response, as described above. An initial response is detected when the signal has changed from the expected signal excursion by a certain factor (typically 0.05 to 0.2). When this condition is satisfied, the area integration and a time counter, which determines the integration period, start. The integration period is calculated from the product of the current time constant and a constant, calibratable factor. When the time counter value is greater than or equal to this integration time, the area calculation is stopped.

Calculating the Maximum Gradient of the Expected Inverted Oxygen Sensor Signal (setpoint value)
The gradient of the expected inverted signal is calculated only after a response to the fuel surge can be detected. For this purpose, the maximum and the minimum values (depending on the direction of the flank change) of the inverted setpoint lambda signal are continuously calculated. These calculations are made after a fuel surge is detected from the lambda controller's response, as described above. An initial response is detected when the signal has changed from the expected signal excursion by a certain factor (typically 0.05 to 0.2). Once this condition is fulfilled, the calculation of the gradient is started, beginning with continuously calculating the difference between the current value and the previous value in 10 ms calculation steps, and calculating the maximum value from the individual gradients of the calculation steps.

Area Integration of the Measured Inverted Oxygen Sensor Signal (Actual Value)
The inverted actual lambda signal is calculated mostly analogously to the integration of the setpoint area. In this case also, the maximum or the minimum value of the inverted setpoint lambda signal is continuously calculated when a fuel surge is detected. Then, the time frame for the integration and the time counter are started when the signal has changed by a calibratable factor, compared to the expected signal excursion. The time frame for the integration is also stopped when the time counter reaches a value calculated from the product of the current time constant and the same calibratable factor, as it is used for calculating the setpoint area.
If there is an excessive delay in the oxygen sensor’s response, no response to the fuel surge will be detected in the actual signal. As a result, no area integration can be done, and the area value for the actual signal is set to zero. Thus, the current area ratio also equals zero.

Calculating the Maximum Gradient of the Measured Inverted Oxygen Sensor Signal (actual value)
The maximum gradient of the measured inverted lambda signal is calculated in the same way as the maximum gradient of the setpoint value.

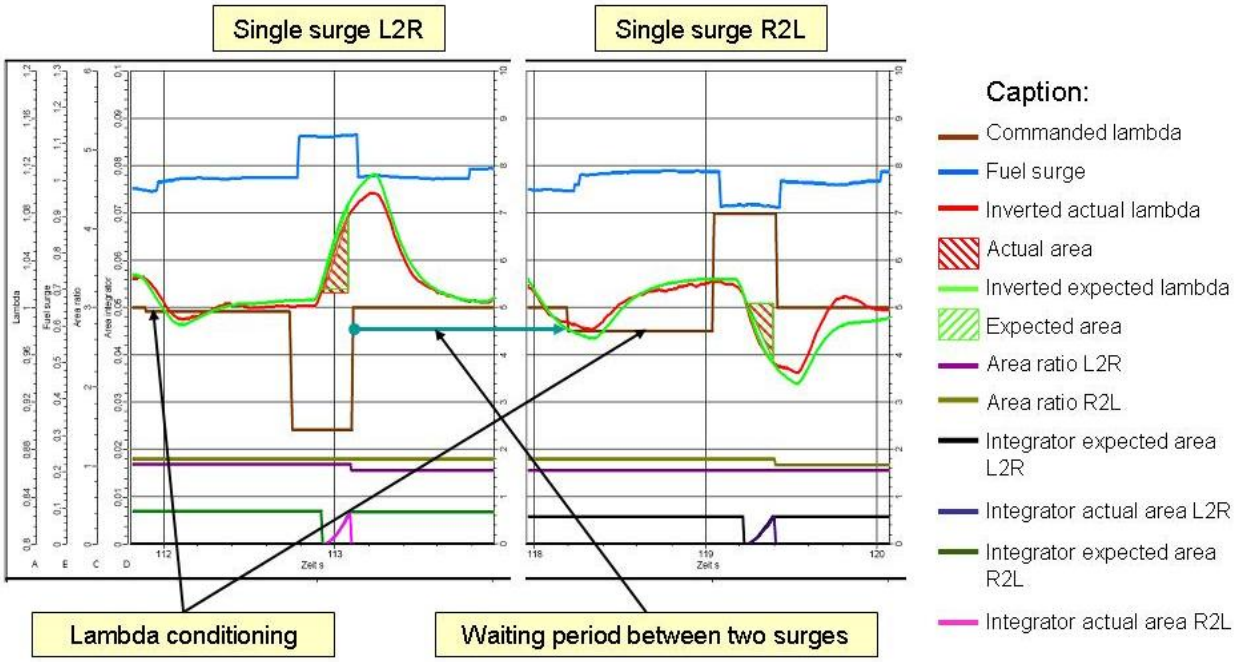
Generating the Diagnostic Values for each Direction
The diagnostic values are calculated for both the falling and the rising flank, respectively. The calculation incorporates the quotient of the actual value integral area (numerator) and the setpoint value integral area (denominator), as well as the quotient of the maximum gradient of the actual value (numerator) and the maximum gradient of the setpoint value (denominator).

Subsequently, the individual area ratios for each direction can be corrected using a factor from a characteristic curve which is a function of the engine temperature (typical factor: 50 °C = 1.5; 90 °C = 1.0).

Explanation: When the engine has not yet completely warmed up, the applied fuel mixture surge reaches the location of the sensor only partially as a result of the fuel being adsorbed to the intake manifold and/or the combustion chamber (surface film). These effects are not considered when modeling the system to be controlled, which is used for generating the target signal. Hence, they have to be taken into account in the diagnostic procedure in order to avoid diagnostic errors with faultless sensors.

From these values, which are calculated as described above, filtered values are generated. The filtered values are the diagnostic values that are used to make fault decisions.

Measurement with faultless oxygen sensor



Measurement with 250 ms symmetrical delayed response (lag time)

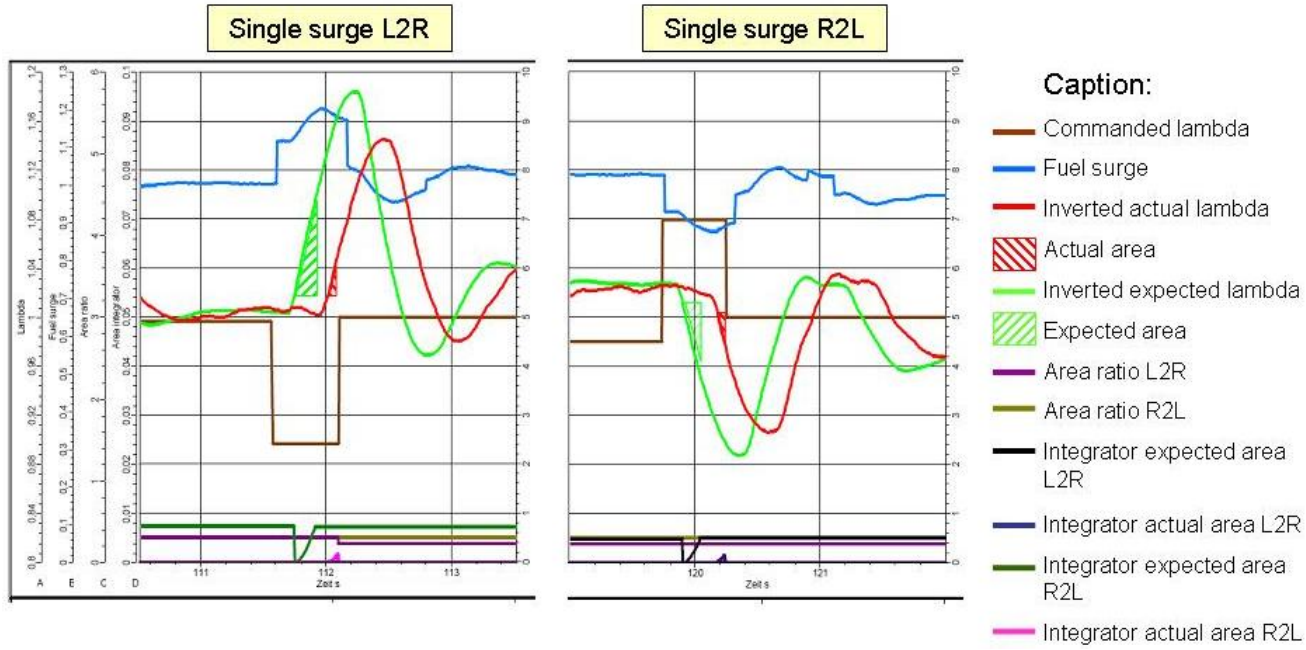


Figure 37: Primary, heated oxygen sensor - Examples for determining the area in an error-free system and in a system with a 250 ms delay

The areas in the examples are determined by successive single R2L and L2R surges.

Calculating the Filtered Dynamic Values

From the values that are calculated for the falling and the rising flanks filtered values are generated. These filtered values are the diagnostic values which are used to make fault decisions.

The event filter constant for the first measurement is 1, which means that the filter is actually initialized with the first measurement value. With each further single result, this filter value decreases by the reciprocal value of the number of measurements. Thus, in each step an average is generated for the individual results that are present up to this point. The reason for this approach is the expectation that the oxygen sensor dynamic does not change substantially between two individual measurement steps (assuming continuous ageing) and therefore all results should be weighted equally.

Potential Results

As a diagnostic value for each direction is calculated for both the area ratio and the gradient ratio, within certain limits it is possible to calibrate different fault thresholds for the different fault types, according to their impact on emissions.

Case 1: Pass Result

In order not to have to carry out unnecessary monitoring cycles with active lambda modification in the case of a good sensor dynamic and thus, to provide monitoring time for other monitors more quickly, the number of measuring samples to attain does not have to be as high as in the fault case.

After each individual measuring sample, verification is made to determine whether it is still possible for the dynamic value to drop below the highest fault threshold with further measurements being taken. If this is no longer possible, the monitor is ended with a pass result.

The sensor is dynamically OK,

if the value of the R2L area ratio multiplied by the quotient of the current counter value for the R2L area ratio and the number of measurements necessary for a fault result (Z1) is greater than the threshold value for the asymmetrical delay fault

and

if the value of the L2R area ratio multiplied by the quotient of the current counter value for the L2R area ratio and the number of measurements necessary for a fault result (Z1) is greater than the threshold value for the asymmetrical delay fault.

and

if the value of the R2L gradient ratio multiplied by the quotient of the current counter value for the R2L gradient ratio and the number of measurements necessary for a fault result (Z1) is greater than the threshold value for the gradient ratio

and

if the value of the L2R gradient ratio multiplied by the quotient of the current counter value for the L2R gradient ratio and the number of measurements necessary for a fault result (Z1) is greater than the threshold value for the gradient ratio.

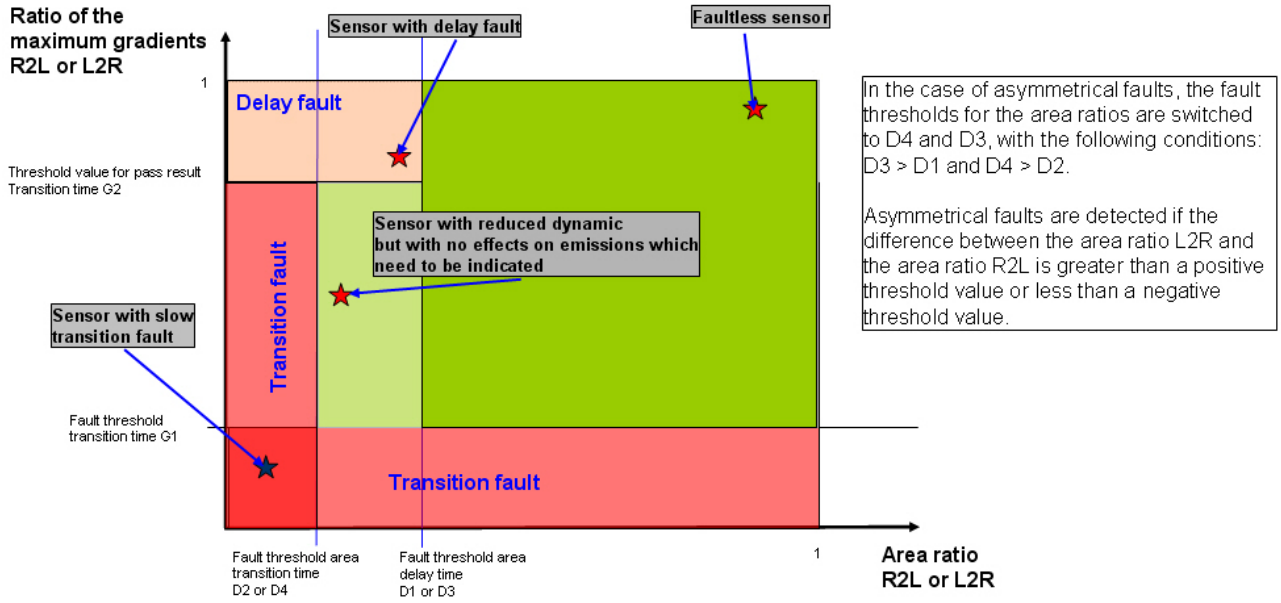


Figure 38: Overview Fault threshold values

Case 2: Fail result due to a symmetrical delay fault
If the difference between the dynamic values of the area ratios for the R2L flank and the L2R flank is greater than a minimum threshold value or less than a maximum threshold value, a symmetrical fault is detected.

- If the higher one of the two counters (for the R2L flank and the L2R flank) exceeds a threshold value Z1 (typically 4 to 6)

and

- the corresponding gradient ratio (for the R2L flank or the L2R flank) exceeds an upper threshold value G2

and

- the corresponding area ratio (for the R2L flank or the L2R flank) falls below the fault threshold value for the symmetrical delay fault D1,

the sensor is dynamically defective, the monitor is ended and a dynamic fault is stored.

Case 3: Fail result due to a symmetrical slow transition fault
If the difference between the dynamic values of the area ratios for the R2L flank and the L2R flank is greater than a minimum threshold value or less than a maximum threshold value, a symmetrical fault is detected.

- If the higher one of the two counters (for the R2L flank and the L2R flank) exceeds a threshold value Z1 (typically 4 to 6)

and

- the corresponding gradient ratio (for the R2L flank or the L2R flank) exceeds a lower threshold value G1

and

- the corresponding gradient ratio (for the R2L flank or the L2R flank) falls below a second, higher threshold value G2,

and

- the corresponding area ratio (for the R2L flank or the L2R flank) falls below the fault threshold value for the symmetrical transition fault D2,

or

- the corresponding dynamic value for the gradient ratio (for the R2L flank or the L2R flank) falls below the threshold value G1,

the sensor is dynamically defective, the monitor is ended and a dynamic fault is stored.

Case 4: Fail result due to an asymmetrical delay fault

If the difference between the dynamic values for the R2L flank and the L2R flank is less than a minimum threshold value or greater than a maximum threshold value, an asymmetrical fault is detected.

- If the higher one of the two counters (for the R2L flank and the L2R flank) exceeds a threshold value Z1 (typically 4 to 6)

and

- the corresponding gradient ratio (for the R2L flank or the L2R flank) exceeds an upper threshold value G2

and

- the corresponding area ratio (for the R2L flank or the L2R flank) falls below the fault threshold value for the asymmetrical delay fault D3,

the sensor is dynamically defective, the monitor is ended and a dynamic fault is stored.

Case 5: Fail result due to an asymmetrical slow transition fault

If the difference between the dynamic values for the R2L flank and the L2R flank is less than a minimum threshold value or greater than a maximum threshold value, an asymmetrical fault is detected.

- If the higher one of the two counters (for the R2L flank and the L2R flank) exceeds a threshold value Z1 (typically 4 to 6)

and

- the corresponding gradient ratio (for the R2L flank or the L2R flank) exceeds a lower threshold value G1

and

- the corresponding gradient ratio (for the R2L flank or the L2R flank) falls below a second, higher threshold value G2

and

- the corresponding area ratio (for the R2L flank and the L2R flank) falls below the threshold value for the asymmetrical transition fault D4

or

- the corresponding dynamic value for the gradient ratio falls below the threshold value G1,

the sensor is dynamically defective, the monitor is ended and a dynamic fault is stored.

7.1.1.4 Flowchart

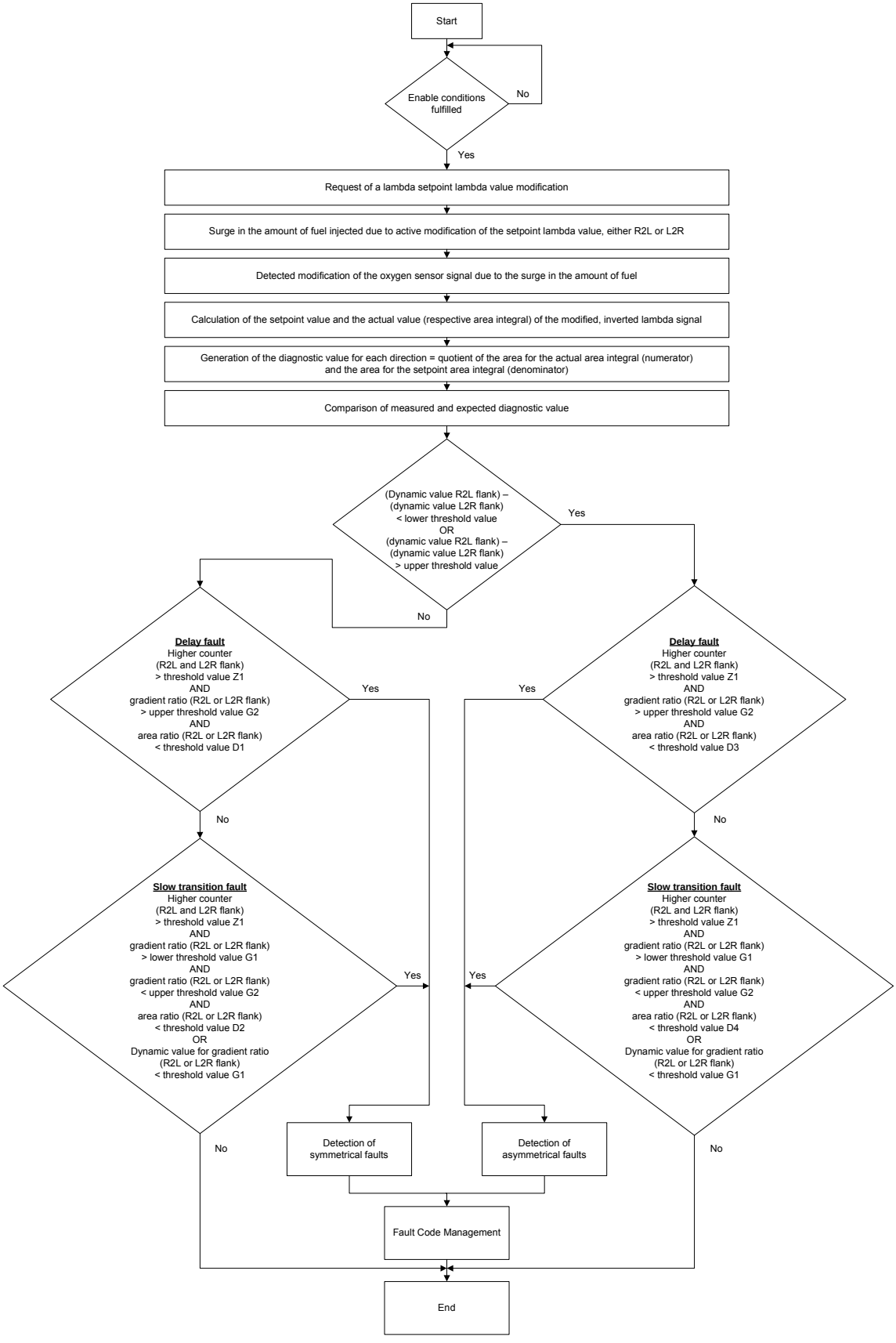


Figure 39: Flowchart Oxygen sensor, signal too slow, P0133, P0153

7.1.1.5 In-Use Monitor Performance Ratio

The incrementing of the numerator and the denominator, and the ratio calculation for the response rate monitor of the primary heated oxygen sensor are executed by the IUMPR kernel function. In accordance with all monitors requiring a standardized track and report of the in-use performance, the rate response monitor of the oxygen sensor reports to the IUMPR kernel function via status flags – see the description of the IUMPR kernel function.

Incrementing the numerator

Measurements with a properly working oxygen sensor can usually be taken quickly and without any disturbances. A slow oxygen sensor increases the measuring time only insignificantly. The measurements, however, are interrupted more frequently. Therefore, the time required for fault detection and hence for incrementing the numerator has to be simulated by a shadow counter.

A time counter is started, whenever the enable conditions and the conditions for the signal evaluation/validation are fulfilled, and when the waiting period between two fuel surges has elapsed. This time counter is repeatedly increased each 100 ms, until a calibrated threshold value is exceeded. This fault-case measuring time must be adapted to the worst case fault. When this time period for one event has elapsed, an event counter is incremented. When the event counter exceeds a threshold value in an error-free system, the condition "numerator complete" is set.

The numerator for the sensor dynamic diagnostic is also incremented, when an actual fault is detected.

Incrementing the denominator

The denominator is incremented, when the standardized conditions during a current driving cycle, in accordance with CCR (d) (4.3.2.) (E) (ii), are fulfilled, and when the monitoring function is not affected or inhibited by already stored faults or faults of sensors that are necessary to determine the denominator.

Flowchart

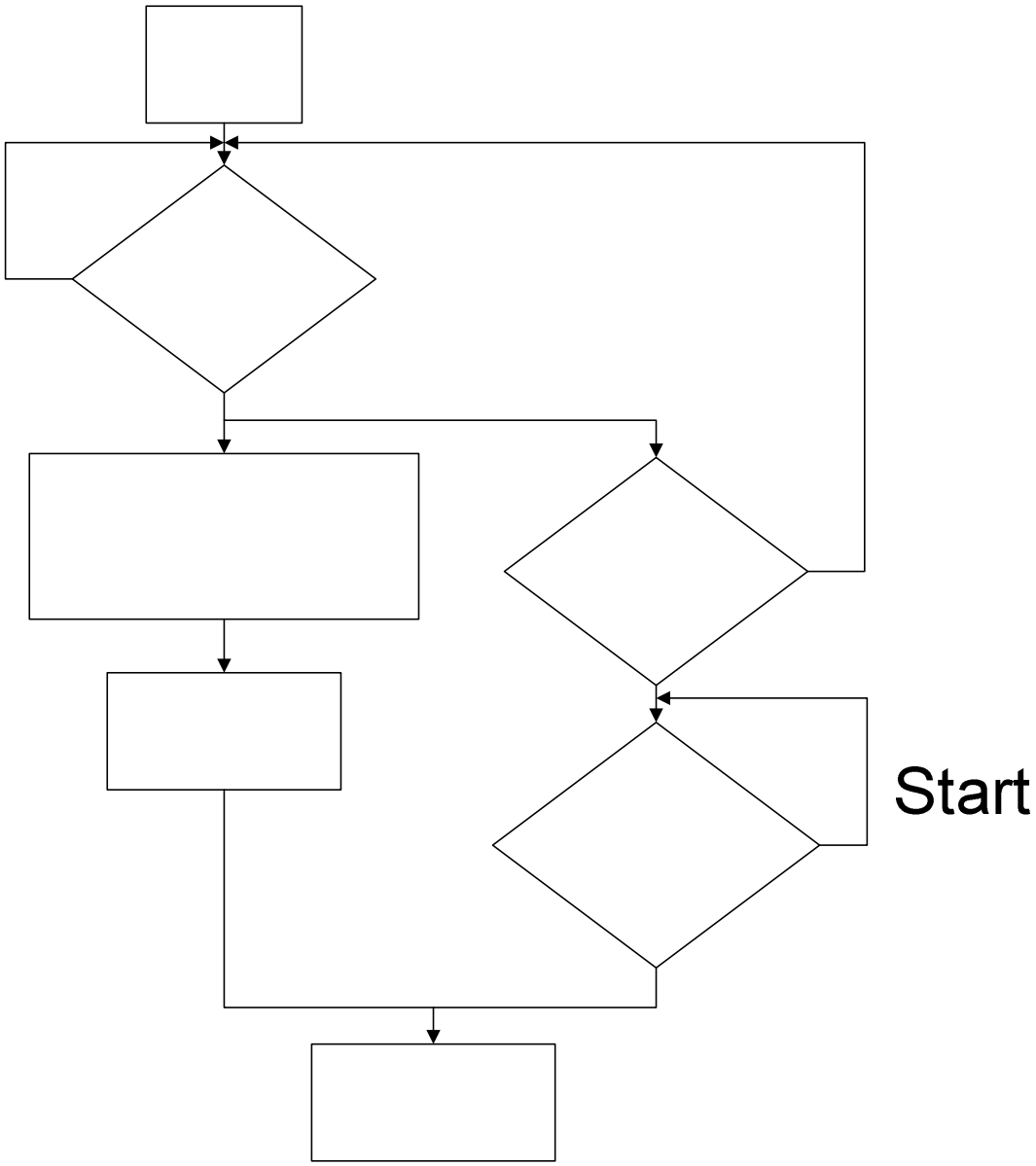


Figure 40: Flowchart IUMPR numerator Oxygen sensor, signal too slow

No

Enable conditions of the monitor fulfilled

Yes

7.2 FO2 Sensor circuit continuity check

7.2.1 Diagnosis of electrical faults at the FO2 Sensor

Lambda control can be disabled only when at least a pending fault code (service $07) has been entered in the fault code memory. Several operating conditions exist, under which faulty components can be pinpointed only after a time delay. Lambda control must however be disabled when fault symptoms are detected.

This diagnostic function detects and sets a general electrical fault. The actual fault which is accompanied by a second entry into the fault code memory is then pinpointed afterwards by the appropriate diagnostic function. This second fault entry could either be a sensor line error or a heater fault of the upstream O2 sensor. In order to ensure timely MIL illumination (two-in-a-row principle) the general electrical fault is also set when a sensor line error or a heater fault of the upstream O2 sensor is set.

A general electrical fault of the upstream heated oxygen sensor will be set either

- when the internal resistance of the O2 sensor's Nernst cell is implausibly high or the ceramic temperature of the FO2 sensor is implausibly low. All of the following monitoring conditions must be fulfilled in both cases:
  - the exhaust gas temperature model is valid
  - the modeled exhaust gas temperature at the upstream O2 sensor's location lies above a calibrated minimum
  - the FO2 sensor's heater is enabled/switched on and throttle fuel cut-off condition doesn't exist
  - the FO2 sensor's heater diagnostic has not been inhibited (battery voltage supply)
  - no errors from the FO2 sensor's heater power stage
  - no faults of the FO2 sensor's evaluation IC
  - no short circuits of the FO2 sensor
- or when the FO2 sensor's IC Nernst voltage line diagnostic is performed via its IC diagnostic and an interruption of this line is detected.
- or when the FO2 sensor's virtual ground line diagnostic has been performed via its IC diagnostic and an interruption of this line is detected
- or when the FO2 sensor's heater circuit diagnostic is performed and a heater fault is detected.

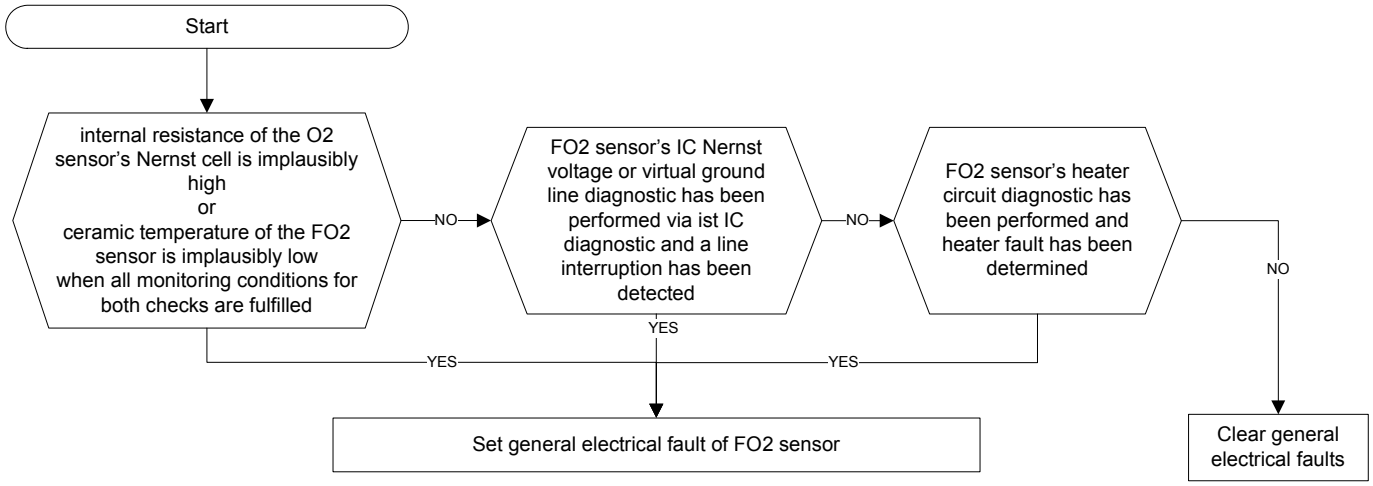


Figure 41: Flow chart diagnosis of electrical faults at the FO2S

7.2.2 Diagnosis of evaluation IC of the FO2 Sensor

This chapter describes the sum of all possible evaluation IC checks of the FO2 sensor.
The hardware of the Oxygen sensor consists of an IC (CJ 125) with the capability of self-diagnostics. The diagnosis of the evaluation IC of the heated upstream oxygen sensor (HO2S) detects electrical faults of the UN (Nernst voltage), VM (virtual ground), IA (compensation) and IP (pump) signal lines. The picture below shows the signal lines between the IC (CJ125) and the HO2 sensor. These electrical faults could result from short circuits to battery, or ground and signal interruptions. Short circuits are detected by a self-diagnosis of the CJ125. Line interruptions are identified by observing the system. The diagnosis monitors communication between the CJ125 IC and the electronic control unit and also performs a rationality check of the supply voltage as well as the adaptation values of the IC's electrical compensations. The CJ125 communicates with the ECU via a serial port interface (SPI). The evaluation IC's diagnosis runs continuously.

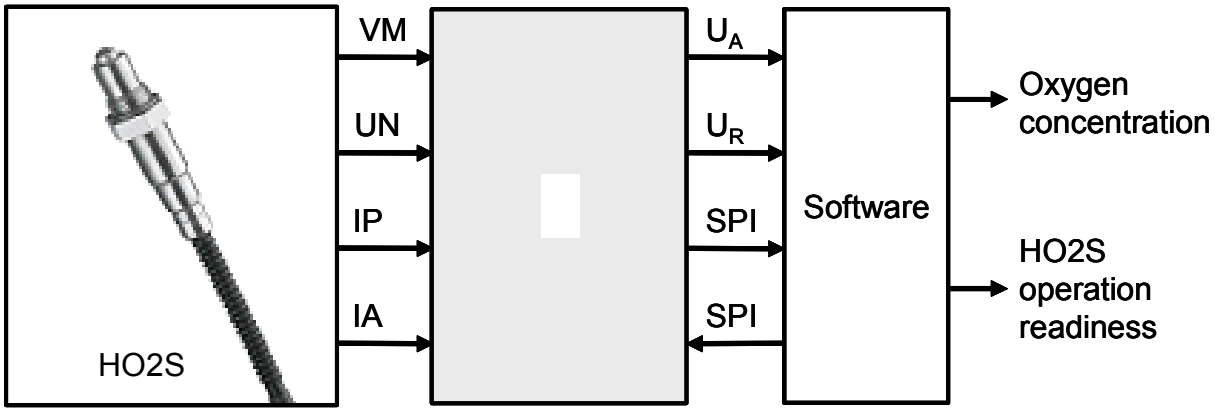


Figure 42: Overview signal lines of heated O2 Sensor

General Monitoring conditions

- engine start has finished
- battery voltage is within diagnostic range
- engine speed has exceeded the calibrated minimum threshold

1. Open circuit - VM line interruption (LSUVM)

Monitoring conditions - VM line interruption

- all general monitoring conditions are fulfilled
- offset corrected voltage of the FO2 sensor respectively lies above and below the lower and upper plausible output voltage Ua of the CJ125 IC required for detecting a VM line interruption
- internal resistance of the galvanic (or Nernst) cell of the HO2S lies above a calibrated threshold after a calibrated period of time
- the exhaust gas temperature at the FO2 sensor's vicinity lies below the calibrated permissible maximum for detecting a VM line interruption
- the FO2 sensor's heater power stage toggles on and off
- the FO2 sensor's pump voltage has not been switched-off
- heater control active for a calibrated period of time
- no FO2 sensor power stage error
- the following conditions have to be fulfilled altogether for a calibrated period of time
  - heater enabled
  - engine is running
  - heater control is switched-on
  - no fuel cut-off lasting longer than a calibrated period of time
  - battery voltage exceeds calibration

1.1 VM line interruption due to heater coupling check (LSU 4.2)

This check is performed for the HO2S type LSU 4.2.

The pump- or limit-current of the Nernst cell no longer flows when there is a VM line interruption. This results in an extremely high resistance, which remains even when the O2 sensor is sufficiently hot. The O2 sensor's ceramic temperature doesn't rise although the system reacts by increasing the heating power. A further effect is the coupling of the duty cycle signal of the heater into the O2 signal. Heater couplings resulting from switching are counted. The counter is incremented each time the voltage signal rises or falls with an artificial gradient which doesn't represent exhaust gas flow. A signal fault is set when the counter exceeds the calibrated threshold.

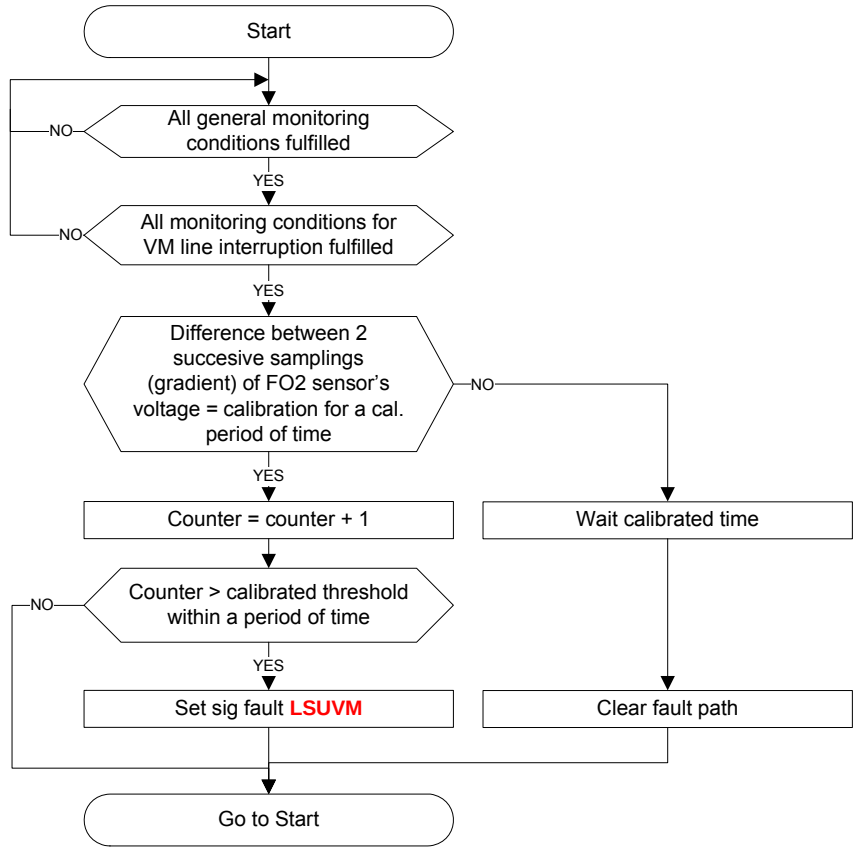


Figure 43: Flow chart VM line interruption (heater coupling check)

1.2 VM line interruption due to internal resistance of Nernst cell check (LSU 4.9)

This check is performed for the HO2S type LSU 4.9.

The pump- or limit-current of the Nernst cell no longer flows when there is a VM line interruption. This results in an extremely high resistance which remains even when the O2 sensor is sufficiently hot. The O2 sensor's ceramic temperature doesn't rise although the system reacts by increasing the heating power. A malfunction is detected and a signal fault is set when the internal resistance of the galvanic (or Nernst) cell exceeds a calibrated threshold after a calibrated period of time.

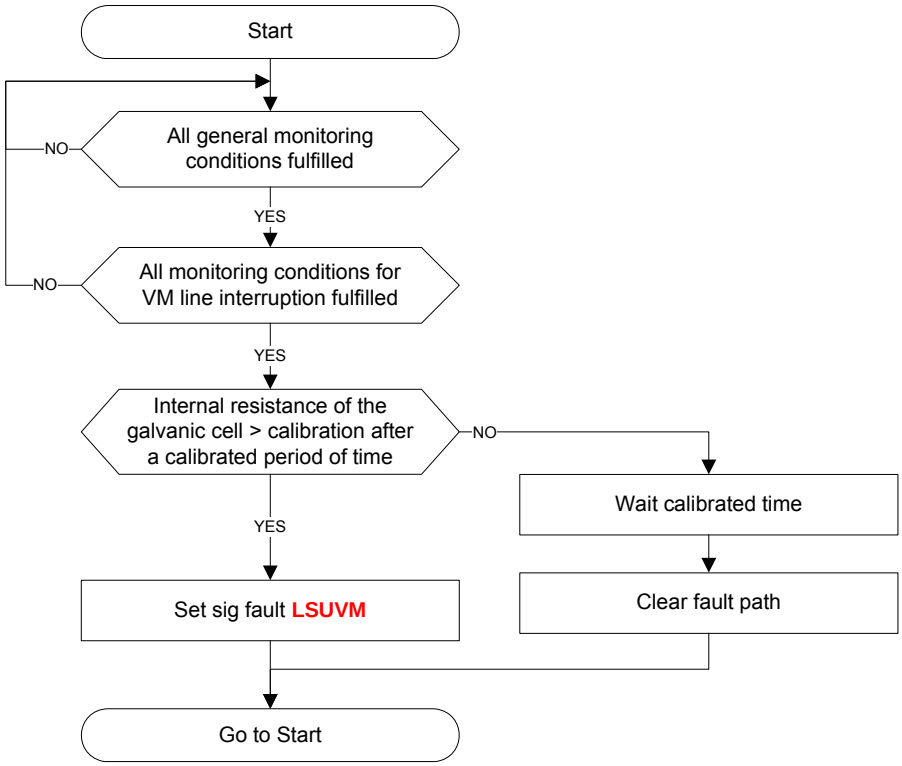


Figure 44: Flow chart VM line interruption (internal resistance of Nernst cell check)

2. Open Circuit - UN line interruption LSUUN

A UN line interruption leads to an irrationally high UR signal as well as an undefined output voltage UA - see fig.1. A signal fault LSUUN is set when the offset corrected voltage of the upstream HO2S lies above the upper (or below the lower) plausible output voltage UA of the CJ125 IC required for detecting a UM line interruption.

Monitoring conditions - UN line interruption

- all general monitoring conditions are fulfilled
- no power stage error of the FO2 sensor's heater
- FO2 sensor's pump voltage has not been switched-off
- internal resistance of the FO2 sensor's Nernst cell exceeds calibrated threshold (after enough time has been allowed for all transient events, induced during the determination of the FO2 sensor's internal resistance, to settle down)
- heater control active for a calibrated period of time

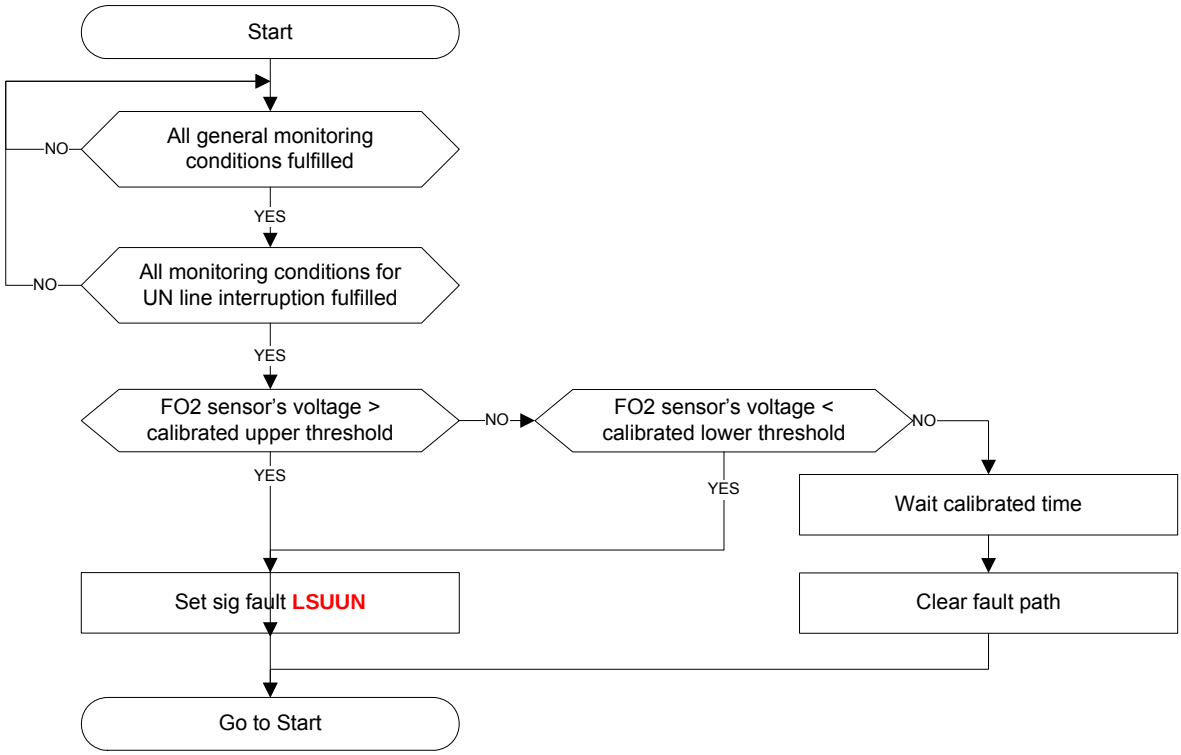


Figure 45: Flow chart UN line interruption

3. Open Circuit - IA line interruption LSUIA

An IA line interruption leads to a non-plausible large oxygen sensor voltage signal in a fuel cut off condition. A signal fault LSUIA is set after a calibrated delay time, if the oxygen sensor's voltage is greater than or equal to a calibrated threshold**.** The fault is set after an additional calibrated time if the fuel tank is empty or in an unknown state.

Monitoring conditions - IA line interruption

- all general monitoring conditions are fulfilled
- fuel cut off condition exists
- modeled exhaust gas temperature at the upstream side of the main catalyst is less than a calibrated value
- FO2 sensor's pump voltage has not been switched-off
- oxygen sensor has reached its operating temperature

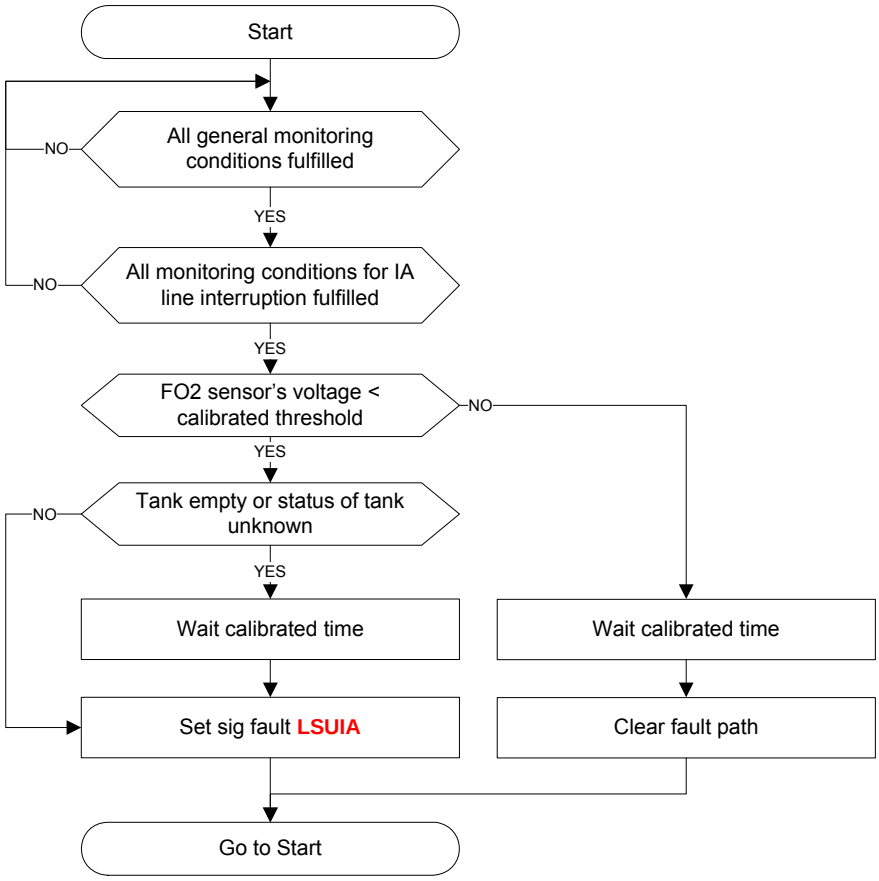


Figure 46: Flow chart IA line interruption

4. Open Circuit - IP line interruption LSUIP

The pump current of the FO2 sensor, which flows through the IP line, is equivalent to the oxygen concentration in the exhaust gas. An IP line interruption means the pump current will be permanently equal to zero. The output voltage UA of the CJ125 IC will remain constant and corresponds to the normalized A/F ratio of one (lambda=1). UA no longer varies with the oxygen concentration in the exhaust gas. An IP line interruption is detectable via three methods:

- Detection during fuel cut off condition
- Detection by mixture enrichment or lean-off
- Detection by closed-loop control to a nom. A/F value that differs from one

4.1 Detection during fuel cut off condition

The fuel cut off condition is an operating mode with a nominal A/F ratio > 1. A plausibility fault is set when during fuel cut-off condition, the value of the oxygen sensor's voltage is less than a calibrated threshold for a calibrated period of time.

Monitoring conditions for detection during fuel cut-off

- all general monitoring conditions are fulfilled
- FO2 sensor has reached its operating temperature
- fuel cut-off condition exists for at least 3 seconds
- FO2 sensor's pump voltage has not been switched-off
- canister purge system diagnosis has been performed and no faults were detected
- all monitoring conditions have been fulfilled for a period of time.

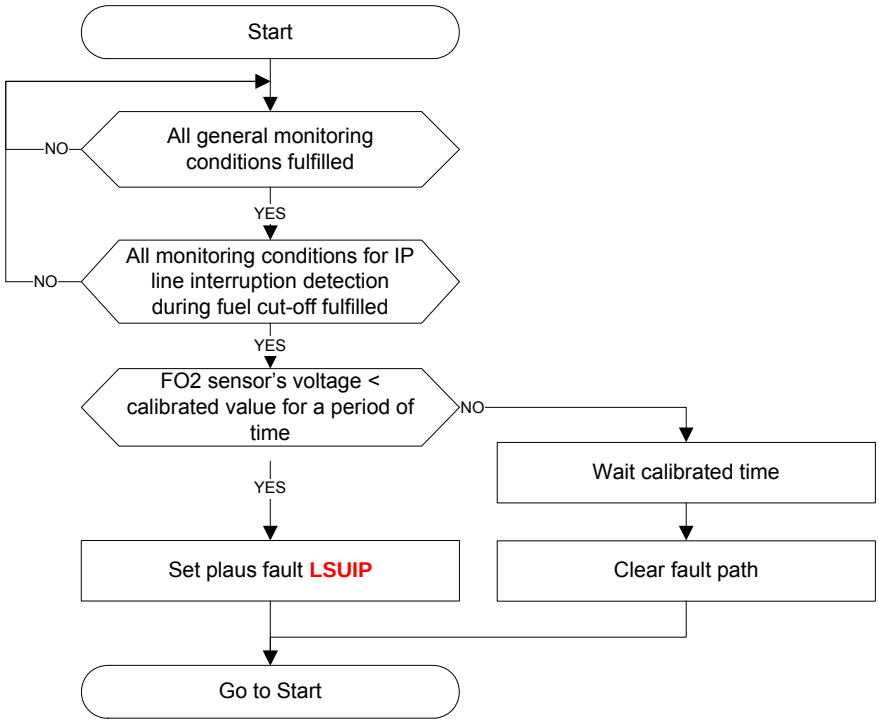


Figure 47: Flow chart IP line interruption (during fuel cut off condition)

4.2 Detection by mixture enrichment or lean-off

A maximum fault is set when the absolute difference between the A/F controller's output value at the moment the FO2 sensor's voltage springs into the calibrated range (i.e within 1.5V) and the A/F controller's output value thereafter, exceeds the calibrated maximum allowable excursion in that calibrated range.

Monitoring conditions for detection via mixture enrichment or lean-off

- all general monitoring conditions are fulfilled
- FO2 sensor has reached its operating temperature
- A/F ratio closed loop control is activated
- oxygen sensor's voltage is within the calibrated range
- electrical trimming of the FO2 sensor is inactive
- end of start control in the heater control function
- artificial fuel system modulation is active
- the artificial fuel system's modulation amplitude is greater than or equal to a calibrated threshold for a calibrated period of time
- no initialization of A/F ratio closed loop control factor
- no lean-off protection set
- proportional portion of the A/F closed loop control on the downstream side of the catalyst has not been activated
- catalyst heating not activated
- FO2 sensor's pump voltage has not been switched-off

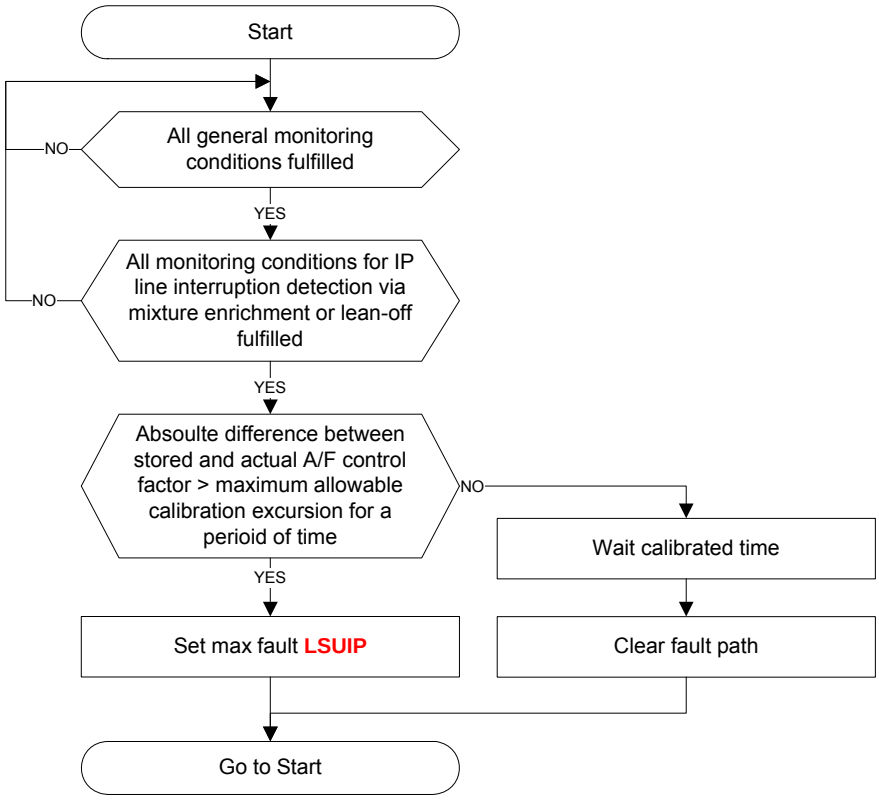


Figure 48: Flow chart IP line interruption (by mixture enrichment or lean-off)

4.3 Detection by closed-loop control to a nom. A/F value that differs from one

A IP signal fault is set when the normalized nominal A/F ratio (lambda) differs from one (lies beyond a calibrated range) and the oxygen sensor's voltage lies within a calibrated range during the time required for the integrated exhaust gas mass flow to exceed a calibrated threshold.

Monitoring conditions for detection by closed-loop control to a nom. A/F value that differs from one

- all general monitoring conditions are fulfilled
- Lambda (A/F ratio) closed-loop control is activated
- oxygen sensor has reached its operating temperature
- the heater of the FO2 sensor has no faults
- FO2S response rate diagnosis didn't detected a fault
- FO2S pump voltage has not been switched-off
- electrical trimming of the FO2S is inactive

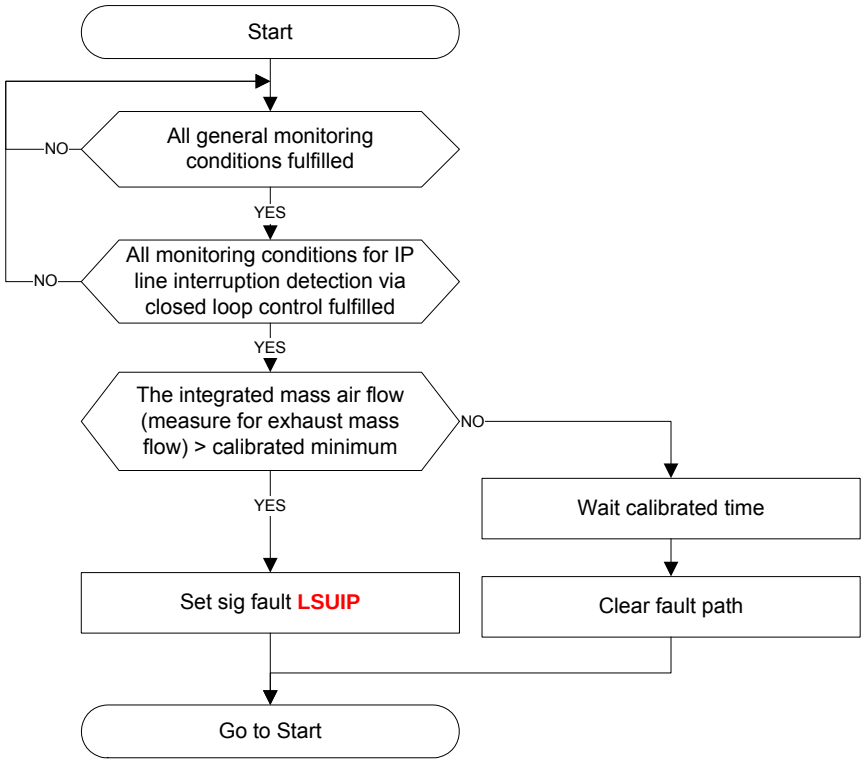


Figure 49: Flow chart IP line interruption (by closed-loop control to a nom. A/F value)

5 Short circuits to ground or to battery voltage LSUKS

Short circuits are detected by a self diagnosis of the CJ125 IC. An integrated voltage comparator at each and every pin of the HO2 sensor's CJ125 IC, detects and sets a maximum or a minimum fault if the voltage at that pin respectively lies above a calibrated maximum or below a calibrated minimum for a calibrated period of time.

Explicitly, a maximum fault is set either when

- the HO2 sensor's voltage at the VM pin exceeds a calibrated plausible maximum or
- the HO2 sensor's' voltage at the UN pin exceeds a calibrated plausible maximum or
- the HO2 sensor's' voltage at the IA or IP pin exceeds a calibrated plausible maximum.

Likewise, a minimum fault is set either when

- the HO2 sensor's voltage at the VM pin lies below a calibrated plausible minimum or
- the HO2 sensor's voltage at the UN pin lies below a calibrated plausible minimum or
- the HO2 sensor's voltage at the IA or IP pin lies below a calibrated plausible minimum.

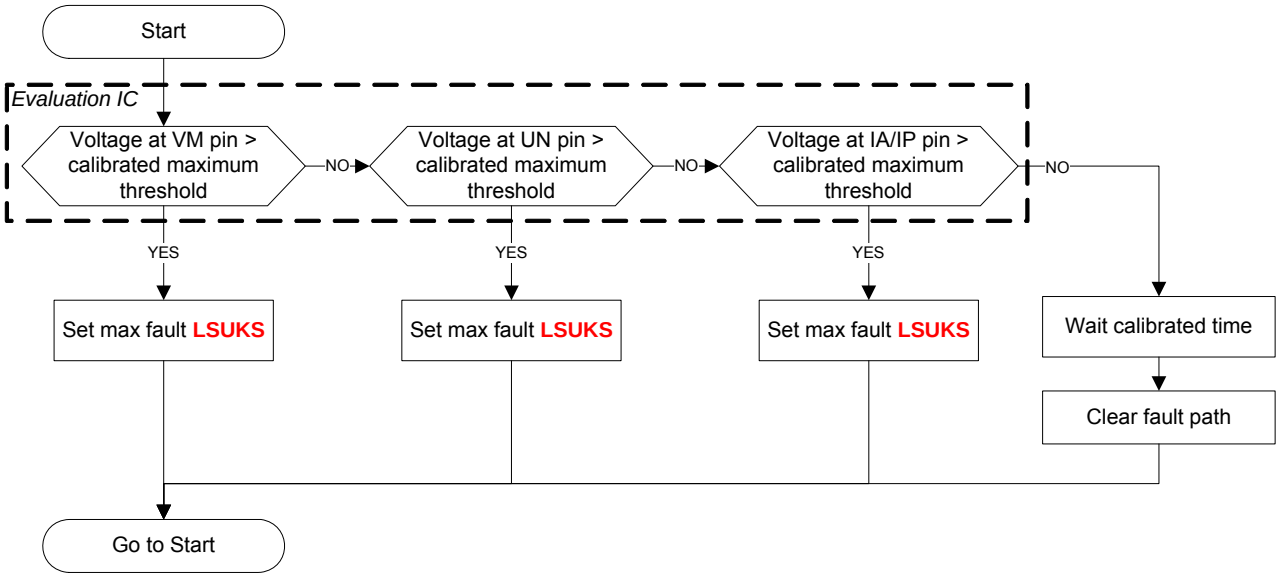


Figure 50: Flow chart Evaluation IC short circuit to battery

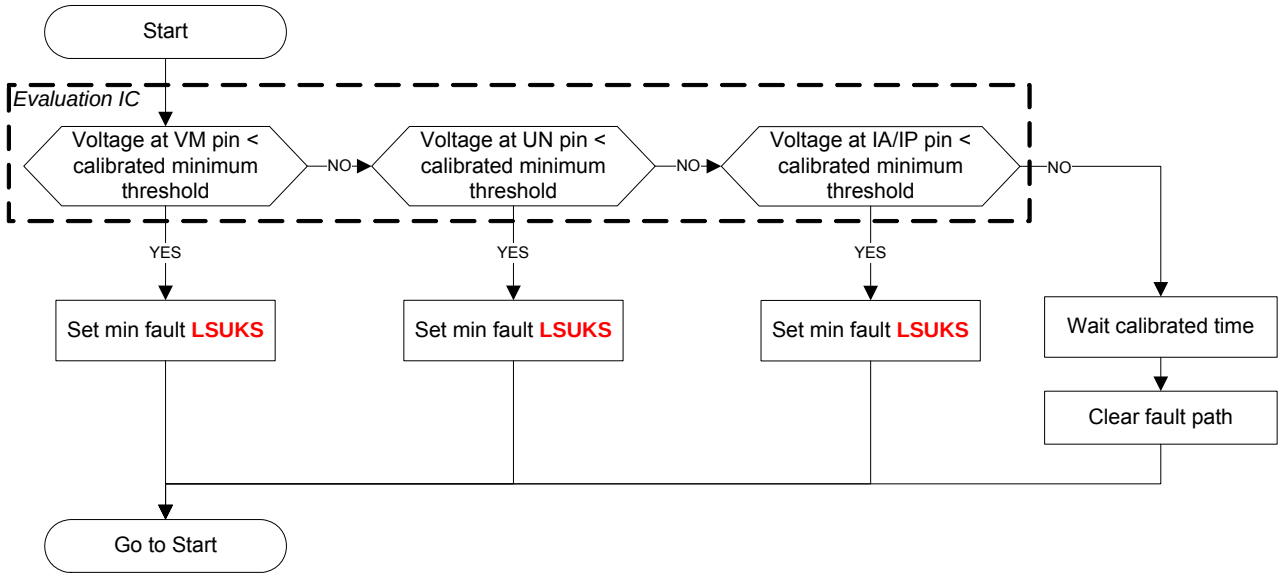


Figure 51: Flow chart Evaluation IC short circuit to ground

6. Monitoring of communication between the Evaluation-IC CJ125 and the Micro-controller of the ECM ICLSU

6.1 Non-plausible commands counter

The CJ125 evaluation IC communicates with the main processor of the ECM via a serial port interface. They both send data to each other. Interference on the SPI bus leads to non-plausible signals. These non-plausible signals, which persist even when the data is re-transmitted, are tracked by incrementing an internal error counter. A signal fault is set when the counter exceeds a calibrated threshold.

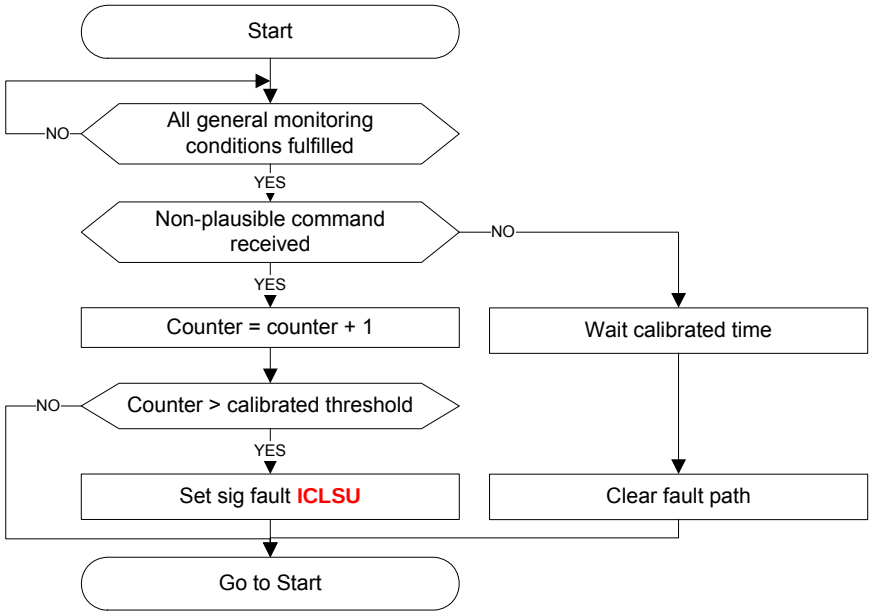


Figure 52: Flow chart communication Evaluation IC (non-plausible commands counter)

6.2 Comparison of initialization and mirror register

A further communication monitor compares the old value of the initialization register, which is backed up in a mirror register, with its current value after a rewrite. A plausibility fault is set after a calibrated period of time, if the current value of the initialization register isn't equal to that of its mirror register.

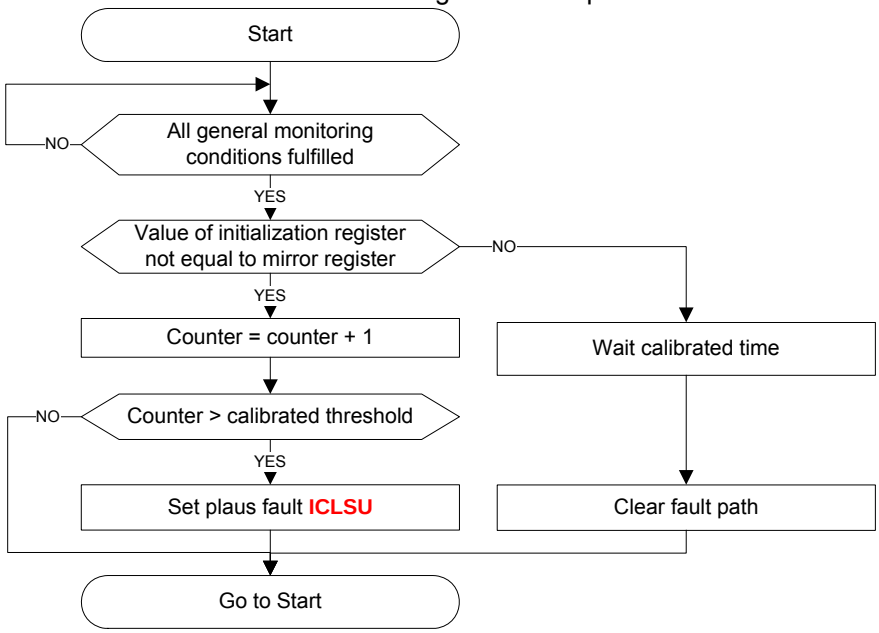


Figure 53: Flow chart communication Evaluation IC (Comparison of the registers)

7. Low supply voltage of the CJ125 IC ICLSU

The CJ125 IC is specified for supply voltages > 9V. It possesses a supply voltage detection module. Low supply voltages lead to faulty diagnosis at the voltage comparators. A minimum fault is set when the supply voltage drops below 9V. The supply voltage monitor is aborted if the monitoring conditions are not fulfilled.

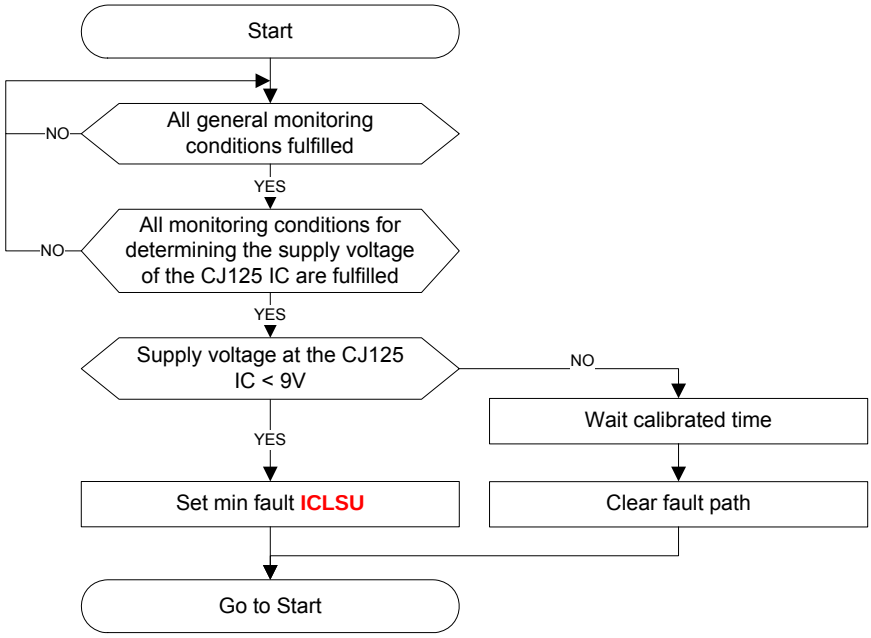


Figure 54: Flow chart Low supply voltage of the CJ125 IC

8. Electrical trimming ICLSU

Electrical trimming of the oxygen sensor is performed in order to determine and store the difference between the expected and the actual pump-current-proportional output voltage. This difference stems from hardware tolerances. Electrical trimming is carried out once after engine start and once in the idle mode during a calibrated period of time. A maximum fault is set when after electrical trimming the adaptation value for the corresponding curve (normal and rich) exceeds a calibrated maximum**.**

Monitoring conditions for electrical trimming

- engine start has finished
- engine is in idle mode.

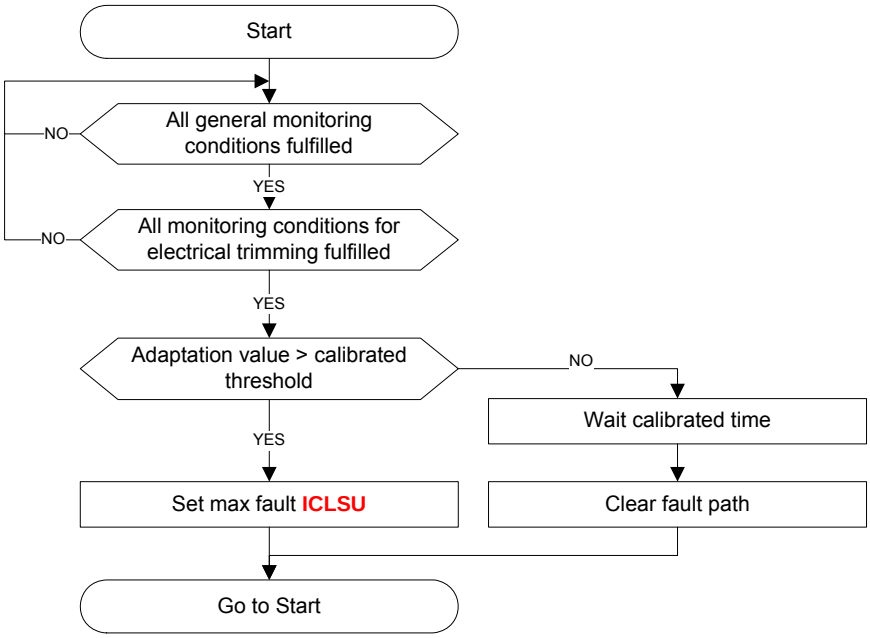


Figure 55: Flow chart electrical trimming of FO2 sensor

7.3 FO2 Sensor rationality check

This chapter describes the sum of all possible rationality checks of the upstream HO2S.

7.3.1 Offset check

This diagnostic function continuously checks the heated upstream oxygen sensor's (HO2S) response signal by comparing it with that of the downstream oxygen sensor or by utilizing technical parameters of the engine control system. A faulty sensor signal is implied when the characteristic lambda curve derived from the upstream HO2S's response signal (see figure below) indicates an air-fuel mixture that is leaner or richer than that expected from the nominal curve.

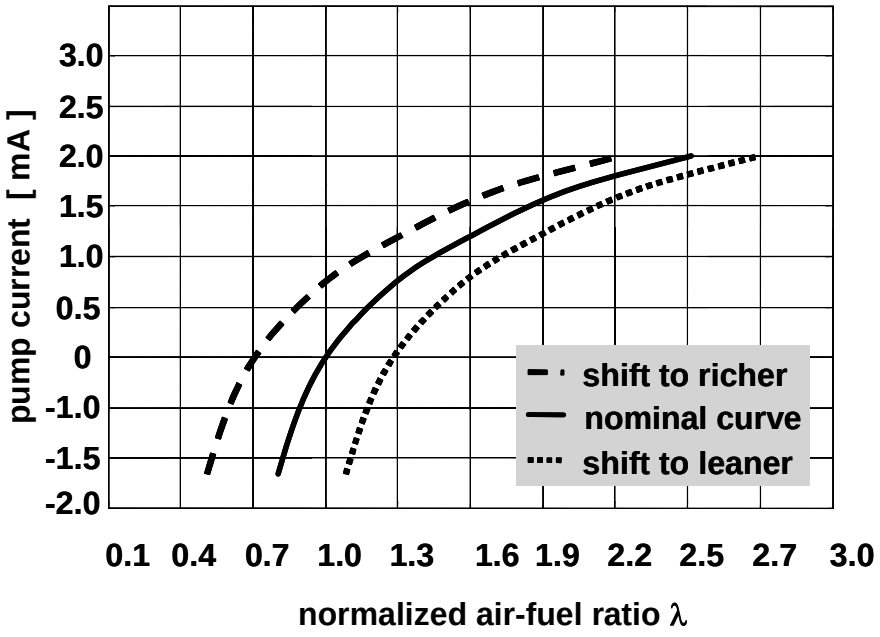


Figure 56: Shift in the characteristic lambda curve of FO2 sensor response signal

The integral component of the downstream lambda controller is interpreted as a sensor/fueltrim system fault. A shift is acceptable (because of tolerances) only when it lies between a calibrated minimum and maximum threshold value.
If the integral component of the downstream lambda controller exceeds the calibrated maximum 'sensor' threshold value for a calibrated debouncing delay, an unacceptable 'shift to lean' is detected and a maximum fault (**PLLSU**) is set.
If the integral component of the downstream lambda controller exceeds the calibrated maximum 'fueltrim' threshold value for a calibrated debouncing delay, an unacceptable 'shift to lean' is detected and a maximum fault (**FTDLA**) is set.
If the integral component of the downstream lambda controller lies below the calibrated minimum 'sensor' threshold value for a calibrated debouncing delay, an unacceptable 'shift to rich' is detected and a minimum fault (**PLLSU**) is set.
If the integral component of the downstream lambda controller lies below the calibrated minimum 'fueltrim' threshold value for a calibrated debouncing delay, an unacceptable 'shift to rich' is detected and a minimum fault (**FTDLA**) is set.

Note:
Normally the rationality check monitors aging effects of the HO2S or other effects in the exhaust system. This aging effects develop very slow. Due to this reason the integral component of the downstream lambda controller will change slow too. Emissions are quite well during this behavior. If the integral component exceeds an irrational threshold a 'fueltrim' fault is set. Such a malfunction can not be found in one FTP test cycle.
To detect suddenly occurring faults a step function is implemented. On basis of the control difference of the rear sensor voltage and the control value of the downstream lambda controller a predicted magnitude of failure is made which results in a strongly reduced diagnosis time. Such 'sensor' malfunctions can be.

Monitoring conditions for offset check

- engine start has finished
- no critical misfire rate
- lambda control active for calibrated period of time
  - after critical misfire rate **or**
  - in case of second driving cycle to confirm P-code
- diagnoses of downstream HO2S performed without any fault
- diagnosis of upstream HO2S' voltage performed without faults
- diagnosis of 'exchanged upstream HO2S' performed without faults
- no fault of 'heater influence on upstream HO2S' diagnostic
- no fault of 'upstream HO2S' response rate' diagnostic
- no fault of 'CJ125 evaluation IC of the upstream HO2S' diagnostic (i.e. no electrical faults and no communication errors)
- no fault of 'upstream HO2S heater' diagnostic
- no fault of 'upstream HO2S heater power stage' diagnostic
- no lean shift fault in last driving cycle without cooled off sensor
- no fault debouncing active
- downstream HO2S switches from lean to rich or vice versa during debouncing
- enabled by diagnostic scheduler

7.3.2 Plausibility check with help of upstream and downstream O2S signals

The following checks determine, in selected operating points, if the deviation of the upstream HO2S signal is out of certain limits using upstream and downstream oxygen sensor signals and closed loop controller condition as main parameters.

Plausibility check - shift to lean

A shift of the upstream HO2S characteristic lambda curve towards lean will cause a rich A/F ratio at the downstream HO2S. Because of an airtight exhaust system the mixture at position of upstream HO2S and the mixture at position of downstream HO2S has to be equal. So lean mixture at upstream and rich mixture at downstream HO2S is not rational and shows a malfunction.
The following methods are performed.

Method A1 - shift to lean

If the upstream HO2S measures a lean mixture and the downstream HO2S measures a rich mixture and the monitoring conditions are simultaneously fulfilled, a malfunction is detected and a plausibility fault PLLSU is set after debouncing.

Method A1 - shift to lean - monitoring conditions

- both the upstream and downstream oxygen sensors are ready for operation
- one of the following 2 conditions is fulfilled
  A the following conditions are fulfilled
  - the lambda controller has reached its limit in the rich direction
  - debouncing is finished (see the following conditions):
    - integrated mass airflow exceeds calibrated threshold

  B the following conditions are fulfilled
  - diagnoses of downstream HO2S performed without any fault
  - the proportional component of the downstream lambda controller is active
  - the absolute value of the proportional component of the rear controller is greater than calibration and the integral component and the proportional component both have the same sign, or the absolute value of the proportional component is greater than (Integral component + calibration)
  - debouncing is finished (see the following conditions):
    - integrated mass airflow exceeds calibrated threshold

Method B1 - shift to lean

If the normalized A/F-ratio setpoint value of the upstream HO2S lies in a desired region (see monitoring conditions) and the downstream HO2S measures a rich mixture and the monitoring conditions are simultaneously fulfilled for a calibrated period of time a malfunction is detected and a plausibility fault PLLSU is set after debouncing.

Method B1 - shift to lean - monitoring conditions

- both the upstream and downstream oxygen sensors are ready for operation
- the lambda controller has not reached its limit in the lean direction
- diagnoses of downstream HO2S performed without any fault
- one of the following 2 conditions is fulfilled
  A the following conditions are fulfilled
  - desired normalized A/F-ratio setpoint value equals one
  - the absolute value of the proportional component of the rear controller is greater than calibration and the integral component and the proportional component both have the same sign, or the absolute value of the proportional component is greater than (Integral component + calibration).
  - the proportional component of the downstream lambda controller is active
  - debouncing is finished (see the following conditions):
    - integrated mass airflow exceeds calibrated threshold
    - downstream HO2S switches from lean to rich or vice versa

  B the following conditions are fulfilled
  - desired normalized A/F-ratio setpoint value exceeds calibrated threshold (lean region)
  - closed loop lambda control is active
  - debouncing is finished (see the following conditions):
    - integrated mass airflow exceeds calibrated threshold
    - downstream HO2S switches from lean to rich or vice versa

Plausibility check - shift to rich

A shift of the upstream HO2S characteristic lambda curve towards rich will cause a lean A/F ratio at the downstream HO2S. Because of an airtight exhaust system the mixture at position of upstream HO2S and the mixture at position of downstream HO2S has to be equal. So rich mixture at upstream and lean mixture at downstream HO2S is not rational and shows a malfunction.
The following methods are performed.

Method A2 - shift to rich

If the upstream HO2S measures a rich mixture and the downstream HO2S measures a lean mixture and the monitoring conditions are simultaneously fulfilled, a malfunction is detected and a signal fault PLLSU is set after debouncing.

Method A2 - shift to rich - monitoring conditions

- both the upstream and downstream oxygen sensors are ready for operation
- one of the following 2 conditions is fulfilled
  A the following conditions are fulfilled
  - the lambda controller has reached its limit in the lean direction
  - debouncing is finished (see the following conditions):
    - integrated mass airflow exceeds calibrated threshold

  B the following conditions are fulfilled
  - diagnoses of downstream HO2S performed without any fault
  - the proportional component of the downstream lambda controller is active
  - the absolute value of the proportional component of the rear controller is greater than calibration and the integral component and the proportional component both have the same sign, or the absolute value of the proportional component is greater than (Integral component + calibration)
  - debouncing is finished (see the following conditions):
    - integrated mass airflow exceeds calibrated threshold

Method B2 - shift to rich

If the normalized A/F-ratio setpoint value of the upstream HO2S lies in a desired region (see monitoring conditions) and the downstream HO2S measures a lean mixture and the monitoring conditions are simultaneously fulfilled for a calibrated period of time, a malfunction is detected and a plausibility fault PLLSU is set after debouncing.

Method B2 - shift to rich - monitoring conditions

- both the upstream and downstream oxygen sensors are ready for operation
- the lambda controller has not reached its limit in the rich direction
- diagnoses of downstream HO2S performed without any fault
- one of the following 2 conditions is fulfilled

  A the following conditions are fulfilled
  - desired normalized A/F-ratio setpoint value equals one
  - the absolute value of the proportional component of the rear controller is greater than calibration and the integral component and the proportional component both have the same sign, or the absolute value of the proportional component is greater than (Integral component + calibration).
  - the proportional component of the downstream lambda controller is active
  - debouncing is finished (see the following conditions):
    - integrated mass airflow exceeds calibrated threshold
    - downstream HO2S switches from lean to rich or vice versa

  B the following conditions are fulfilled
  - desired normalized A/F-ratio setpoint value lies below calibrated threshold (rich region)
  - closed loop lambda control is active
  - debouncing is finished (see the following conditions):
    - integrated mass airflow exceeds calibrated threshold
    - downstream HO2S switches from lean to rich or vice versa

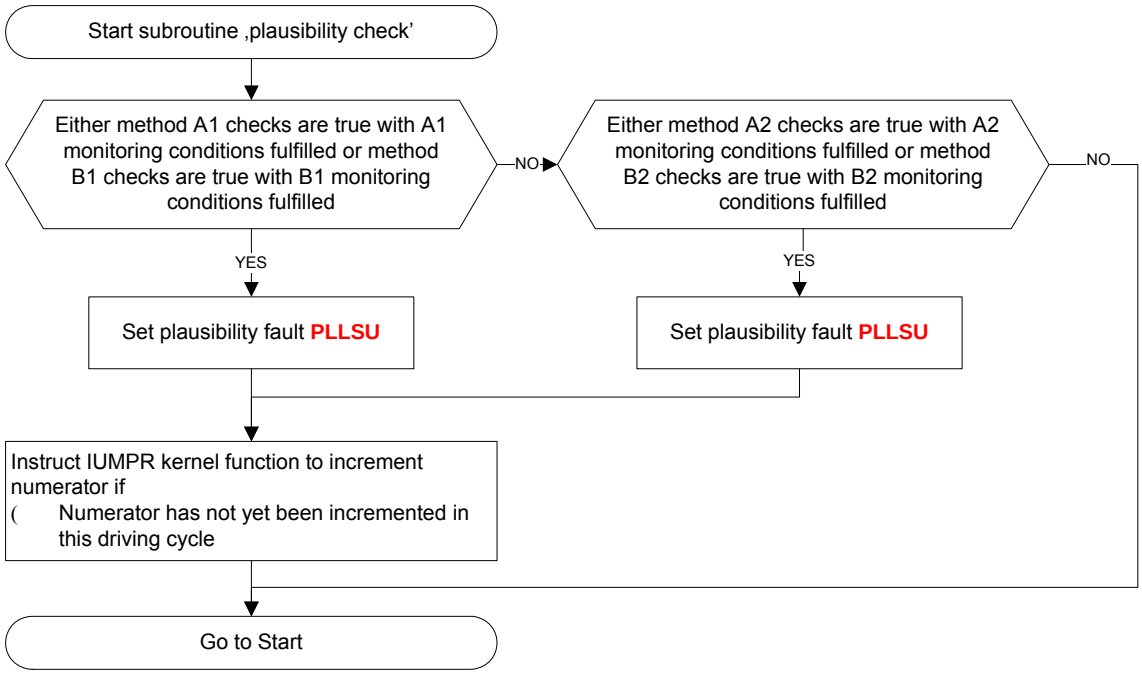


Figure 57: Flow Chart subroutine plausibility check FO2 Sensor

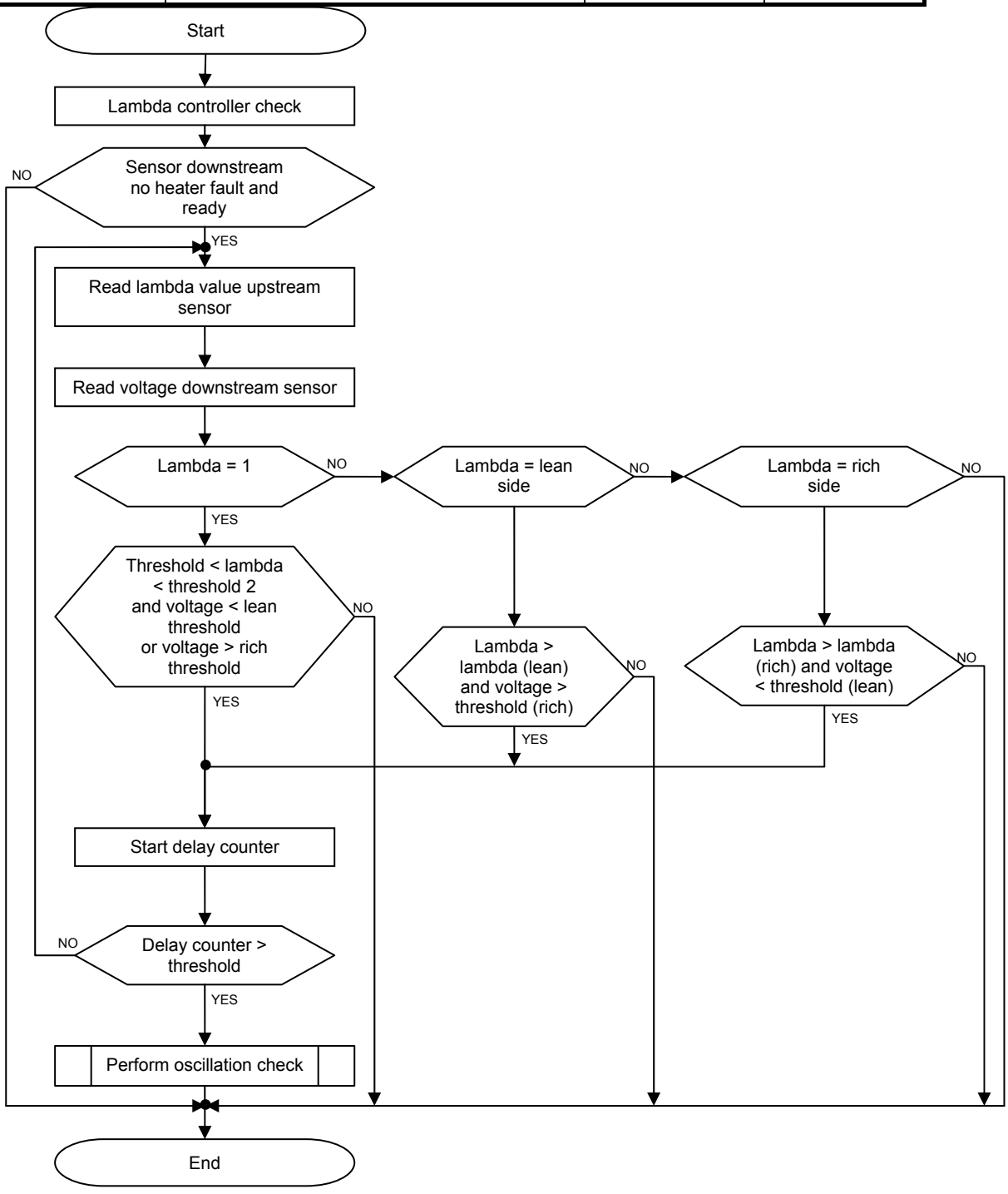


Figure 58: Flow Chart rationality monitor FO2 Sensor

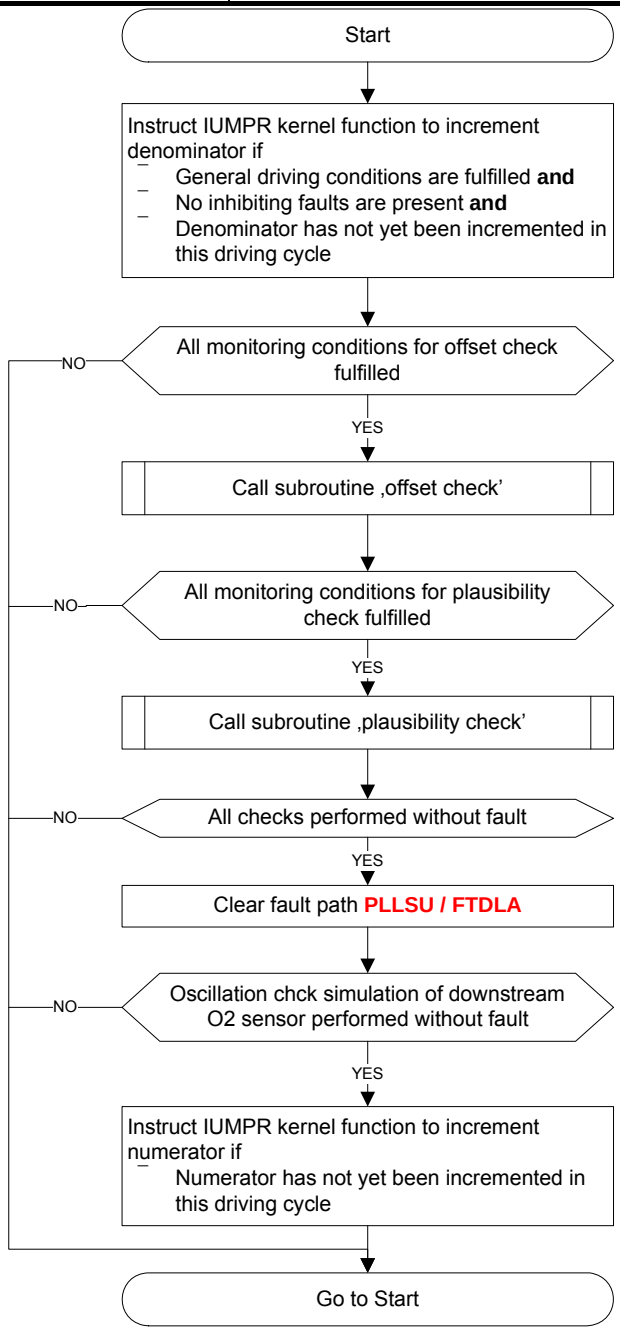


Figure 59: Flow Chart IUMPR offset check FO2 sensor

7.3.3 Diagnosis of O2 sensor voltage (FO2S not in exhaust system)

This chapter describes the sum of all possible LSU voltage checks of the upstream HO2S.

The diagnosis performs a range check of the voltage VA of the output signal of the heated wide band upstream oxygen sensor (HO2S) after amplification by the CJ125 integrated circuit. VA depends on the characteristics of the oxygen sensor itself and those of the peripheral circuitry of CJ125.

Generally, in homogenous or homogenous-lean engine operation the measured output voltage VA lies clearly below the voltage read when the oxygen sensor lies in ambient air. If the measured Voltage VA exceeds the calibrated ambient air voltage but lies below a calibrated maximum voltage, all for a calibrated period of time, a malfunction is detected and a plausibility fault (**ULSU**) is set. .

A fault could be triggered if an electrically connected oxygen sensor is not properly mounted in the exhaust system.

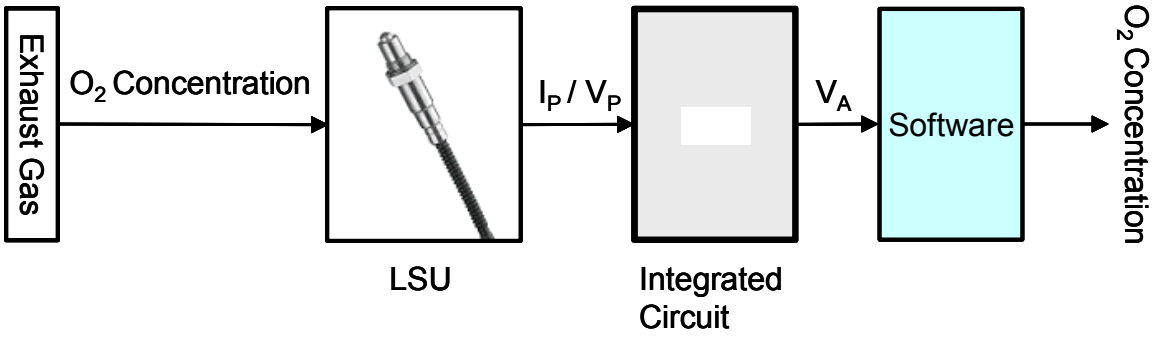


Figure 60: Overview voltage diagnosis of the FO2 sensor

Monitoring conditions

- all injection valves are active
- engine start is finished
- upstream oxygen sensor has reached operating temperature
- upstream oxygen sensor is ready for operation
- set point value of normalized air-fuel ratio lies below threshold value
- no lean shift fault in last driving cycle without cooled off sensor
- fuel tank level has been validated
- AIR injection not active
- no fault of crankshaft ventilation diagnosis
- diagnosis of ‘evaluation IC of the upstream HO2S’ performed without faults
- enabled by the diagnostic scheduler

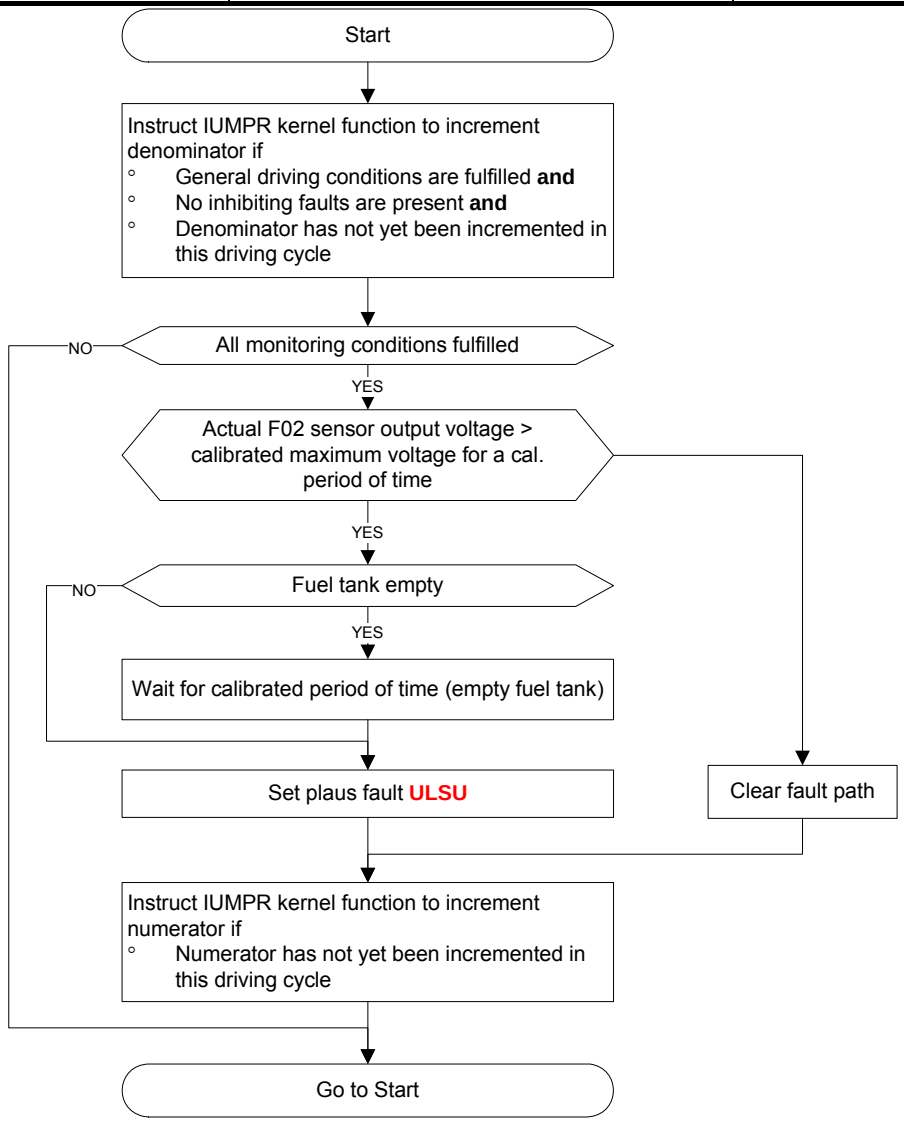


Figure 61: Flow chart diagnosis of O2 sensor voltage

7.3.4 Heater Coupling Check

This monitoring function will detect any short circuits between sensor heater and the Nernst cell of the Oxygen sensor by watching the Lambda signal. The Lambda value variation is checked by the ECM. The heater is operated by a pulsating signal with a frequency of two Herz. The sensor signal characteristic is checked for noises with a significant level and a frequency of the heater operation. If the level of noises is greater than a threshold, a low resistance short-cut between heater and pump current or the current of the Nernst cell is detected.

7.4 FO2 Sensor heater

For proper function of the Oxygen sensors, their ceramic elements must be heated. A non-functioning heater delays or prevents the sensor readiness (LSU) for closed loop control and thus influences emissions.
The heating up is controlled by the heater control.
The heater control loop is integrated within the oxygen sensor hardware and has to achieve a target temperature of about 750 °C of the ceramic element.

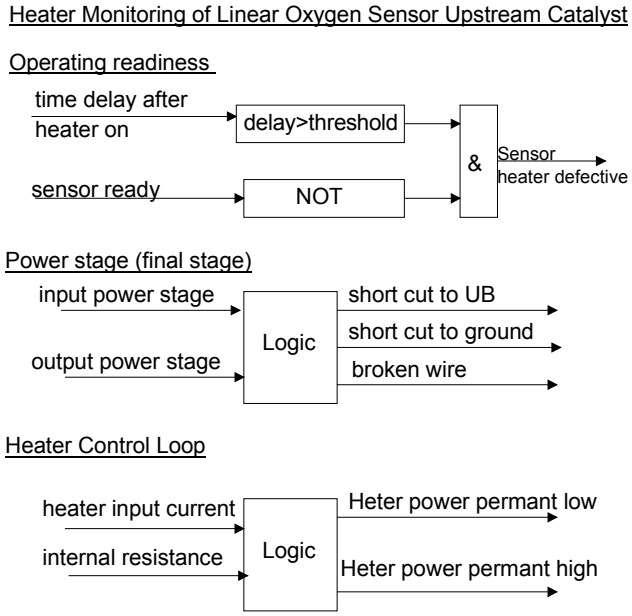


Figure 62: Characteristics -Switch on of sensor heater is ECM controlled

This chapter describes the sum of all possible heater checks of the upstream HO2S.
The operating temperature of the HO2S depends on the type used. Internal heating is required when the heat dissipated from the exhaust gas isn't sufficient to maintain the HO2S at its operating temperature. The extra power required for heating depends on the deviation from the operating temperature. It can be controlled by varying the duty cycle factor of the heater.

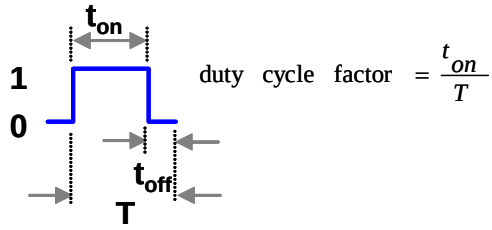


Figure 63: Duty cycle factor of the heater

7.4.1 Calibration resistor check

A reliable Nernst cell temperature determination is ascertained by referencing a calibration resistor. The resistance of this calibration resistor mounted in the ECM is constant.
If the difference between its nominal and measured value exceeds a calibrated threshold for a calibrated period of time, a malfunction is detected and a signal fault **HSV** (heater sensor voltage) is set.
If the signal fault is present, a proper Nernst cell temperature determination will be impossible.

Monitoring conditions for calibration resistor check

- battery's voltage lies within calibrated range
- engine start has finished
- engine is running
- temperature upstream catalyst exceeds dew-point
- heater of upstream oxygen sensor is ready for operation
- no faults of diagnosis of 'Evaluation IC of the upstream HO2S'

7.4.2 Temperature check of Nernst cell after engine start

The oxygen sensor's ceramic temperature is determined by measuring the internal resistance of its Nernst cell. If the ceramic temperature of the sensor lies below a calibrated minimum after a calibrated period of time, a malfunction is detected and a plausibility fault is set.

Monitoring conditions for temperature check after engine start

- the heater control is active
- all injection valves are activated
- internal resistance calculation (with respect to heater control) is possible
- no faults of diagnosis of 'Evaluation IC of the upstream HO2S'
- no HO2S power stage faults
- battery's voltage lies within calibrated range
- engine start has finished
- engine is running
- temperature upstream catalyst exceeds dew-point
- no fault of calibration resistor check
- engine soak time exceeds calibrated threshold
- engine start temperature exceeds calibrated threshold
- enabled by the diagnostic scheduler
- diagnosis enabled time for 'temperatur check of Nernst cell after engine start' not elapsed

7.4.3 Maximum heater output check

If the target temperature of the oxygen sensor's ceramic isn't reached during controlled operation, the duty cycle factor of the output function will converge towards one. A duty-cycle factor equal to one for a long period of time is implausible and prohibited.

If, with maximum heater output, the temperature of the oxygen sensor's ceramic lies below a calibrated threshold for a calibrated period of time, a malfunction is detected and a maximum fault **HSV** is set

Monitoring conditions for maximum heater output check

- battery's voltage lies within calibrated range
- diagnosis of 'Evaluation IC of the upstream HO2S' performed without faults
- the heater control is active
- calculated model of exhaust gas temperature is valid
- modeled exhaust gas temperature exceeds calibrated threshold
- no fuel cut-off
- engine start has finished
- engine is running
- temperature upstream catalyst exceeds dew-point
- no reduced heating power active
- no fault of power stage of upstream oxygen sensor heater
- enabled by the diagnostic scheduler

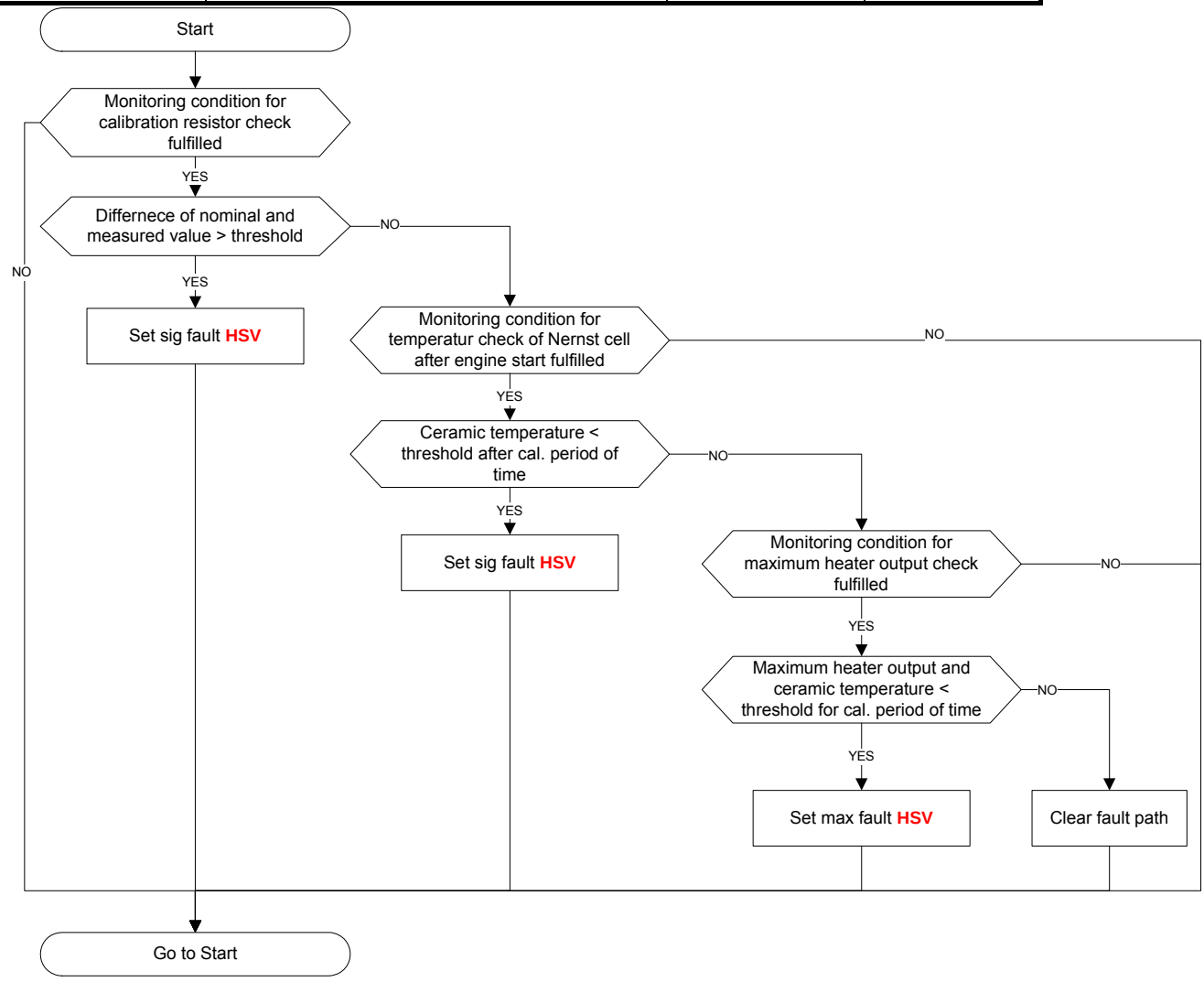


Figure 64: Flow chart FO2 sensor heater monitoring

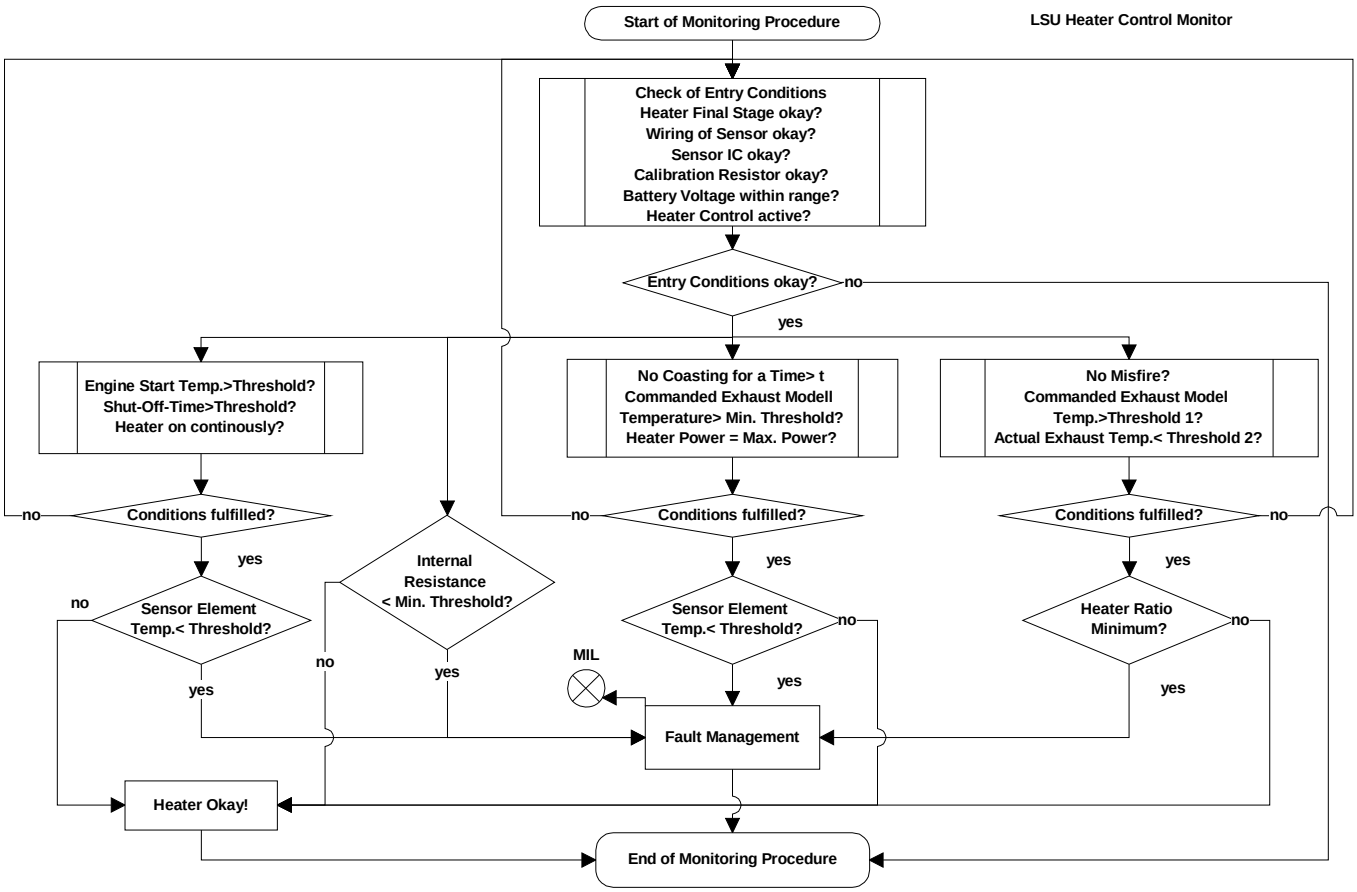


Figure 65: Flow chart O2 Sensor Heater Control upstream catalyst (1)

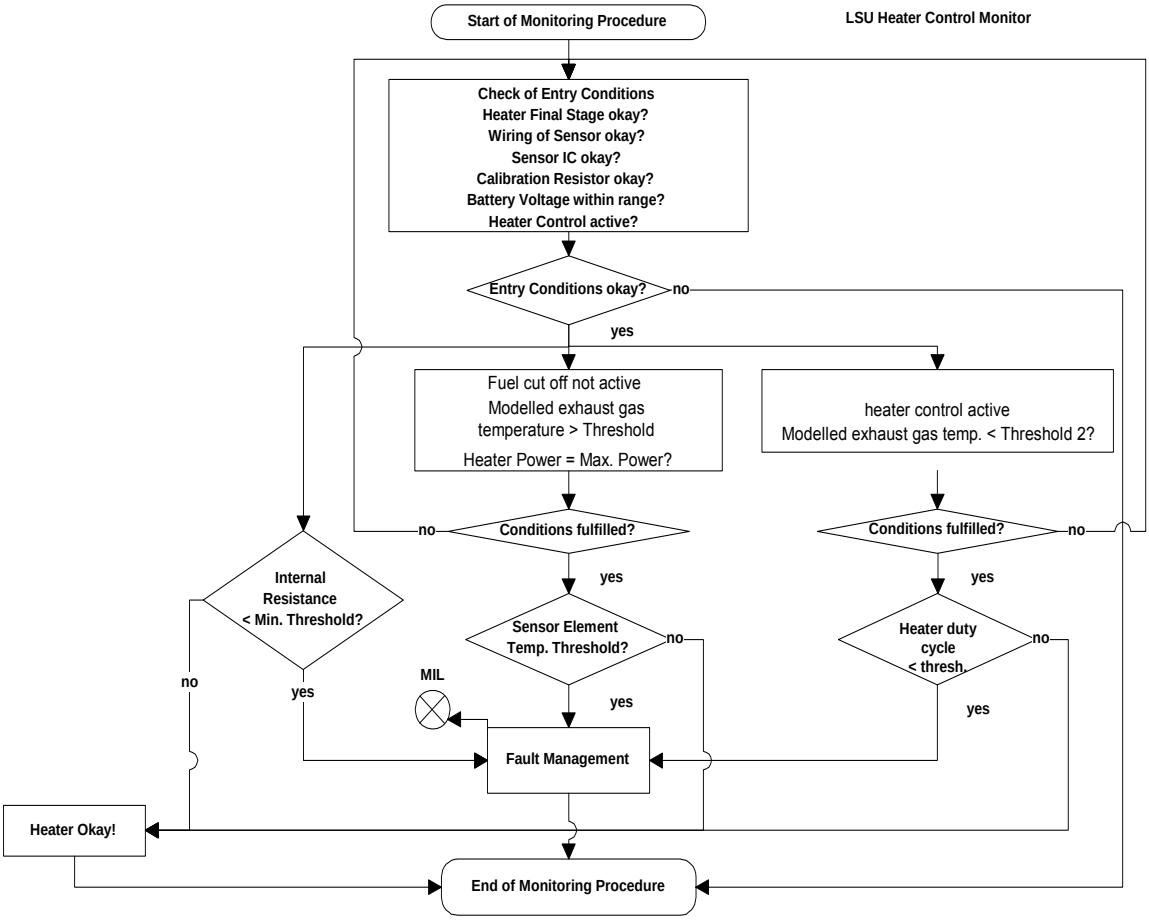


Figure 66: Flow chart O2 Sensor Heater Control upstream catalyst (2)

7.5 Rear downstream oxygen sensor (RO2S) dynamic

In case of oxygen sensor (LSF1, rear sensor) signal shows permanently “lean” voltage, ECM is forcing an enrichment of mixture. If sensor voltage shows still lean, a “stuck low” fault is detected.

In case of oxygen sensor (LSF1) signal shows permanently “rich” voltage, ECM enables lean out of mixture. If sensor voltage shows still rich, ECM is watching the sensor signal during the next coasting condition. In case of no signal change during coasting, a “stuck high” fault is detected.

The diagnosis of the aging of the rear O2 sensor consists of an oscillation check and a threshold check during fuel cut-off. The diagnosis runs continuously.

General Monitoring Conditions

- the canister purge system diagnosis has detected no faults
- no faults of the canister purge valve’s power stage diagnosis
- no battery voltage faults
- the downstream oxygen sensor connectors are correctly matched with their corresponding banks

7.5.1 Diagnosis of aging of RO2 Sensor - Oscillation check (rear sensor)

During normal engine operation the normalized A/F ratio and hence the voltage of the RO2 sensor oscillates about the set point value. The oscillation check triggers a test function if the measured voltage of the O2 sensor signal permanently lies below or above the set point value for a calibrated period of time. The test function applies a rich A/F mixture if the voltage is below the set point value or a lean A/F mixture if the voltage is above the set point value.
If the voltage doesn’t cross the set point value in the expected direction after applying a lean or rich A/F mixture, a malfunction is detected and a minimum or maximum fault **LASH** will be respectively set.

Monitoring conditions for oscillation check

- all general monitoring conditions have been fulfilled
- the proportional part of the mixture control system on the downstream side of the main catalyst has been activated
- the mass airflow is greater than calibration
- the canister purge valve is inactive
- fuel control error threshold has not been exceeded
- no critical misfiring rate.

7.5.2 Threshold check during trailing throttle fuel cut-off (rear sensor)

This check determines whether the voltage of the RO2 sensor signal exceeds a calibrated threshold for a calibrated period of time during fuel cut-off. A malfunction is detected and a signal fault **LASH** is set if this is true.

Monitoring conditions - threshold check during trailing throttle fuel cut-off

- all general monitoring conditions are fulfilled
- fuel cut-off for a calibrated period of time
- the required mass airflow for response rate determination has been reached
- no electrical faults of the downstream HO2S
- no electrical fault of the downstream HO2S’ heater
- no electrical fault of the downstream HO2S heater’s power stage
- the modeled exhaust gas temperature on the downstream side of the catalyst is above a calibrated threshold
- the downstream HO2S has been sufficiently heated up
- the dew-point temperature on the downstream side of the catalyst has been exceeded.

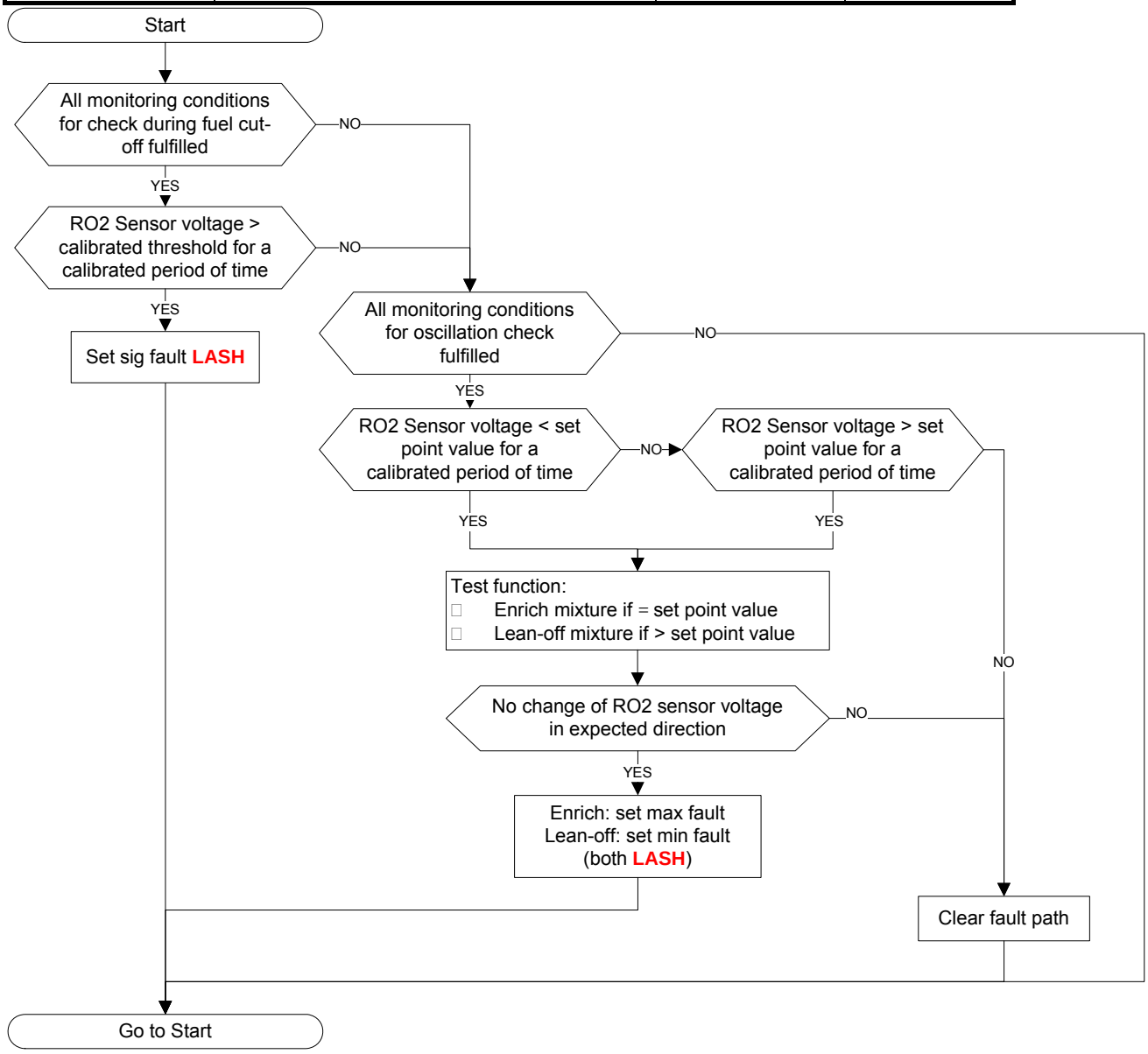


Figure 67: Flow chart RO2 sensor dynamic monitoring (rear sensor)

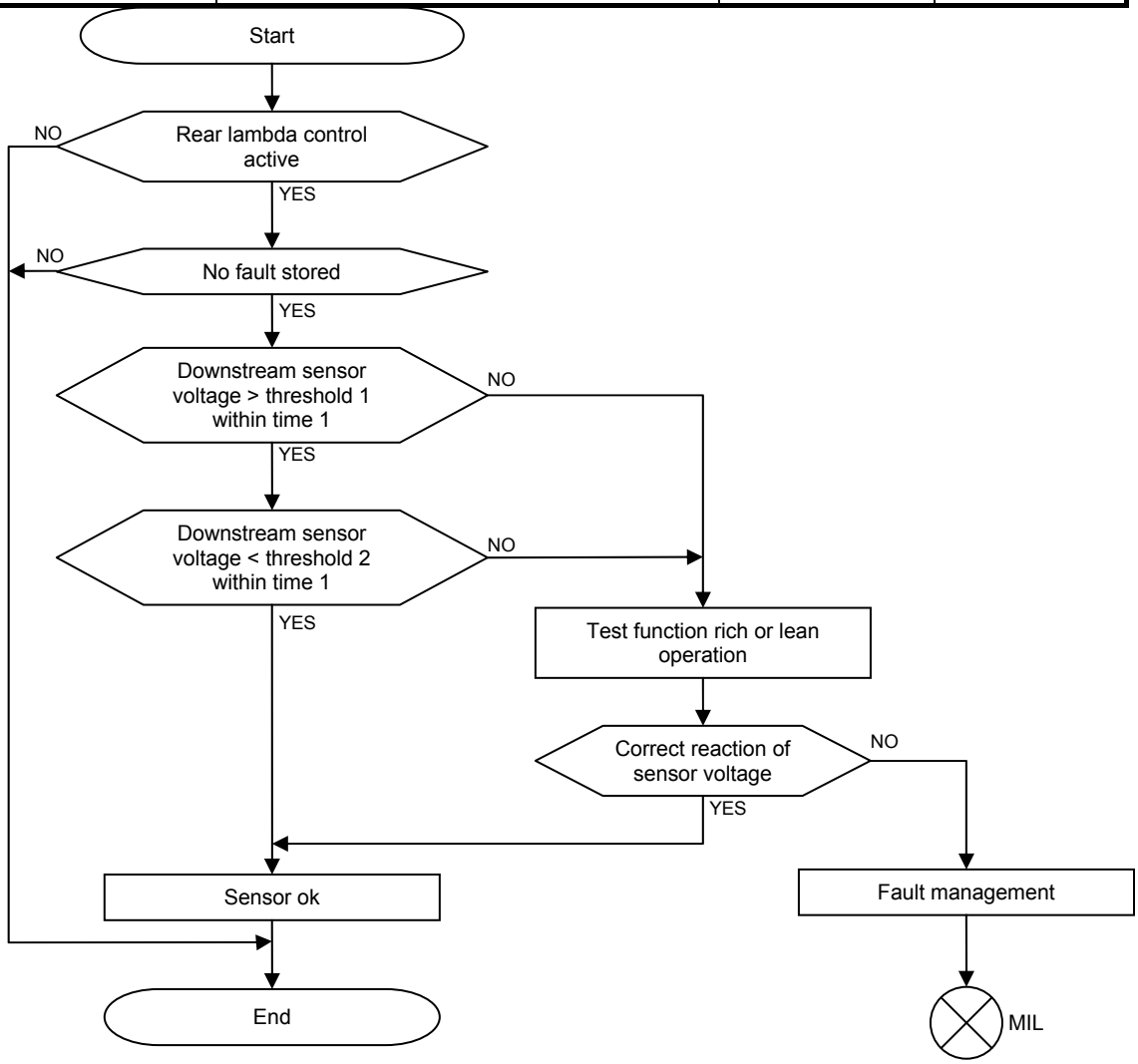


Figure 68: Flow chart oscillation monitoring rear sensor

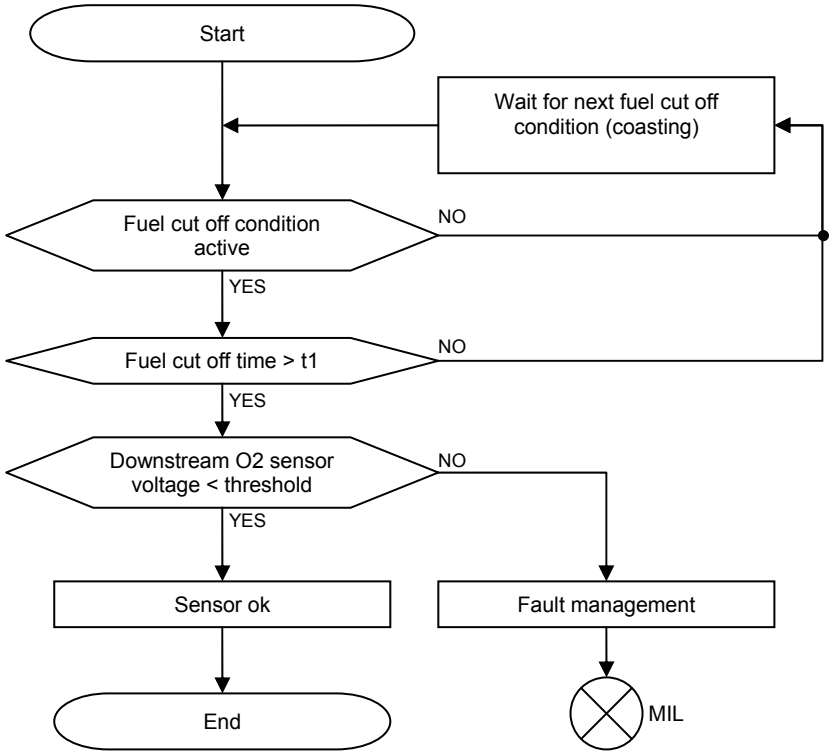


Figure 69: Flow chart fuel cut-off monitoring rear sensor

7.6 Signal range and electrical circuit monitoring of the rear oxygen sensor

This diagnostic monitors the rear sensor of bank 1.

rear Sensor		
P0138	Short to battery	Out of range high
P0137	Short to ground or short circuit between signal wire and ground wire	Circuit continuity
P0140	Open circuit ground wire	Circuit continuity
P0136	Heater coupling	Circuit continuity

7.6.1 System overview

The downstream oxygen sensor of the pre-catalyst is monitored.

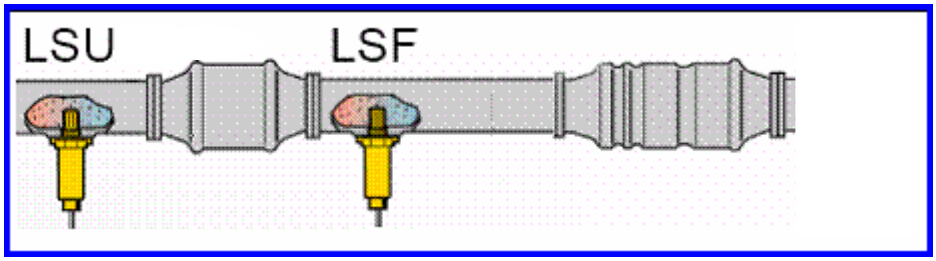


Figure 70: System Overview – downstream oxygen sensors

7.6.2 General description

The diagnostic monitors the two-step oxygen sensors in the exhaust system for wiring faults and effects of heater switching couplings onto the sensor signal. Short circuits to ground and to battery, and open circuits in the signal wiring and the ground wiring, are detected. If a fault is detected in a sensor, the operational readiness will be withdrawn.
The sensor voltage range for a faultless sensor is 0 to 1 Volt. As it is not possible to measure negative sensor voltages in the control unit, signal range exceedances can only be detected for voltages greater than 1 Volt. Since the sensor voltage for open circuits and shorts to ground remains within the plausible range, an additional evaluation criterion is required: the sensor voltage charged with a load impulse is measured, as it is also utilized to measure the internal resistance of a sensor.

7.6.2.1 General enable conditions (for all the following diagnostics)

Physical Enable Conditions

- ➔ Speed for running engine detected (typical speed > 80 rpm)
- ➔ Vehicle system voltage > threshold value (typically 11 V)

Enable Conditions for "Operational Readiness of the Oxygen Sensor fulfilled" (to cover the case that the sensor is faultless):

- ➔ The sensor voltage has exceeded the cold sensor range of +/- 450 mV (typically lower than 400 mV, or greater than 600 mV but lower than 1080 mV)

  → see illustration below
- ➔ Sensor is sufficiently heated. This criterion is defined as
  - o Sensor is sufficiently heated up AND
  - o Dew point in the vicinity of the sensor is exceeded (can optionally be calibrated)

OR

Enable Conditions for "Theoretical Operational Readiness of Oxygen Sensor fulfilled" (to cover the case that the sensor voltage does not exceed the voltage range due to an open circuit):

- ➔ The sensor is sufficiently heated for an extended defined time period AND
- ➔ The dew point in the vicinity of the sensor is exceeded (can optionally be calibrated)

Definition of a Sufficiently Heated Sensor

- ➔ The modeled exhaust gas temperature in the vicinity of the oxygen sensor exceeds a threshold value

  OR
- ➔ The heating power exceeds a threshold value for a defined time period

  AND
- ➔ No heater output stage fault is present in the current driving cycle (monitor is activated immediately after the sensor heating is activated)

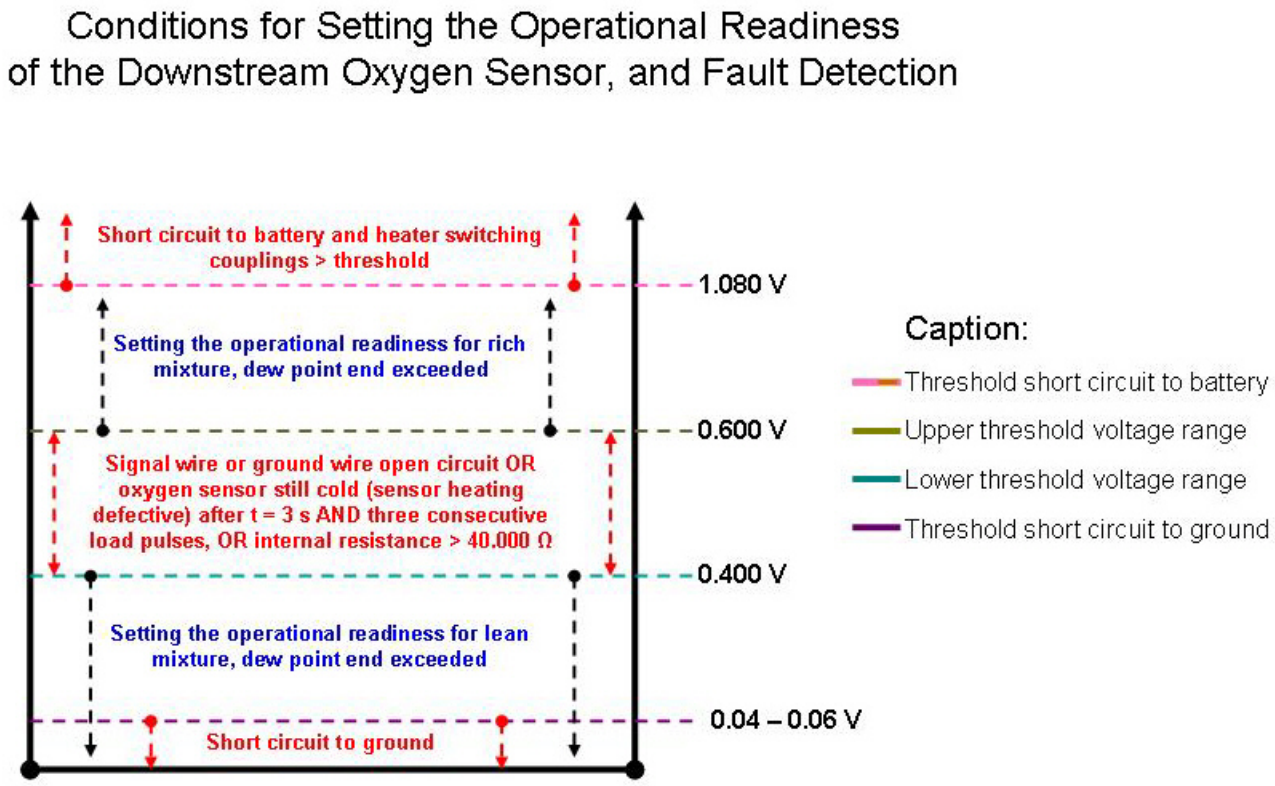


Figure 71: Conditions for setting the operational readiness of the RO2 sensor, and fault detection

7.6.2.2 Short circuit to battery, P0138

Additional enable condition for this diagnostic:

- Setpoint lambda value > 0.995

Monitoring strategy

Measurement and Evaluation of the Sensor Voltage

Malfunction criteria

In order to prevent sensor voltage peaks > 1 V caused by heater couplings, the diagnostic is not activated before the sensor has sufficiently heated up. These heater couplings occur quite frequently when two-point sensors with a planar sensor element are used.
The condition "sensor sufficiently heated" is set TRUE, when either the heating power exceeds a defined heating power threshold value or the modeled exhaust gas temperature exceeds a temperature threshold value for a defined time period, and when the completed heater output stage diagnostic has not detected a fault in the current driving cycle.
When, during sensor operation between slightly rich (λ > 0.995) and lean, a voltage is detected that exceeds a threshold value for a defined time period (typically 1.08 V), the fault P0138 for the rear sensor of bank 1 is set, and the operational readiness of the sensor is withdrawn.

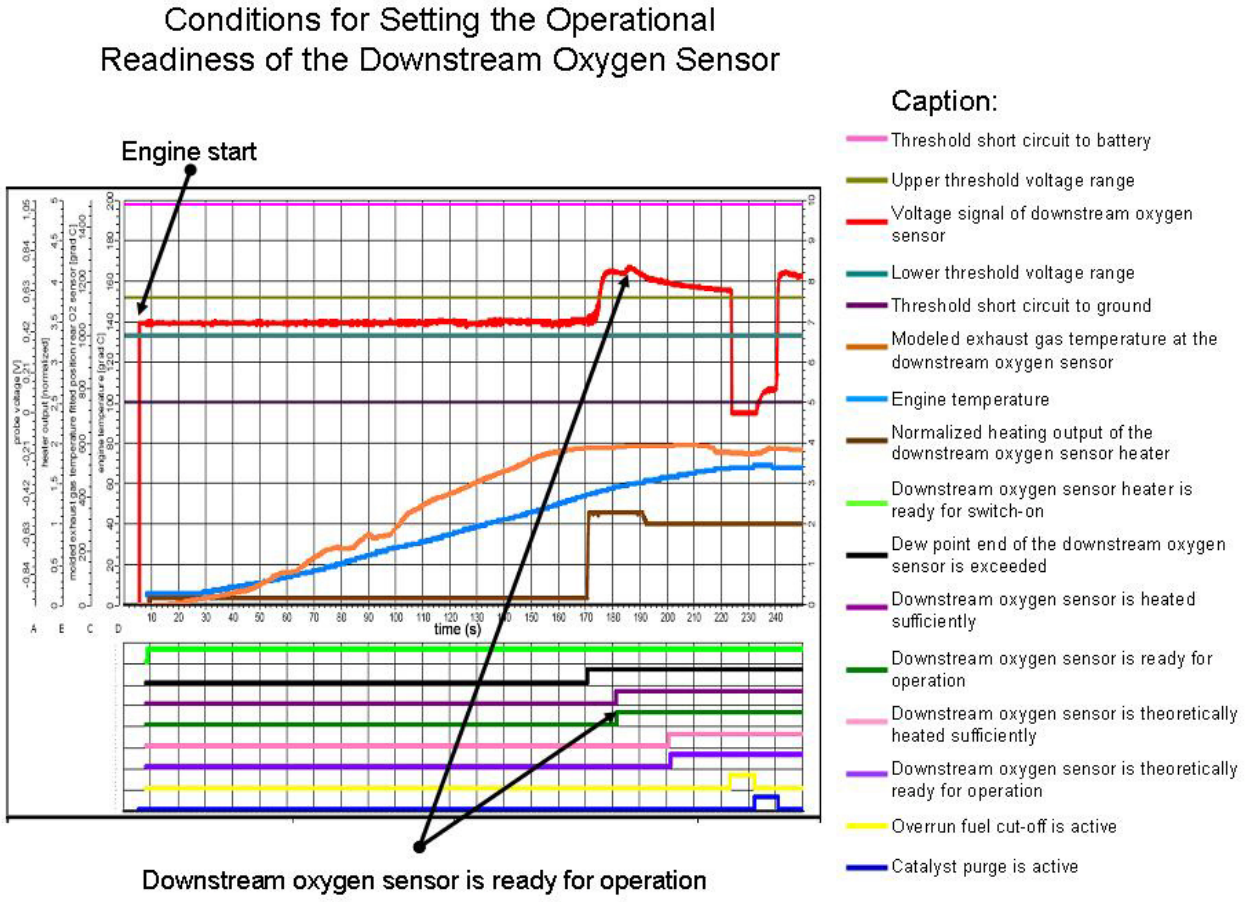


Figure 72: Conditions for setting the operational readiness of the downstream oxygen sensor

Flowchart

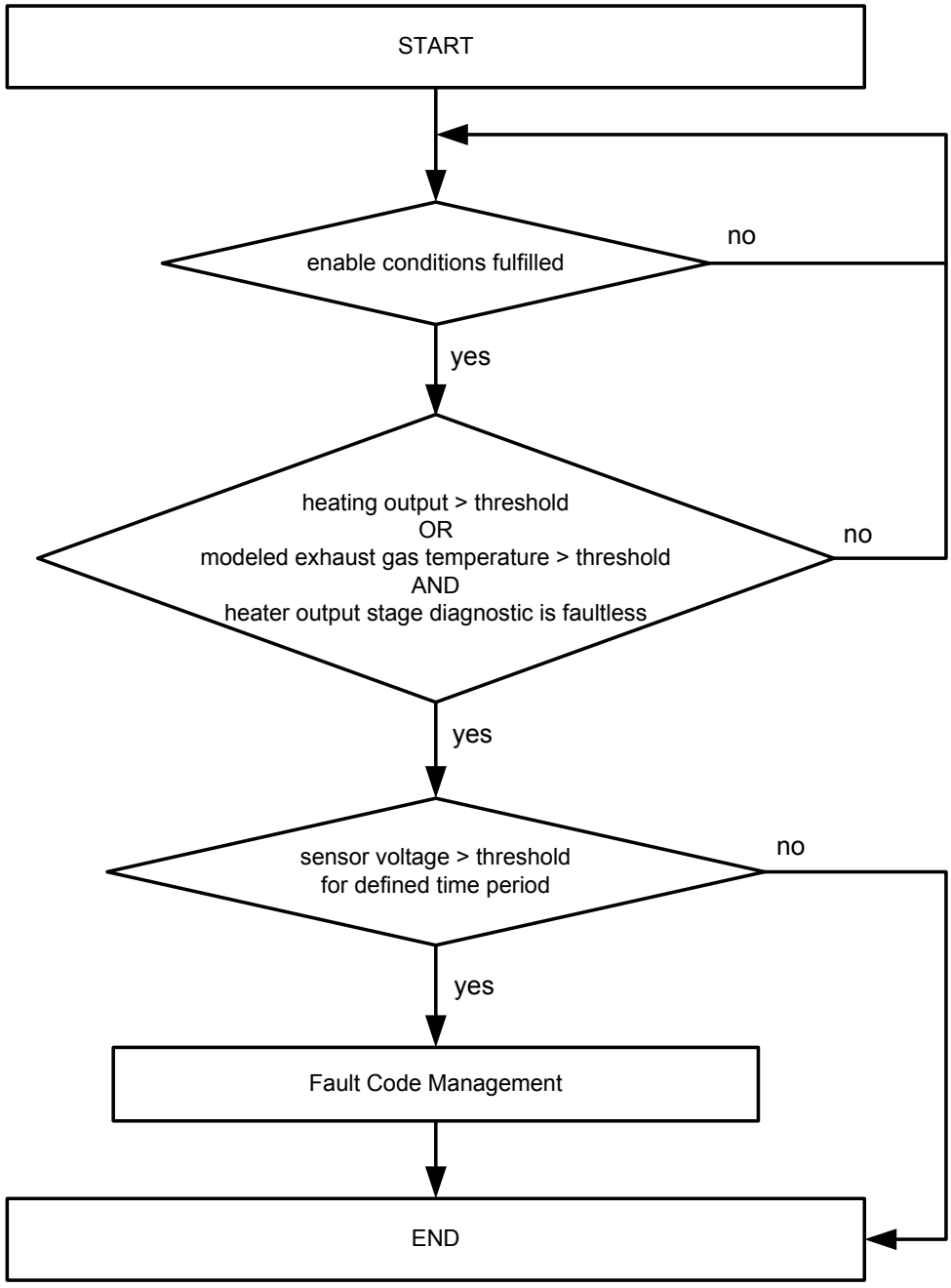


Figure 73: Flow chart short circuit to battery

7.6.2.3 Short circuit to ground, P0137

Additional enable conditions for this diagnostic:

- Overrun fuel cut-off inactive
- Catalyst purge inactive (after overrun phase)

Monitoring strategy

Measurement and evaluation of the sensor voltage, when charged with load pulses

Malfunction criteria

When the sensor voltage remains below a minimum threshold value (typically 40 to 60 mV) for a defined time period (typically 3 s), and if during this period neither overrun fuel cut-off nor catalyst purge after overrun is active, a fault is indicated and the corresponding flag is set. This fault indication triggers the request of three consecutive load pulses. For each of these load pulses, the unloaded and the loaded sensor voltages are measured.
When the mean value of the differences between the loaded and the unloaded sensor voltages is lower than a minimum calibratable threshold value, the fault P0137 for the rear sensor of bank 1, and the operational readiness of the sensor is withdrawn.
The measurement with load pulses corresponds to the measurement of the sensor internal resistance, as it is utilized for determining the sensor temperature, and for the heater diagnostic.

Determination of loaded / unloaded sensor voltage and internal resistance

The internal resistance of the oxygen sensor's Nernst cell can be determined by using a pulsed pump current. Since the internal resistance increases substantially when the heater is defective, or when the heating power is considerably decreased, with the exhaust temperature not being too high (typically T < 700 °C), the internal resistance is used, indirectly, to monitor the sensor heating. Additionally, the internal resistance may be used as a criterion for the electrical wiring diagnostic.

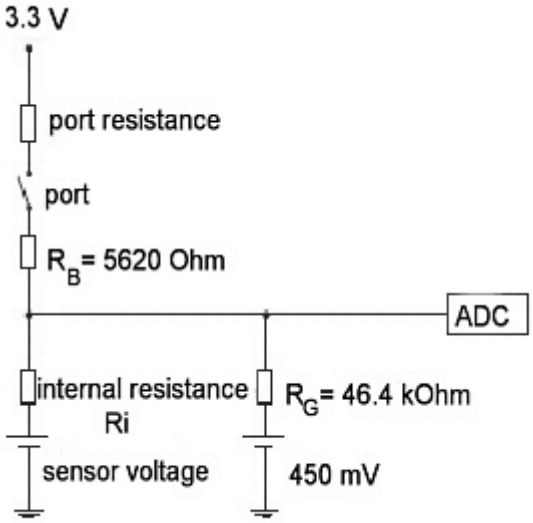


Figure 74: Electrical wiring for measuring unloaded / loaded sensor voltage, and for determination of internal resistance

The load resistance R_B is dimensioned in a way that a pump current of 0.5 mA flows into the oxygen sensor. Measuring the internal resistance is effected as follows:

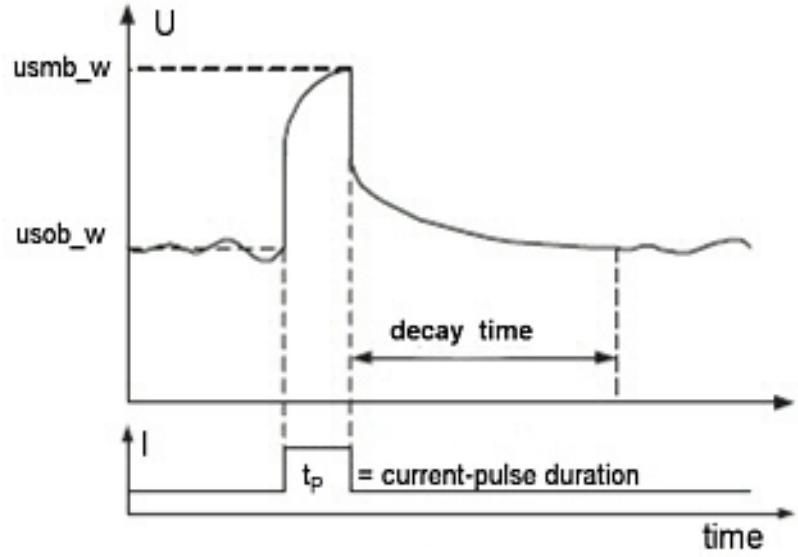


Figure 75: Principle of internal resistance measurement

In order to determine the internal resistance Ri of the Nernst cell, the unloaded and the loaded sensor voltages are measured. The last measured voltage value before the activation of the voltage pulse is stored. Applying the current pulse to the oxygen sensor causes a voltage drop at the internal resistance of the Nernst cell, and thus an increase in the sensor voltage.

The internal resistance is calculated by the following formula:

$$R_i' = \frac{usmb\_w - usob\_w}{3.3V - usmb\_w} \cdot R_B$$

usmb_w = loaded sensor voltage
usob_w = unloaded sensor voltage
R_B = load resistance

Flowchart

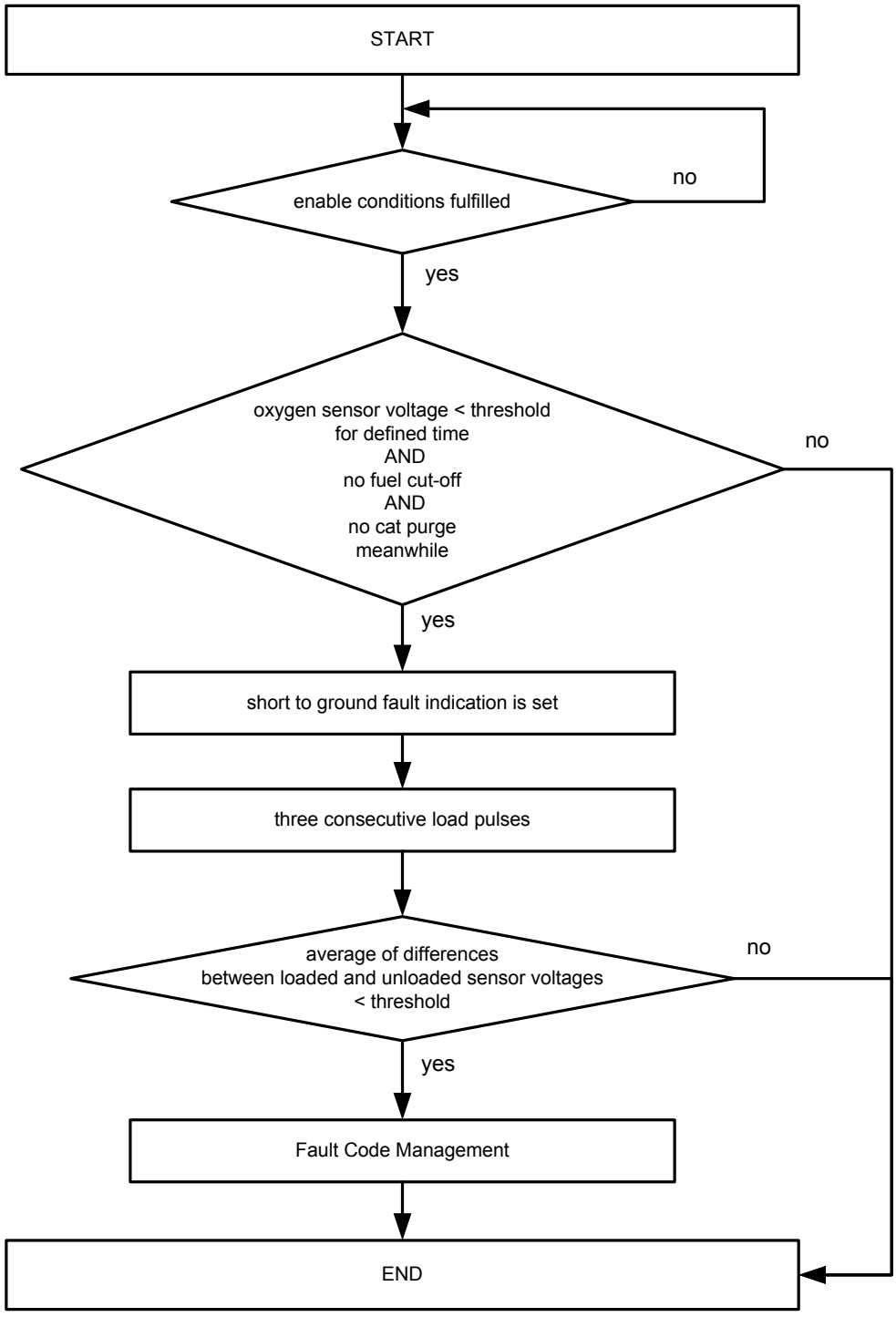


Figure 76: Flow chart short circuit to ground

7.6.2.4 Signal wire or ground wire, open circuit - P0140

Monitoring strategy
Due to the wiring arrangement in the ECU (high-resistance connection of the sensor to a counter voltage of 450 mV), exceedances of the +/- 450 mV voltage range indicate that the internal resistance of the Nernst cell has exceeded a defined threshold. Therefore, these exceedances of the above voltage range are also utilized to detect the operational readiness of the oxygen sensor.
Depending on the current exhaust gas composition in the exhaust system, the oxygen sensor voltage drops below the minimum (lean) voltage threshold value (typically 400 mV), or it exceeds the maximum (rich) threshold value (typically 600 mV), however remaining below the short circuit voltage threshold value (typically 1.08 V).

Malfunction criteria - signal wire, open circuit
When the sensor voltage remains within the voltage range of +/- 450 mV, the oxygen sensor is either too cold, or the signal wire is interrupted.
When the sensor voltage remains within the voltage range of approximately 400 to 600 mV after the sensor has reached its operational readiness, or the sensor has reached its theoretical operational readiness for a defined time period (typically 3 s), a fault is indicated.
This fault indication triggers the request of three consecutive load pulses. For each of these load pulses, the unloaded and the loaded sensor voltages are measured.
When the mean value of the differences between the loaded and the unloaded sensor voltages is greater than or equal to a threshold value, the fault P0140 for the rear sensor of bank 1 is set, and the operational readiness of the sensor is withdrawn.

Malfunction criteria - ground wire, open circuit
Additional enable condition for this diagnostic:

- To ensure that there is a valid measurement of the sensor internal resistance, the number of internal resistance measurements must exceed a threshold value (typically 6 to 10).

Using planar sensors, heater couplings onto the sensor signal may occur at high exhaust temperatures and an interrupted ground wire. Therefore the voltage does not necessarily have to remain within the +/- 450 mV range.

For this reason, another diagnostic path exists to reliably detect an interrupted ground wire. When the internal resistance exceeds a maximum threshold value (typically > 40.000 Ω) and the modeled exhaust gas temperature exceeds a maximum threshold value (typically 660 °C), the fault P0140 for the rear sensor of bank 1 is set, and the operational readiness of the sensor is withdrawn.

A fault must be assumed if the sensor voltage does not exceed the voltage range defined for a cold sensor, despite sufficient heating, for an extended time period (approx. 20 s), even if no open circuit fault has been detected by the current-pulse method. In this instance, the operational readiness is forced. This is to enable fault detection by the oscillation monitoring of the rear oxygen sensor and, consequently, a “stuck lean” fault is registered. Hence, it is even possible to detect a manipulation by simulating the presence of the sensor with a fixed voltage between 400 mV and 500 mV applied to the sensor signal pin.

Flowchart

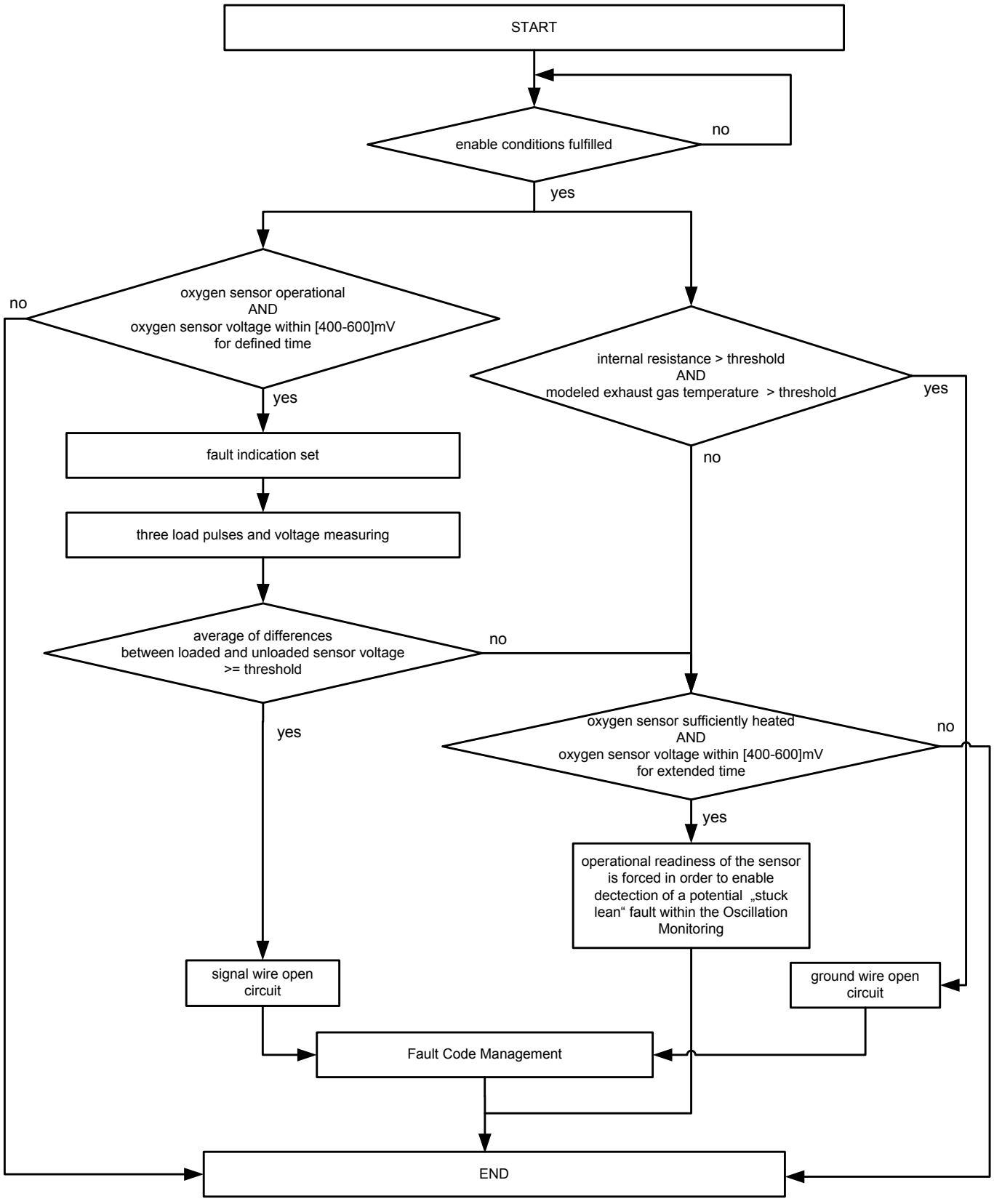


Figure 77: Flow chart signal or ground wire, open circuit

7.6.2.5 Coupling of the heater switching onto the sensor signal, P0136

Additional enable conditions for this diagnostic:

- In order to avoid diagnostic errors while the sensor is still too cold, the dew point in the vicinity of the sensor must have been exceeded for a calibrated time period.
  AND
- Heater activation is off (PWM signal)

Monitoring strategy

A short circuit between the oxygen sensor heater and the oxygen sensor signal wire may cause heater couplings, which disturb the sensor signal. This fault case cannot be detected by the short circuit to battery detection, as the measured sensor voltage is implausibly high for a short time only, when the heater is switched off. The heater coupling diagnostic is based on measuring the corresponding sensor voltage at heater switch-off and comparing it to a defined threshold value.

Malfunction criteria

If the above threshold value is exceeded, a counter is incremented. When this counter exceeds the respective threshold value, the fault P0136 for the rear sensor of bank 1 is set, and the operational readiness is withdrawn.

Flowchart

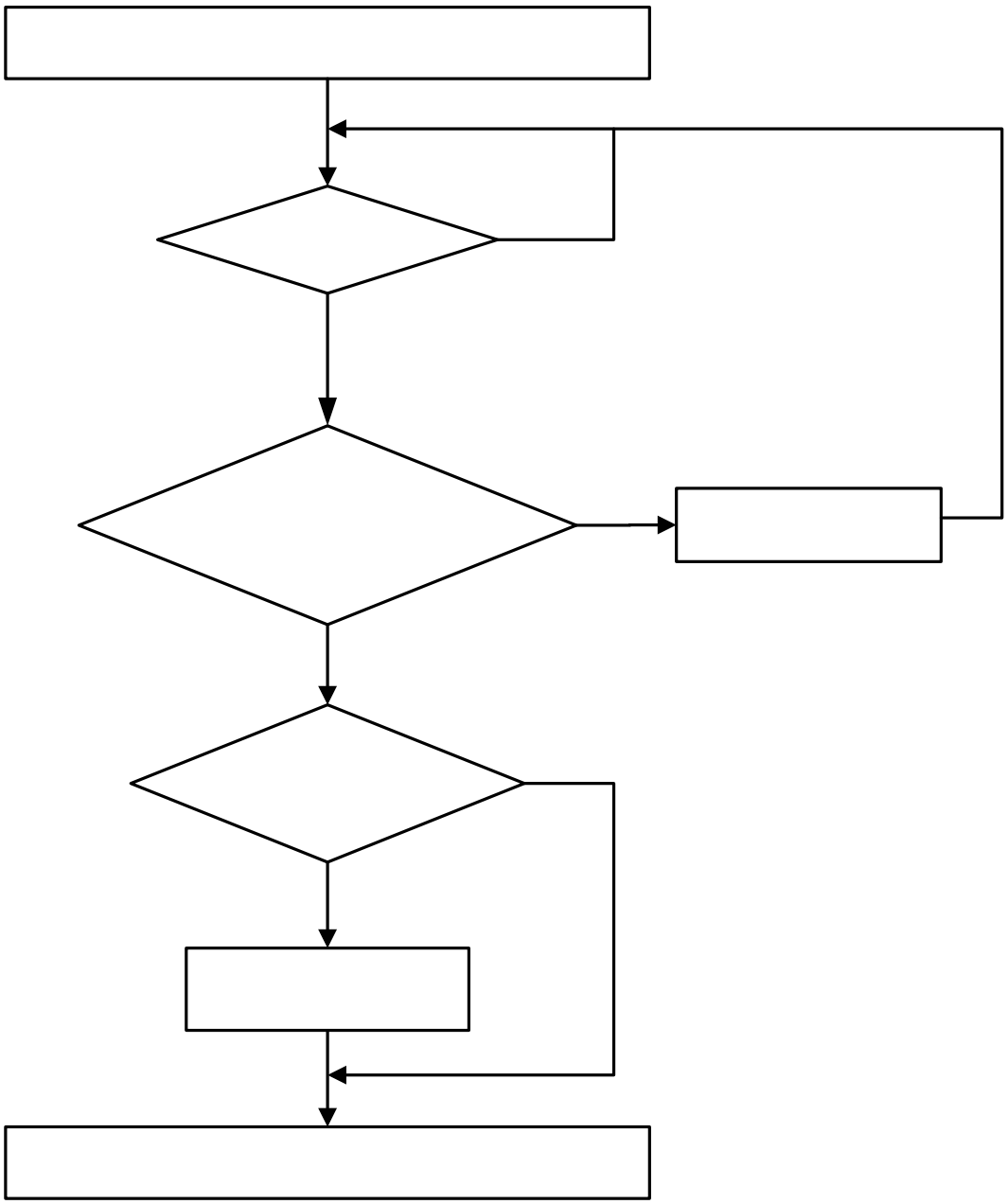


Figure 78: Flow chart coupling of the heater switching onto the sensor signal

enable conditon

7.6.3 In-Use Monitoring Performance Ratio

Since all above diagnostics are continuous monitors, neither numerators nor denominators are created.

y

7.7 RO2 Sensor response time and transition time monitoring

7.7.1 Response rate monitoring rear sensor

Aging, contamination or insufficient heating of the rear HO2S may slow down the sensor's response rate. A slow response rate could influence the catalyst diagnostic and can lead to higher emissions. Therefore this diagnostic function monitors the HO2S Response Rate. The monitor is designed to be executed repeatedly (multiple times) within the same driving cycle as long as the enable conditions are fulfilled or fulfilled again and consist of two monitoring functions. The Response Rate and the Transition Time monitoring function.
The diagnostic function is executed while fuel cut-off during coast down driving condition is present. The diagnostic results are updated depending on the driving profile and the length of the fuel cut-off period. Typical monitoring frequency during a FTP72 is at minimum one to two events, during the Unified Cycle approximately 5 events and during normal driving on road in customer's hand the typical frequency is 10 to 15 events (based on engineering evaluation of road-data).

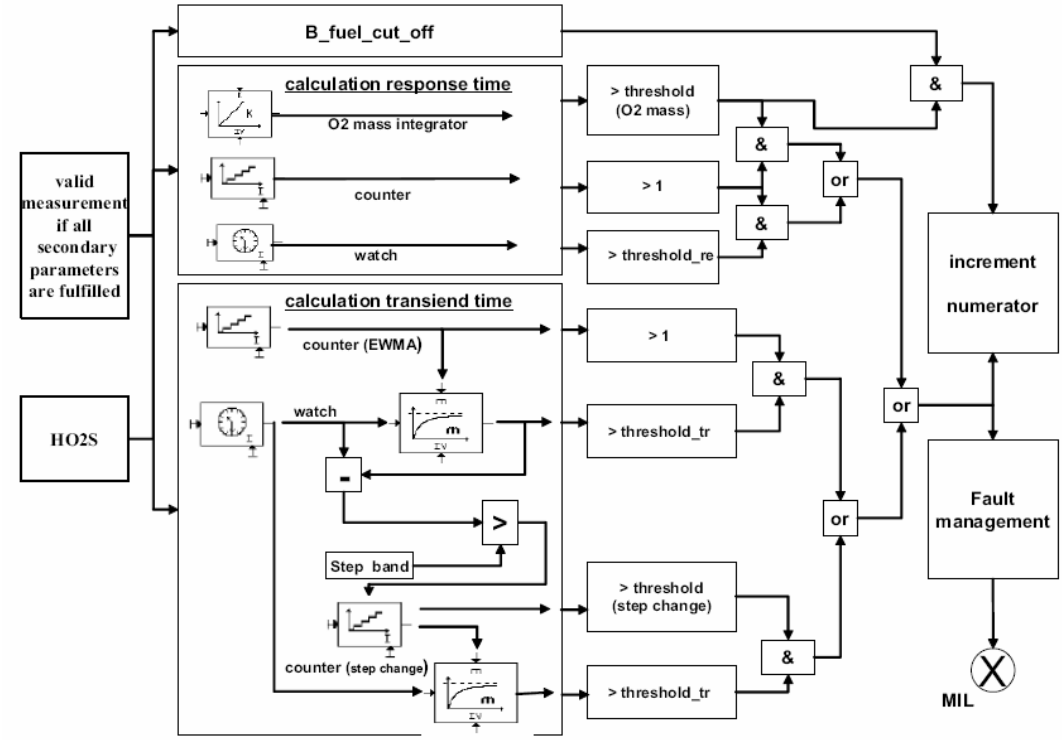


Figure 79: Rear sensor – Functional schematic diagram

Diagnostic Enable / Disable Conditions

Physical Parameters:

- HO2S ready
- Exhaust temperature post catalyst above an applicable level (typical value: 500°C) (dew point exceeded; to ensure homogeneous temperature distribution in the catalyst)
- Internal resistance of the HO2S is less than an applicable value
- HO2S voltage able to cross control level (typical value: 0.6-0.65V) of fuel trim (optional parameter)
- Exhaust mass flow exceeds an applicable value (typical value: ~15-25 kg/h)
- Slope of exhaust mass flow post catalyst is less than an applicable value ((typical value: Delta mass flow of ~10 kg/h)

Disable Conditions:

- Cycle flag of aging diagnostic HO2S post catalyst (lash) not set or failure(s) detected
- Cycle flag of EVAP purge diagnostic not set or failure(s) detected
- Cycle flag HO2S front catalyst not set or failure(s) detected
- No failures detected on final stage for O2S heater

Signal Evaluation / Validation:

For a robust monitoring function the HO2S signal needs to fulfill the following conditions ensuring a certain level of signal quality:

- HO2S voltage post catalyst exceeds a certain level (typical value: ~0.55-0.6V) before fuel cut-off occurs
- Fuel cut-off is present (Bit for this condition is set)
- HO2S in front of the catalyst is ready and shows definitely “lean” (e.g. Lambda is equal or greater than 10). The front HO2S signal range maximum value is equivalent to a Lambda of 16!
- The signal of the HO2S is monotone decreasing (outlier detection)*
- No HO2S faults detected by the dynamic diagnostic within the actual driving cycle

Outlier Detection

The outlier detection is necessary to exclude interferences of the catalyst during fuel cut-off conditions on the HO2S signal.

The rich-to-lean dynamic diagnostic of the H02S post catalyst is based on the physical / chemical effect that during fuel cut-off the Lambda value changes in a step response from Lambda equal one to a Lambda equal or greater than 10 indicating the Oxygen storage capability (OSC) of the catalyst is exceeded. In reality the signal behavior of the rear O2S shows occasionally during fuel cut-off a first decrease of sensor voltage to approximately 0.4 Volts, remains at that voltage level for a certain time and then falls again to a voltage of 0.1 Volts. In this specific case the measured transition time is above the fault threshold of the diagnostic but can not be counted as a O2S failure because the event is based on chemical reaction within the catalyst.

Explanation of chemical effect:

At the beginning of the fuel cut-off the CO post catalyst reaches a minimum level because of the increase of Oxygen available in the catalyst allowing an increase in CO-conversion rate into CO2, the O2S voltage decreases to approximately 0.4 Volts and stays at that level until the OSC of the catalyst is exceeded and the Oxygen level post catalyst increases causing another O2S voltage drop to approximately 0.1 Volts. This interference of the catalyst on the O2S voltage must be excluded from further evaluation by the monitor to prevent false failure detection by the response time diagnostic.

The described physical / chemical effect on the rear O2S signal is shown in figure below.

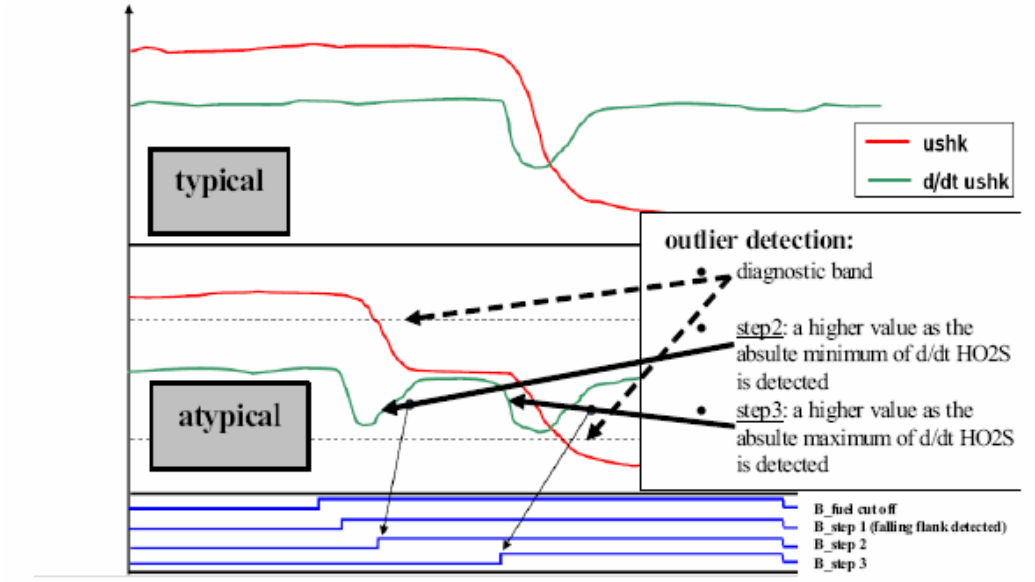


Figure 80: Rear HO2S – Outlier Detection Chart

7.7.2 Monitoring of the response time

Definition

Once fuel cut-off is present, the response time is defined as the O2S signal time needed to fall below a certain voltage level (typical value: ~0.15V). This part of the diagnostic replaces the former diagnostic of the O2S aging-monitor (DLSAHK) conducted during fuel cut-off.

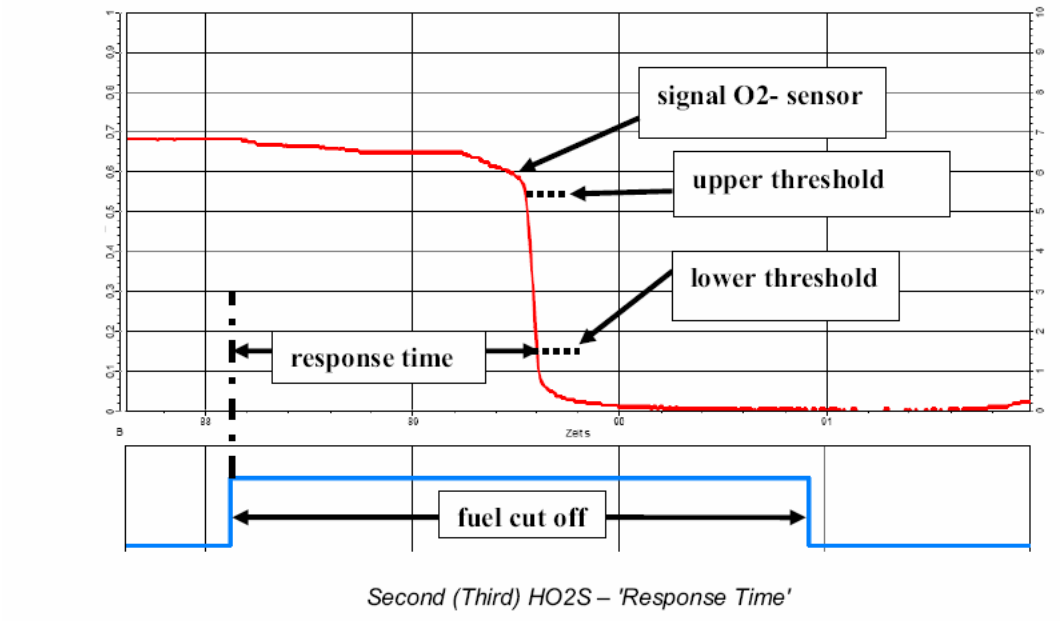


Figure 81: Monitoring of response time

Application of response time diagnostic

The main factors influencing the response time diagnostic are the exhaust mass flow, engine operating condition and the aging level of the catalyst. The maximum time allowed needs to be determined on the catalyst with the highest OSC value (e.g. new catalyst). The evaluation of the response time therefore is a measure whether the O2S signal is capable to show a voltage drop below a certain level within a certain time.
If the enable conditions are fulfilled and the O2S signal falls below an applicable voltage level (typical value: ~0.15 Volts) or the mass of Oxygen lead into the catalyst is above an applicable value (typical value: ~ 2.5 g O2) the measured value of response time is valid. Every valid value is evaluated and counted. The memory of response time and counted events will be cleared with power fail or with the OBD fault memory deleted by use of a Generic Scan Tool (GST).
If the event counter exceeds an applicable level the cycle flag can be set or in case of a response time measured exceeding the applicable fault threshold the diagnostic trouble code (DTC) is stored.

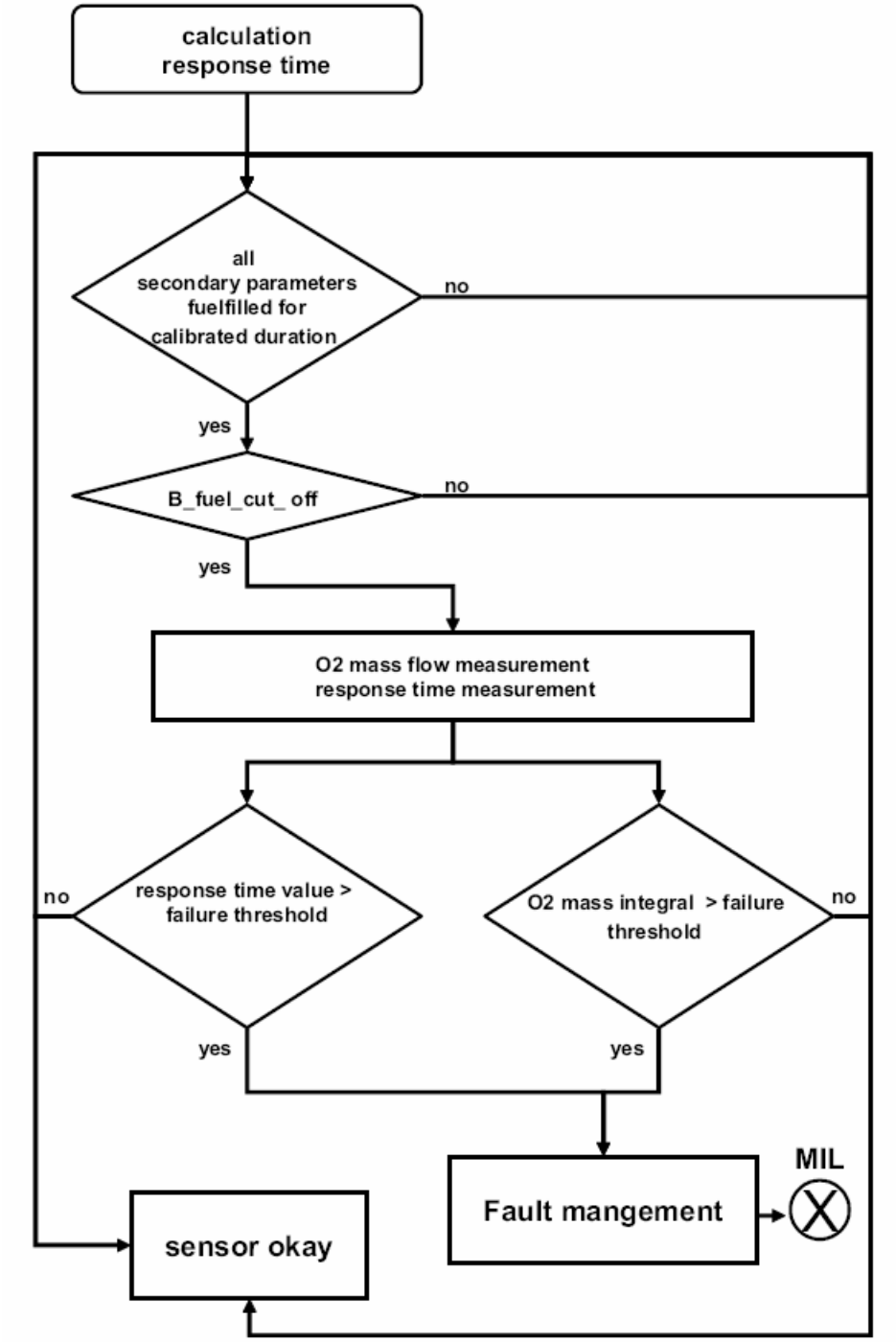


Figure 82: Rear sensor – Calculation RO2S response time check

7.7.3 Monitoring of transition time

Definition:

The transition time is defined as the time the O2S signal needs to pass-through an applicable voltage band (typical range: ~0.4-0.2V). This diagnostic function shall ensure that the reduced O2S signal dynamic (e.g. due to aging) exceeds a specified time threshold. This function is also used to improve the monitoring capability by minimizing the theoretical possibility of “false passes” of an aged catalyst caused by reduced HO2S dynamic.

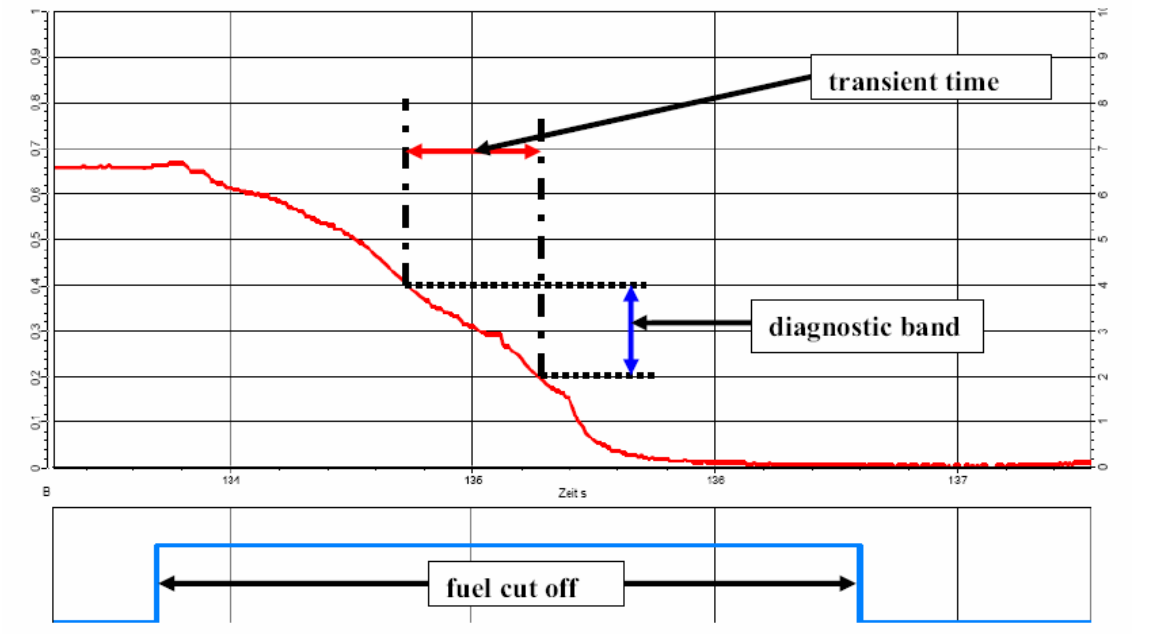


Figure 83: Rear Sensor – transition time

Application of transition time diagnostic

If all enable conditions are fulfilled and the difference between actual and stored transition time value is less than a calibrated value (typical value: ~0.3V) the valid measured value is filtered (moving average) and an event counter is increased. The filter features a “step change” capability in case of difference between actual measured transition time and previously stored transition time is greater than a calibrated value (typical value: ~0.3V) a second filter (arithmetic mean value) and a second event counter is used. This ensures an adequate system reaction in cases of suddenly occurrence of great deterioration in O2S dynamic by storing a diagnostic trouble code in a shorter time. The memory of transition time and counted events will be cleared with power fail or with the OBD fault memory deleted by use of a Generic Scan Tool (GST).

If the event counter exceeds an applicable level the cycle flag can be set or in case of the filtered transition time exceeding the applicable fault threshold the diagnostic trouble code (DTC) is stored.

The following schematic shows the principle of the diagnostics

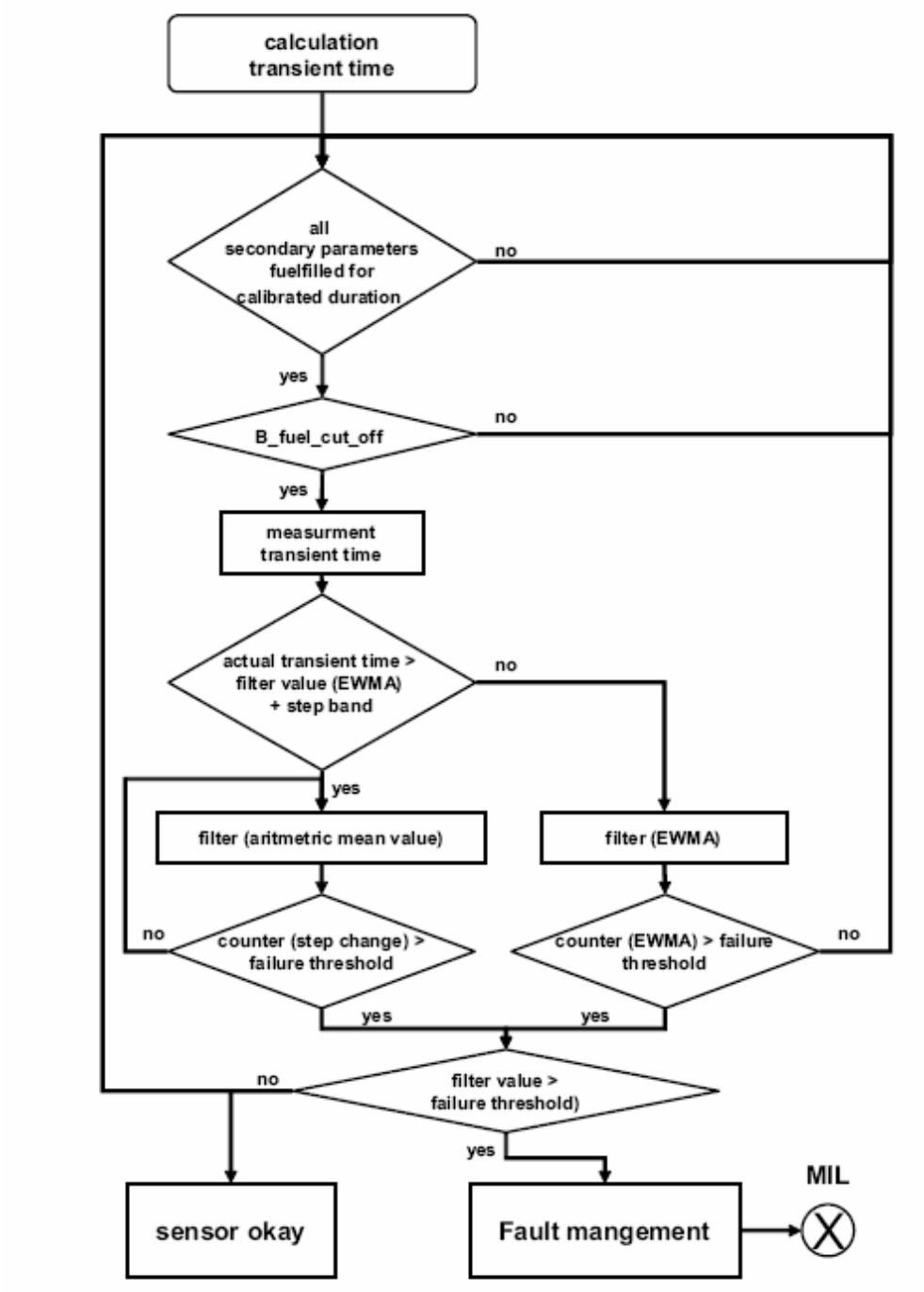


Figure 84: Rear sensor – Calculation RO2S transition time check

7.7.4 In-Use Monitoring Performance Ratio

The incrementing of the numerator, the denominator and the ratio calculation for the HO2S “Response Rate” monitor is executed by the “IUMPR-Kernel” as a subroutine. Like all monitors for which a standardized tracking and reporting of the in-use performance is required, the HO2S “Response Rate” monitor reports to the “IUMPR Kernel”-function via status flags.

Incrementing the numerator

The numerator is incremented, once per driving cycle in case of a fault is detected or if the Oxygen mass flow integral exceeds an calibrated value (typical value: ~2.5 – 3.5 g O2) and a certain number of valid measurements has been conducted (typical value: ~1 - 3 measurements).

Incrementing the denominator

The denominator is incremented if the standardized conditions are fulfilled within the actual driving cycle and the monitor is not inhibited due to already stored faults or faults detected on the sensors necessary to determine the denominator itself.

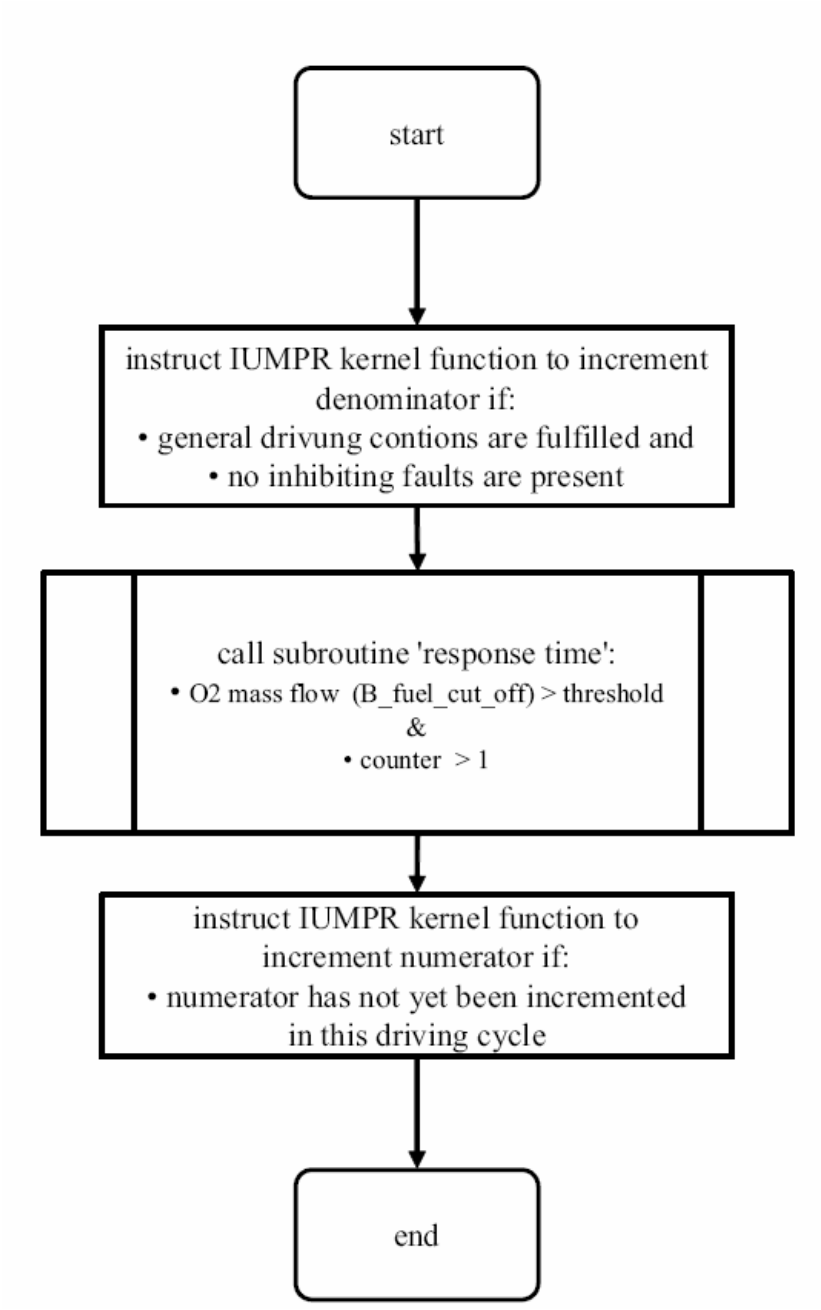


Figure 85: Rear sensor – main RO2S check

7.8 RO2 Sensor heater

For diagnostic of the sensor heater a specific current pulse is supplied via a load resistance and the voltage is measured. The intern resistance of the sensor heater is calculated with the voltage deviation. The result will be compared with a reference resistance map which considers ageing and sampling deviations. In case of internal resistance > map resistance the diagnosis stores a fault and the MIL will be illuminated.

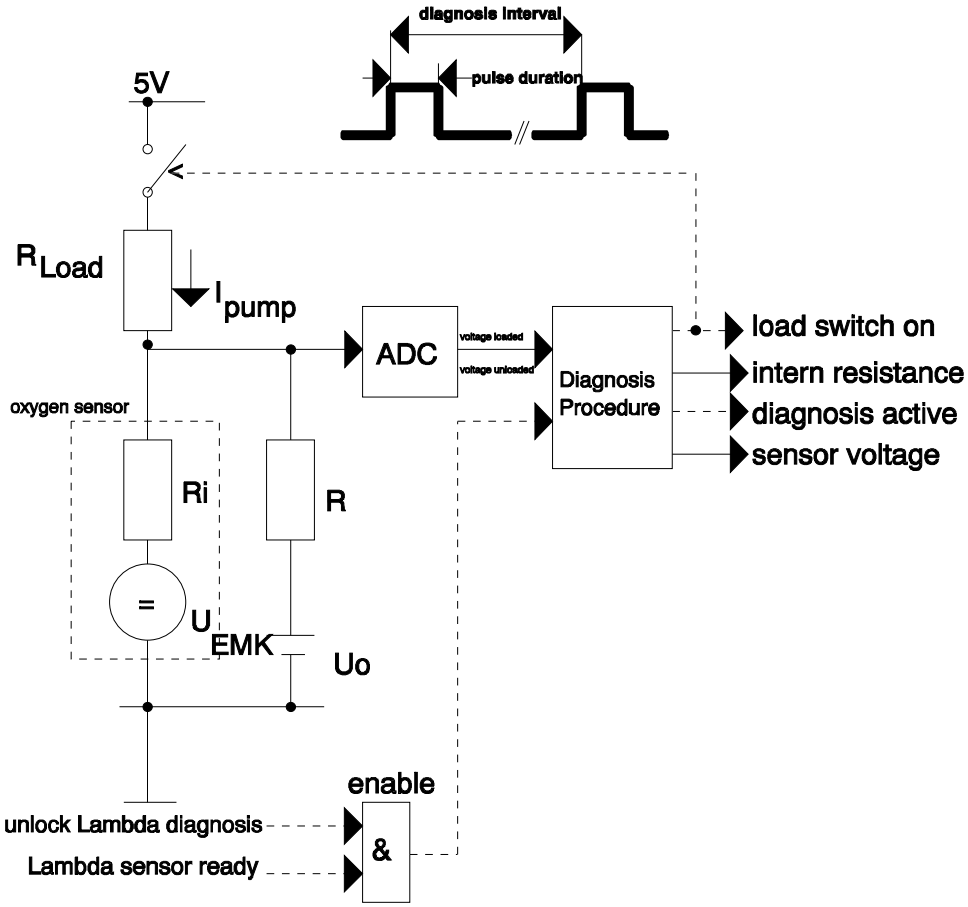


Figure 86: Monitoring structure RO2 Sensor heater

For proper function of the Oxygen sensors, their ceramic elements must be heated. A non-functioning heater delays or prevents the proper signal output for closed loop control and thus influences emissions. The heating up is controlled by the heater control.

This chapter describes the sum of all possible heater checks of the downstream HO2S.
The diagnosis of the heater of the downstream HO2S monitors the internal resistance of the Nernst cell. The internal resistance of the Nernst cell depends on both the electrical power of the heater and the exhaust gas temperature.

The resistance of the Nernst cell is measured and compared with the calculated temperature-dependant reference value. If the measured resistance exceeds the calculated reference value for a calibrated period of time, a malfunction is detected and a plausibility fault **HSH** (rear sensor) is set.

Monitoring Conditions

- no faults of power stage of RO2 Sensor heater
- no faults of RO2 Sensor
- modeled exhaust gas temperature at the vicinity of the downstream front catalyst O2 Sensor lies within calibrated range
- engine soak time exceeds calibrated threshold
- intake air temperature exceeds calibrated threshold
- battery's voltage lies within calibrated range
- engine is running
- engine start is finished
- voltage supply for heater of oxygen sensor is active
- measuring of internal resistance is active
- no signal interruption of RO2 sensor's ground
- no fuel cut-off
- enabled by the diagnostic scheduler

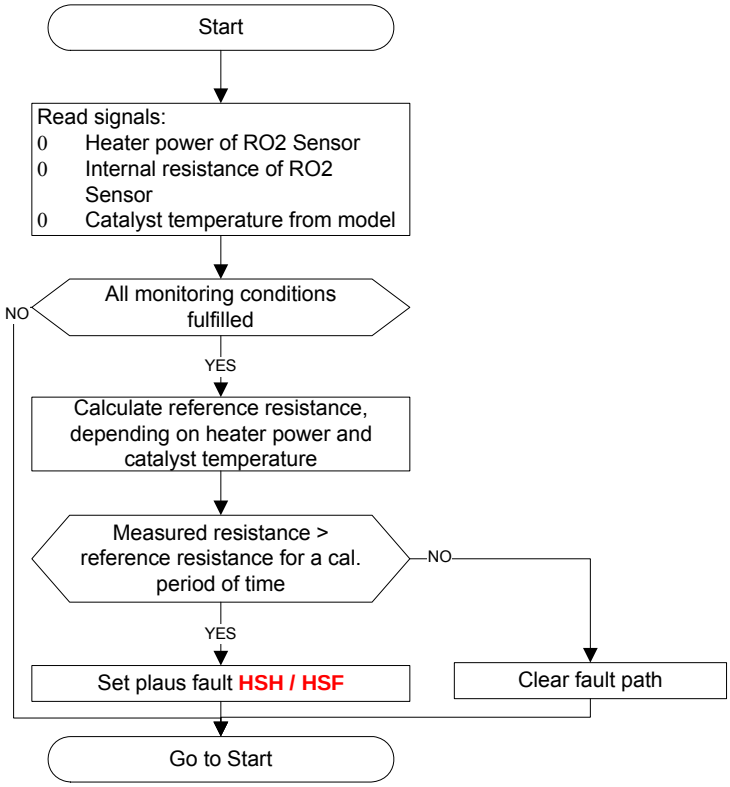


Figure 87: Flow chart heater diagnosis of RO2 Sensor

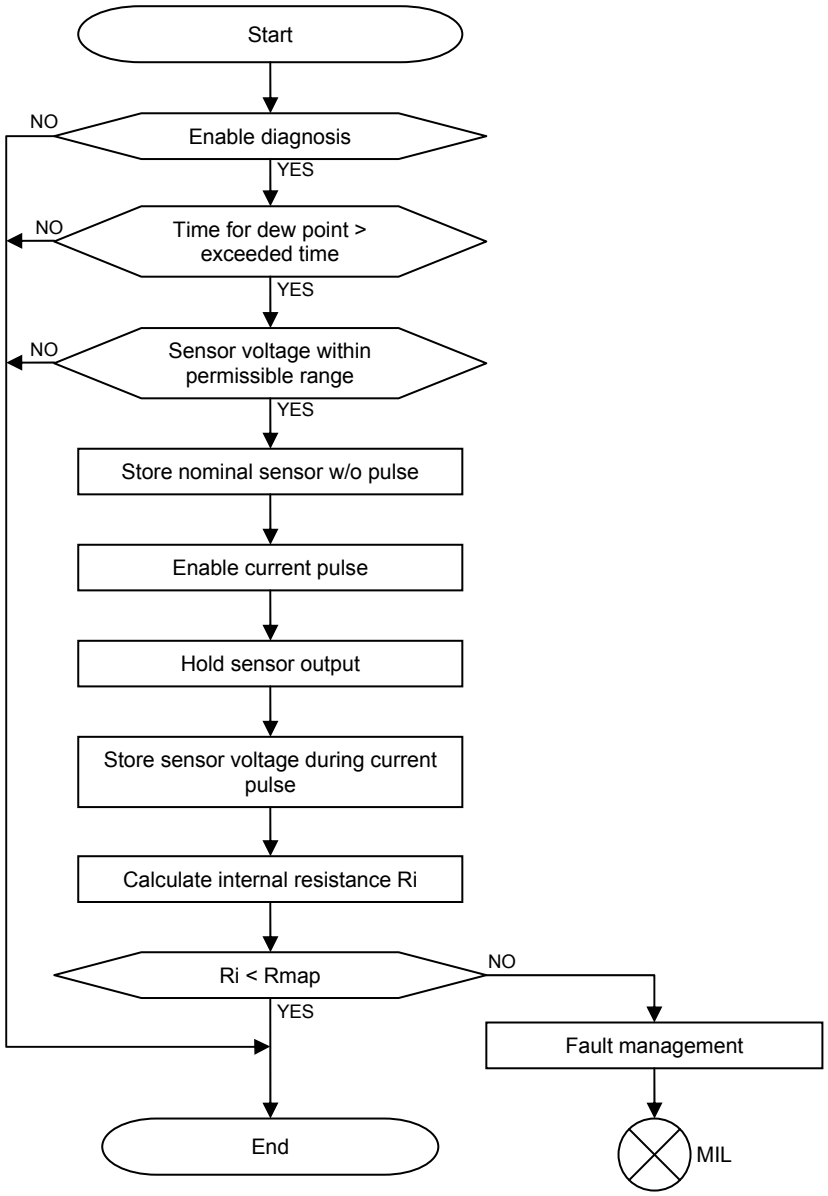


Figure 88: Flow chart RO2 Sensor heater

8 EGR MONITORING

Not applicable

9 PCV-DESCRIPTION

See Chapter J of the folder.

10 ENGINE COOLANT SYSTEM MONITORING

10.1 General description

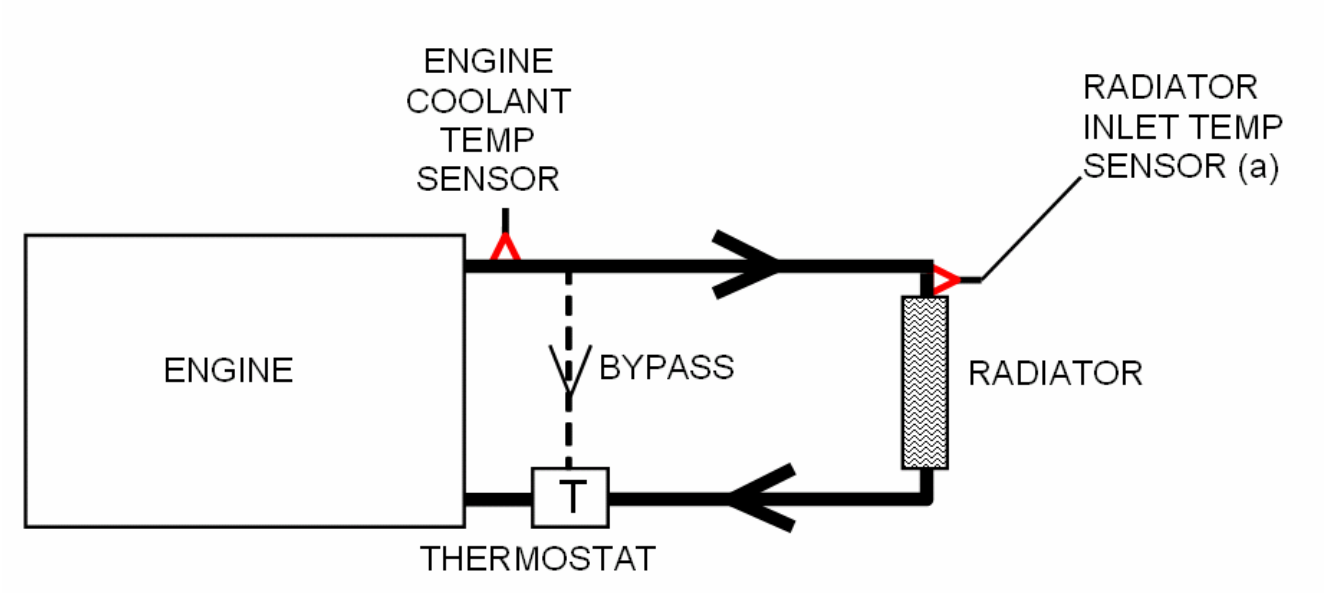
The engine cooling system consists of the following main parts:

- Radiator
- Engine Coolant Temperature Sensor
- Thermostat
- Bypass Cooling Circuit
- Main Cooling Circuit
- Radiator Temperature Sensor (certain OBD groups only)

During warm-up of the engine, the coolant flows first inside the bypass cooling circuit. After the coolant reaches a sufficient temperature the thermostat opens the main cooling circuit to integrate the engine coolant radiator.

The engine coolant temperature sensor measures a mixed temperature between the coolant coming from the bypass and main cooling circuits.

On some concepts, a radiator temperature sensor is used to measure the temperature at the inlet (OBD group BBE-V) of the radiator.



(a) OBD Group BBE-V only

Figure 89: Main elements of engine cooling system

10.2 Concepts without radiator temperature sensor

10.2.1 Monitor Functional Description

The engine cooling system monitoring strategy consists of two main diagnostic parts, shown in Figure 90.

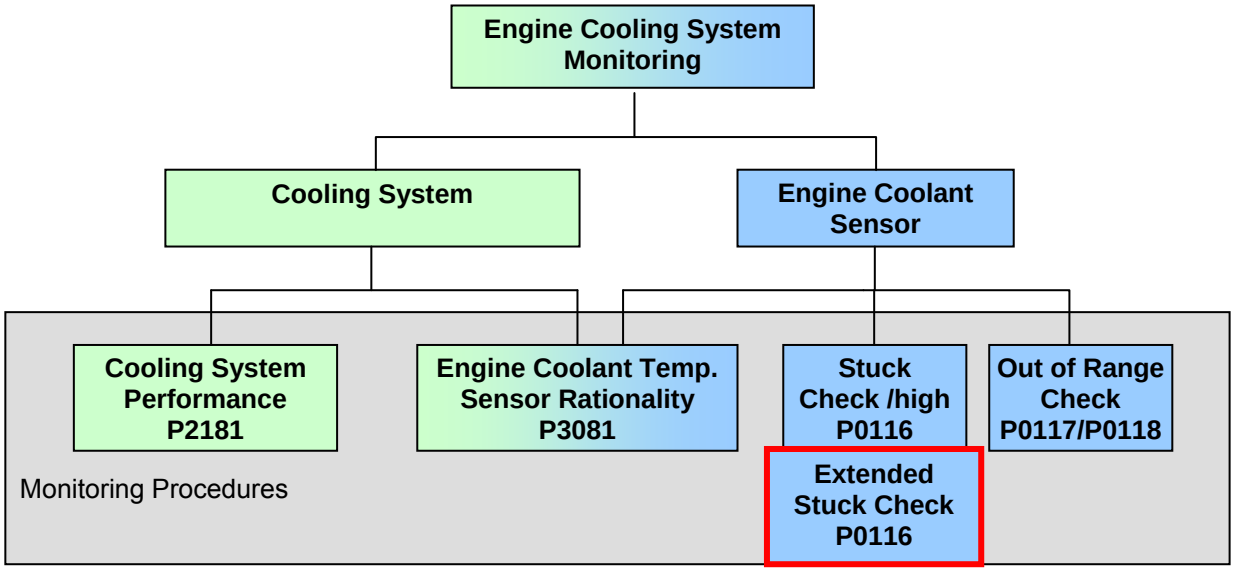


Figure 90: Engine cooling system monitoring strategy

Each engine cooling monitoring function has its own specific engine temperature range in which it will be enabled. Refer to Figure 91.

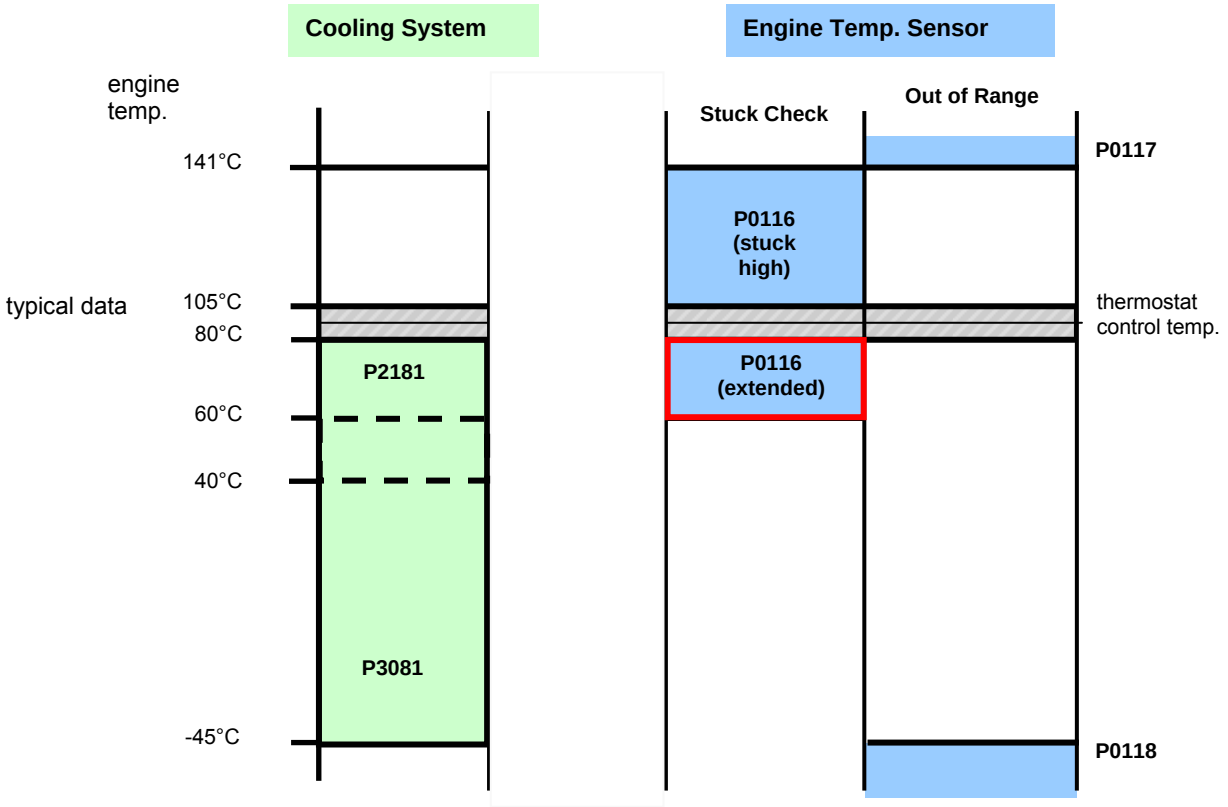


Figure 91: Engine temperature range

10.2.2 Cooling System Performance (P2181)

In case that the engine coolant temperature does not reach a certain value after a sufficient mass air flow under normal driving conditions, the cooling system performance is considered to be reduced. Refer to Figure 92 and Figure 93.

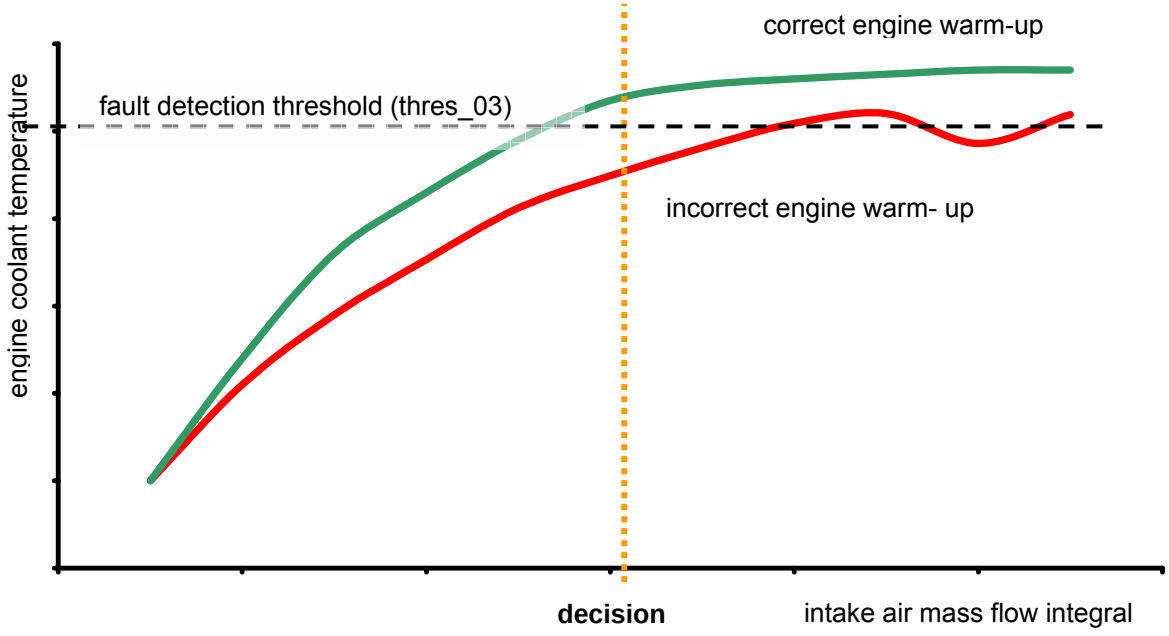


Figure 92: Cooling system performance chart

Flow chart cooling system performance (P2181)

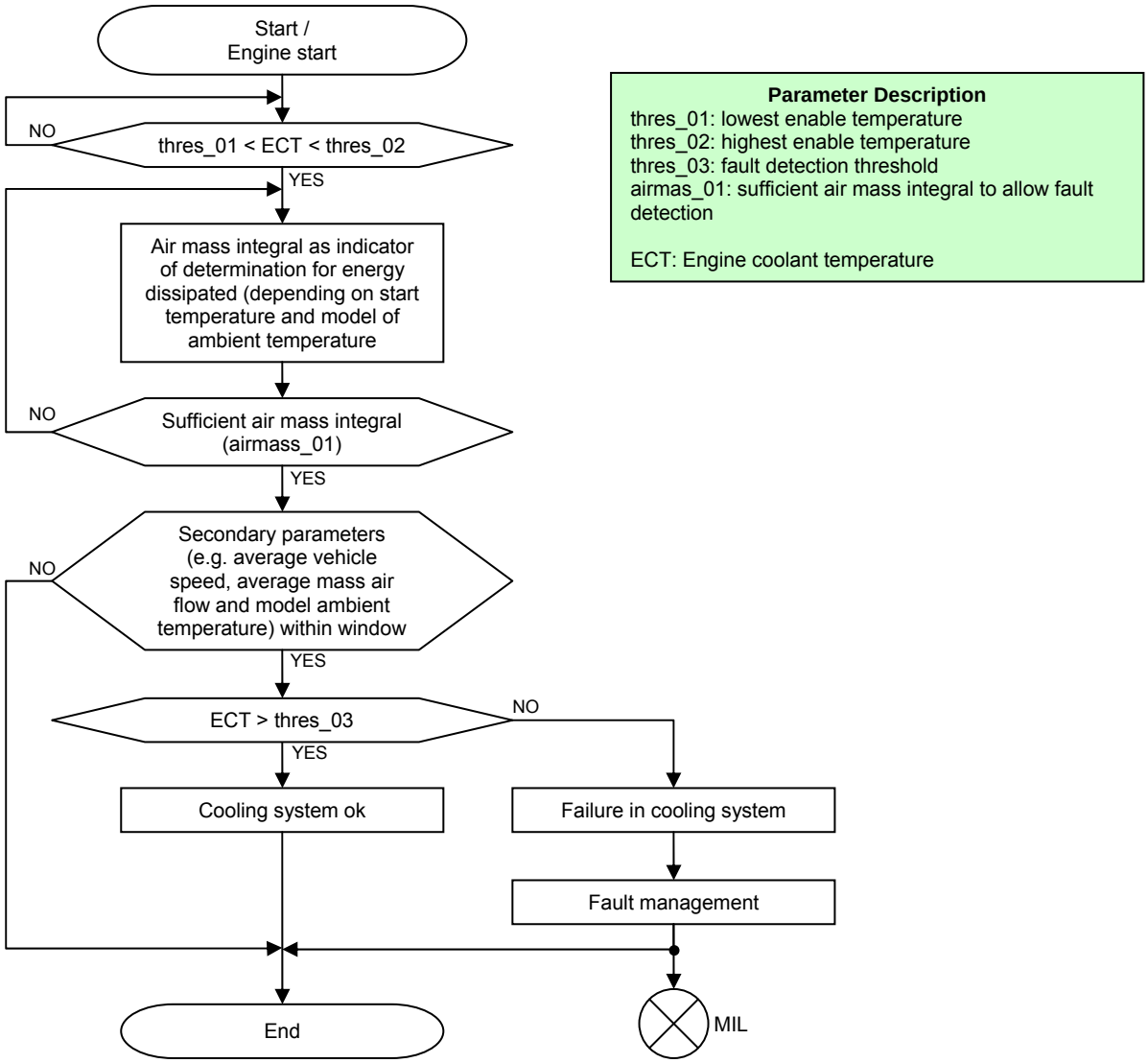


Figure 93: Flow chart cooling system performance monitoring

10.2.3 Engine Coolant Temperature Sensor Rationality (P3081)

In case that the engine coolant temperature does not fit to a reference model temperature in a certain range, the cooling system is defective or the sensor is not in a plausible range. Refer to Figure 94 and Figure 95.

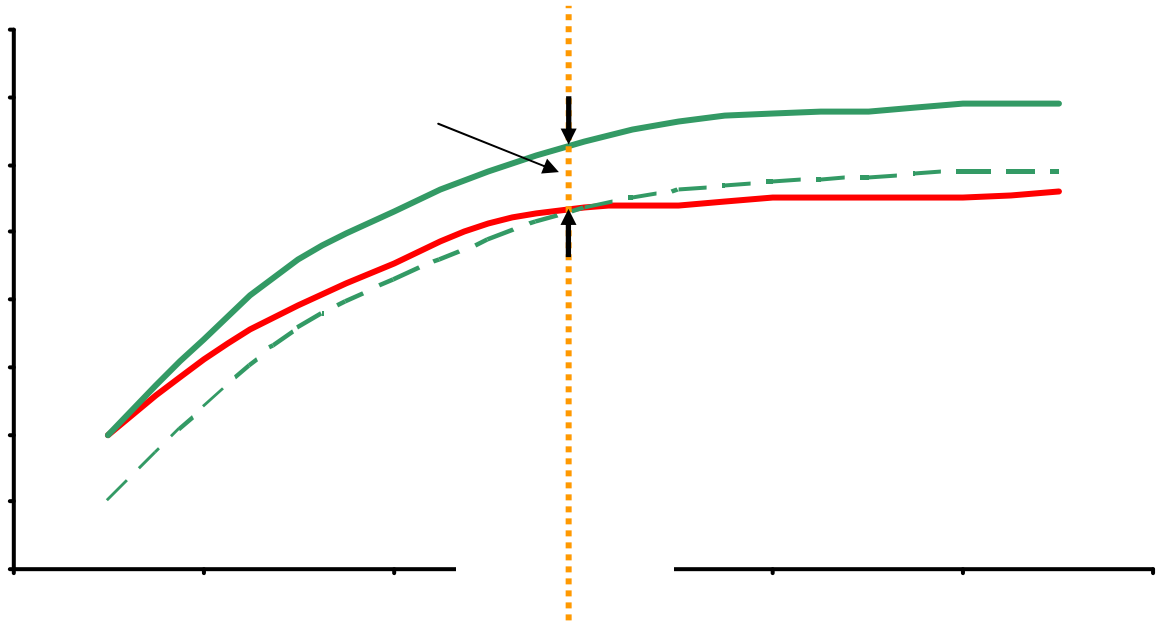
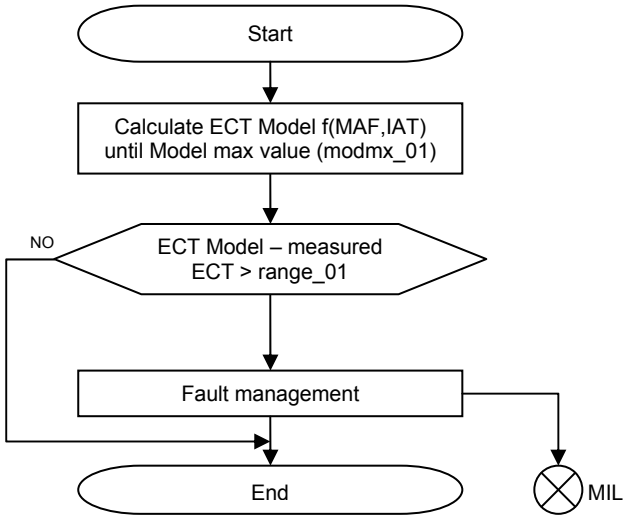


Figure 94: Coolant temperature Sensor Rationality Overview

Flow chart coolant temperature sensor rationality (P3081)



Parameter Description
modmx_01: maximum reference temperature model value

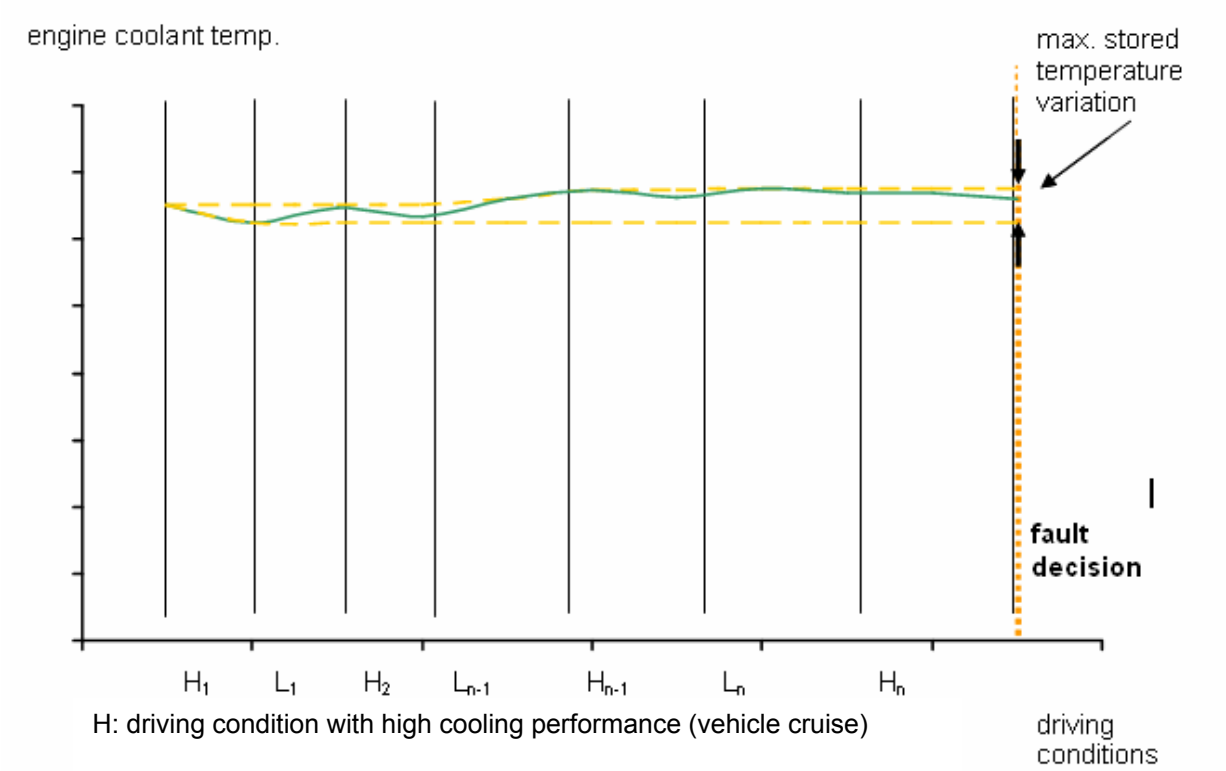
range_01: maximum deviation error to detect a malfunction

ECT: Engine Coolant Temperature
MAF: Mass Air Flow Sensor
IAT: Intake Air Temperature

Figure 95: Flow chart coolant temperature sensor rationality

10.2.4 Engine Coolant Temperature Sensor Stuck (P0116)

After engine start the system stores continuously the lowest and highest ECT above the thermostat control temperature for a driving cycle. In case that after several driving conditions the difference between ECT max and ECT min is lower than the threshold the sensor is stuck at a high (Figure 96) or low (Figure 97) value, depending on start temperature, respectively. Figure 98 is a flow chart of the function.



H: driving condition with high cooling performance (vehicle cruise)

L: driving conditions with low cooling performance (idle)

Figure 96: Coolant temperature Sensor Stuck High Overview

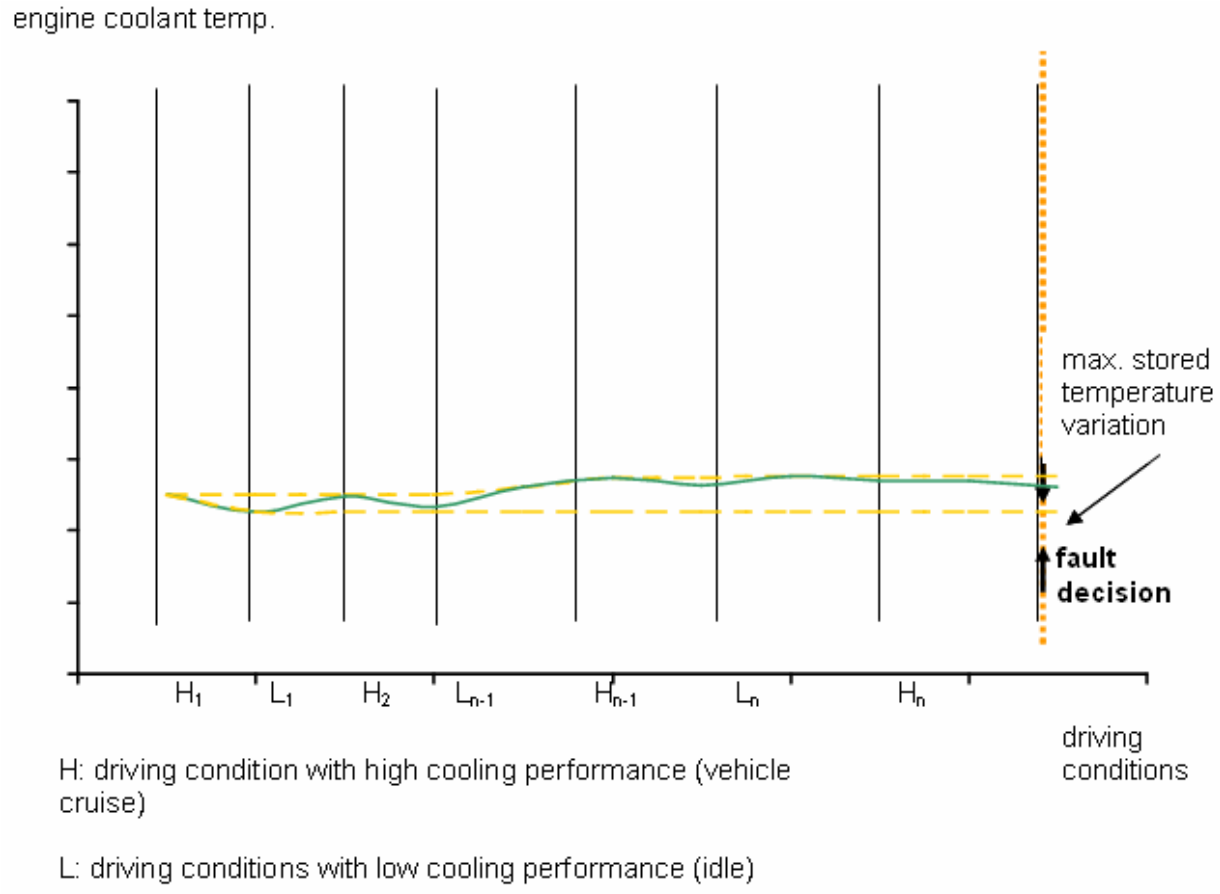


Figure 97: Coolant temperature Sensor Stuck Low Overview

Flow chart engine coolant temperature sensor stuck high (P0116)

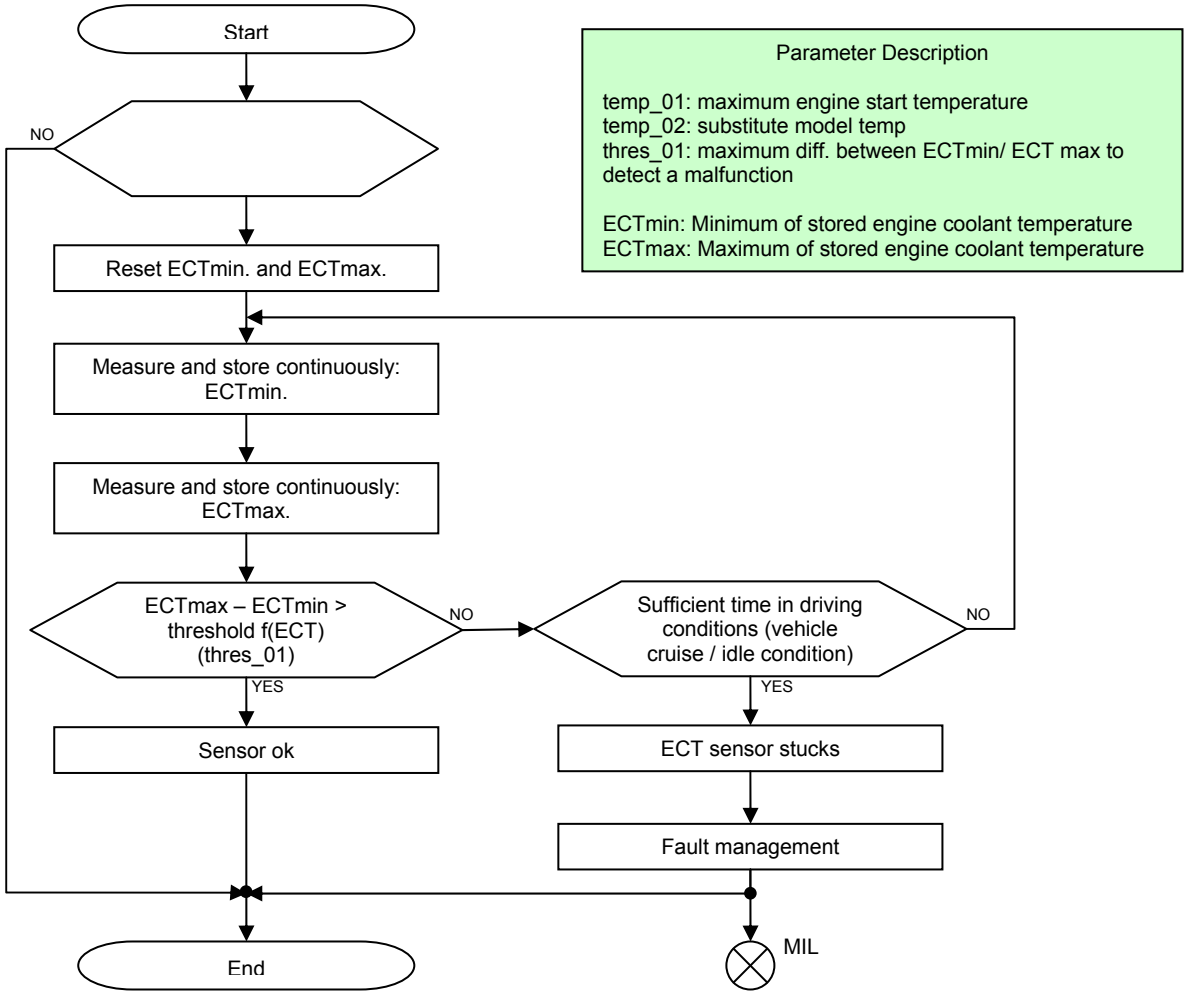


Figure 98: Flow chart engine coolant temperature sensor stuck high

10.2.5 Engine coolant temperature sensor extended stuck check (P0116)

After engine start the system stores continuously the lowest and highest ECT below the thermostat control temperature for a driving cycle. In case that after several driving conditions the difference between ECT max and ECT min is lower than the threshold the sensor stucks at low values.

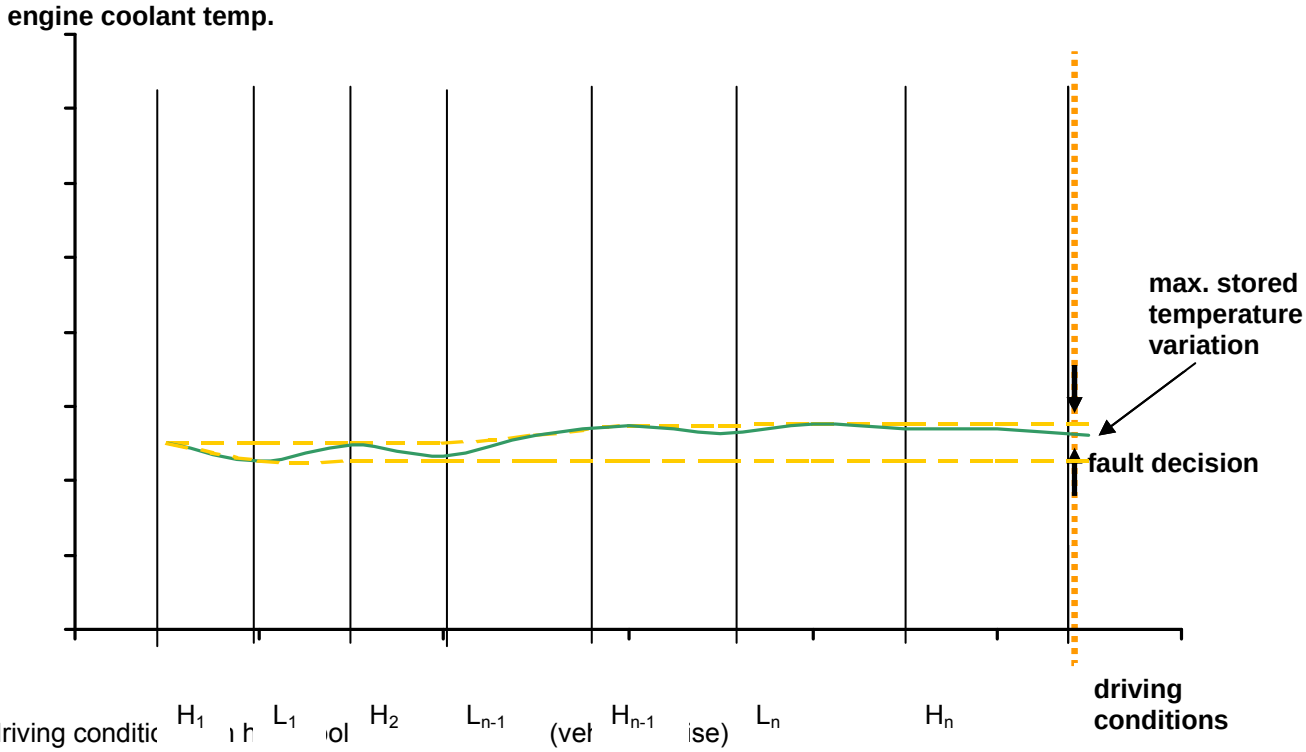


Figure 99: Engine coolant temperature sensor extended stuck check

Flow chart engine coolant temperature sensor extended stuck check (P0116)

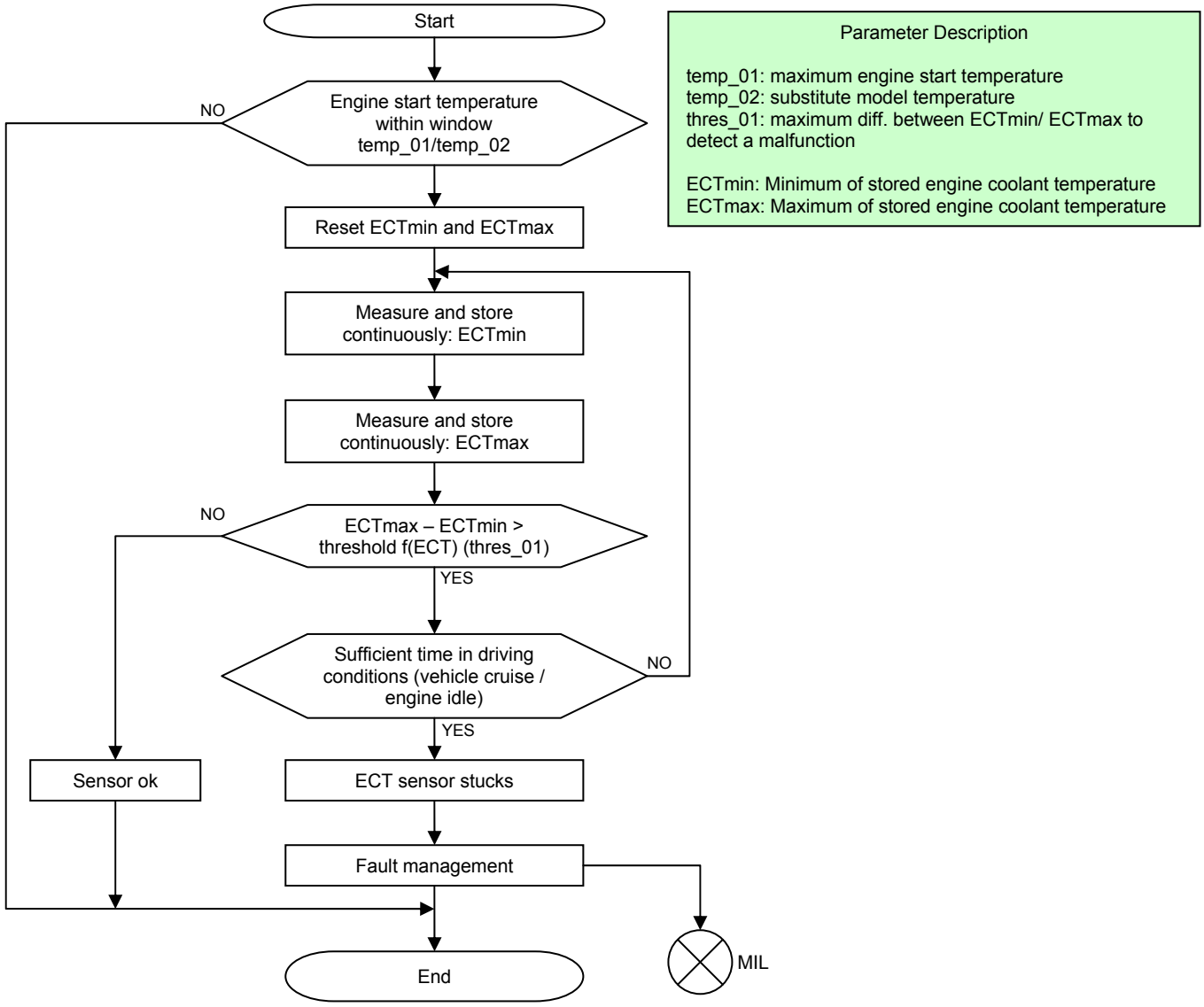


Figure 100: Flow chart engine coolant temperature sensor extended stuck check

Flow chart engine coolant temperature sensor stuck test (all temperatures above threshold) (P0116)

Monitoring of ECT during driving and during engine shut off time

Monitoring during driving – Part I –

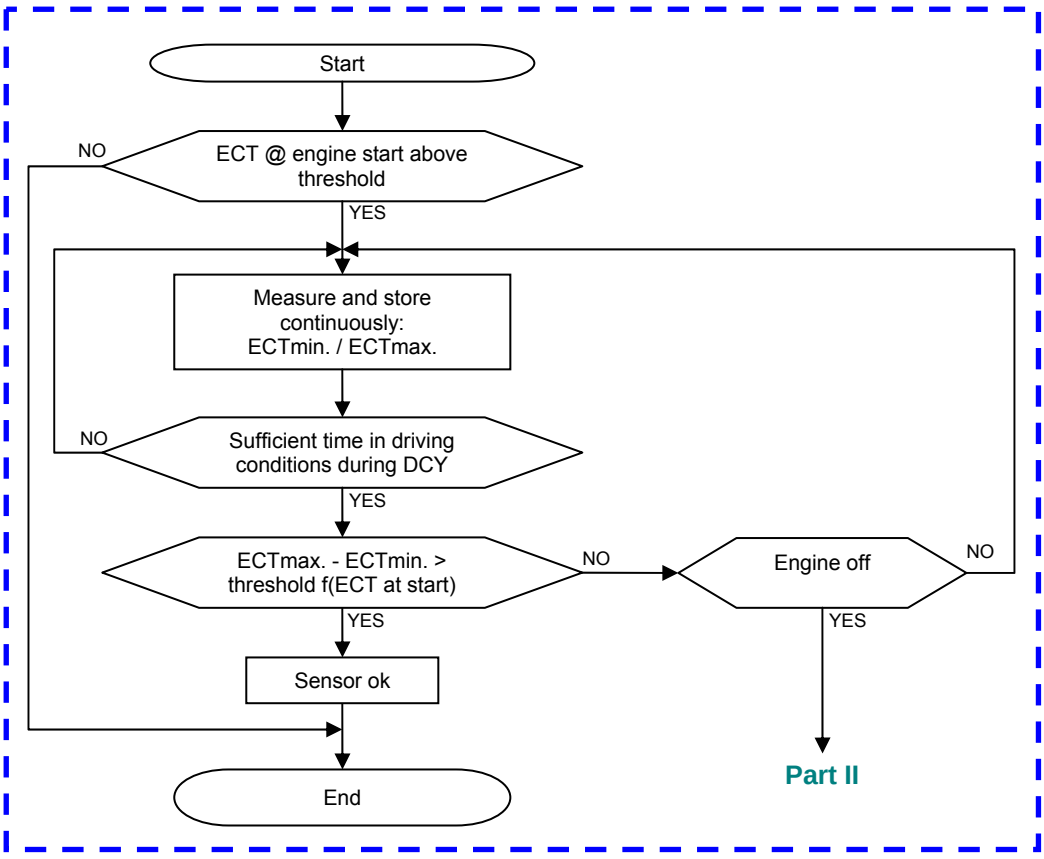


Figure 101: Flow chart monitoring of ECT during driving (part 1)

Monitoring after engine shut off – Part II –

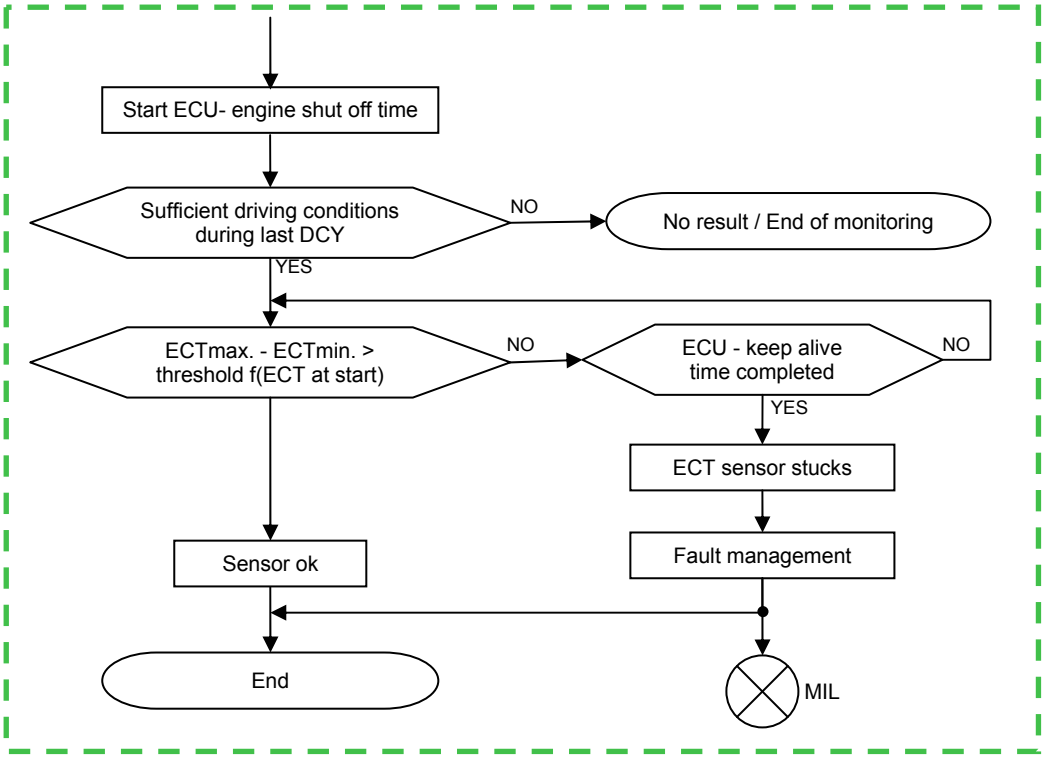


Figure 102: Flow chart monitoring after engine shut off (part 2)

10.2.6 Engine coolant temperature sensor out of range check (P0118 / P0117)

The signal of engine coolant temperature sensor is evaluated and considered to be electrically out of range if either the upper or the lower thresholds is exceeded.

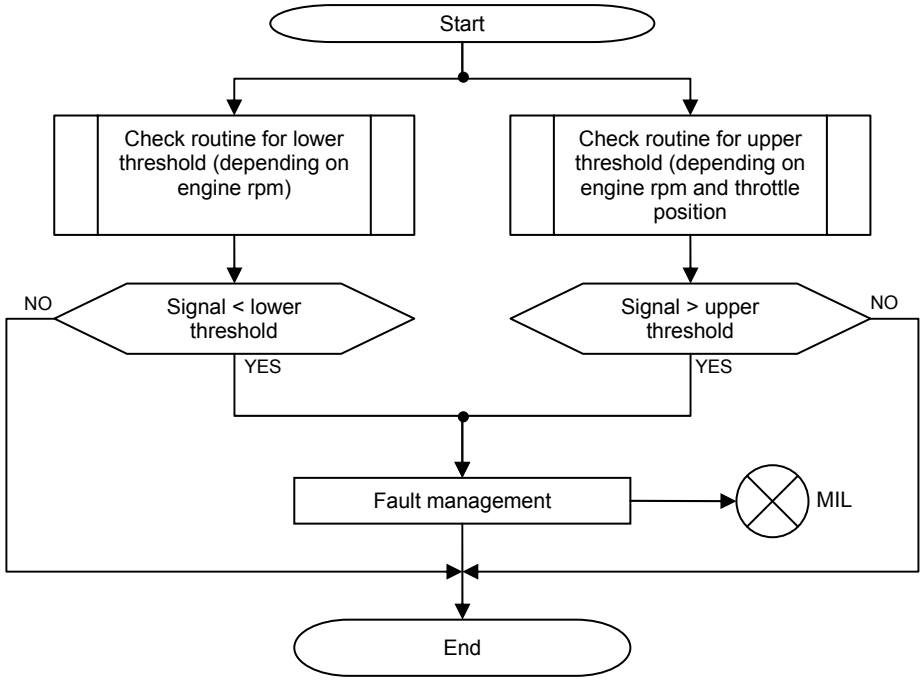


Figure 103: Flow chart engine coolant temperature sensor out of range check

10.2.7 Engine Coolant Temperature Sensor Rationality (P0116)

In case that the engine coolant temperature does not fit to a reference model temperature in a certain range, the cooling system is defective or the sensor is not in a plausible range. Refer to Figure 104 and Figure 105.

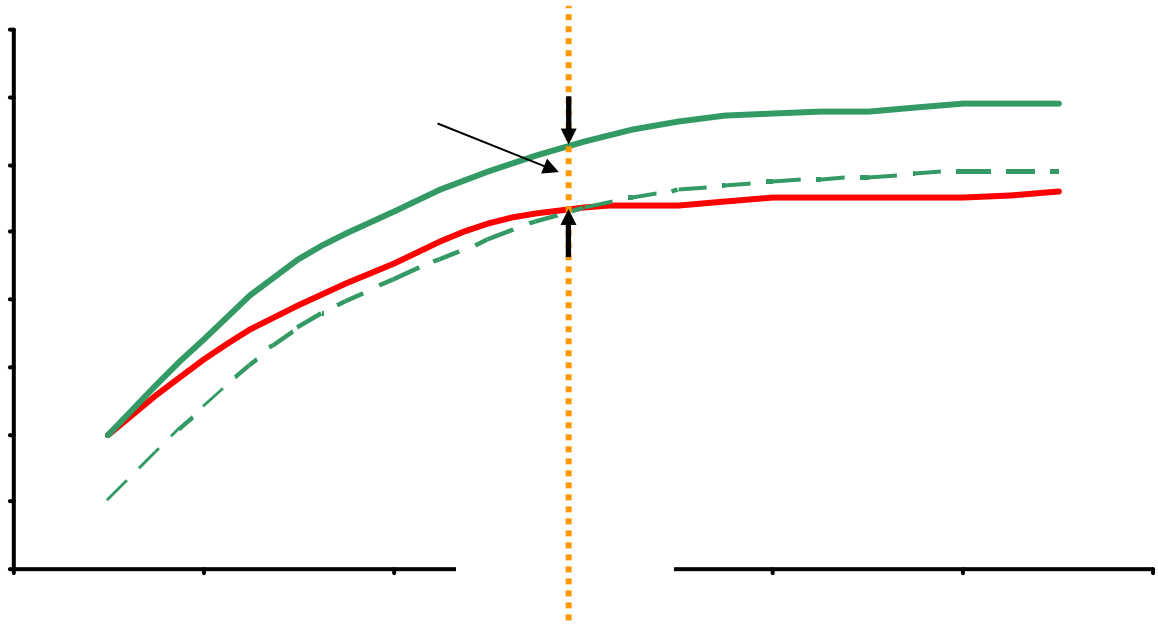


Figure 104: Coolant temperature Sensor Rationality Overview

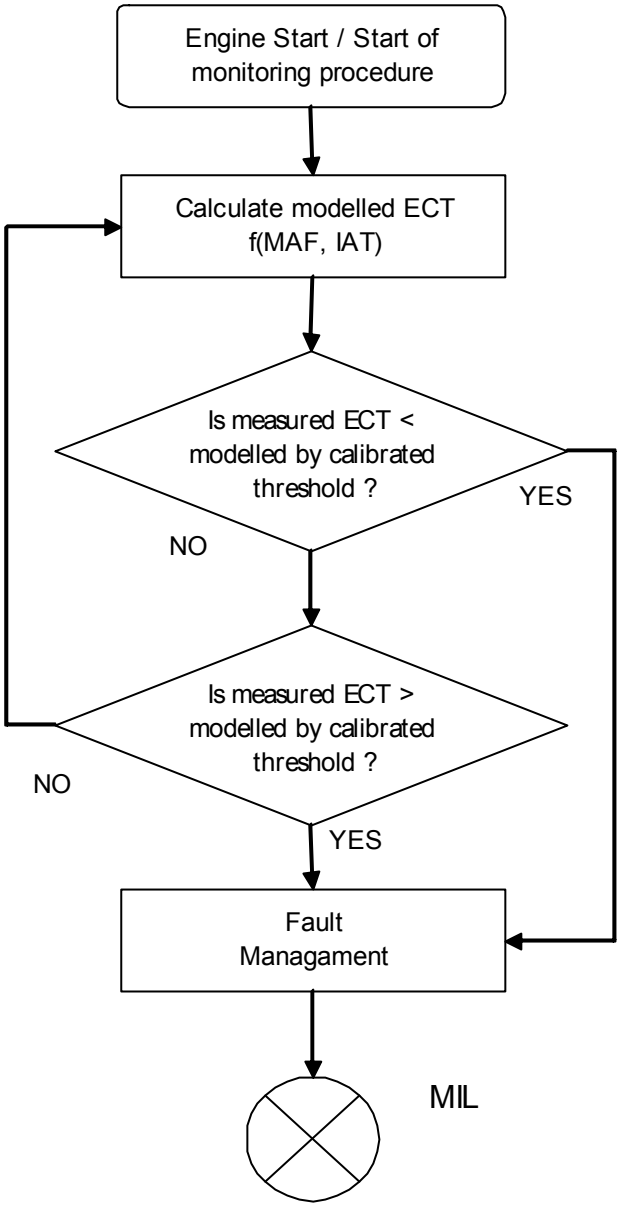
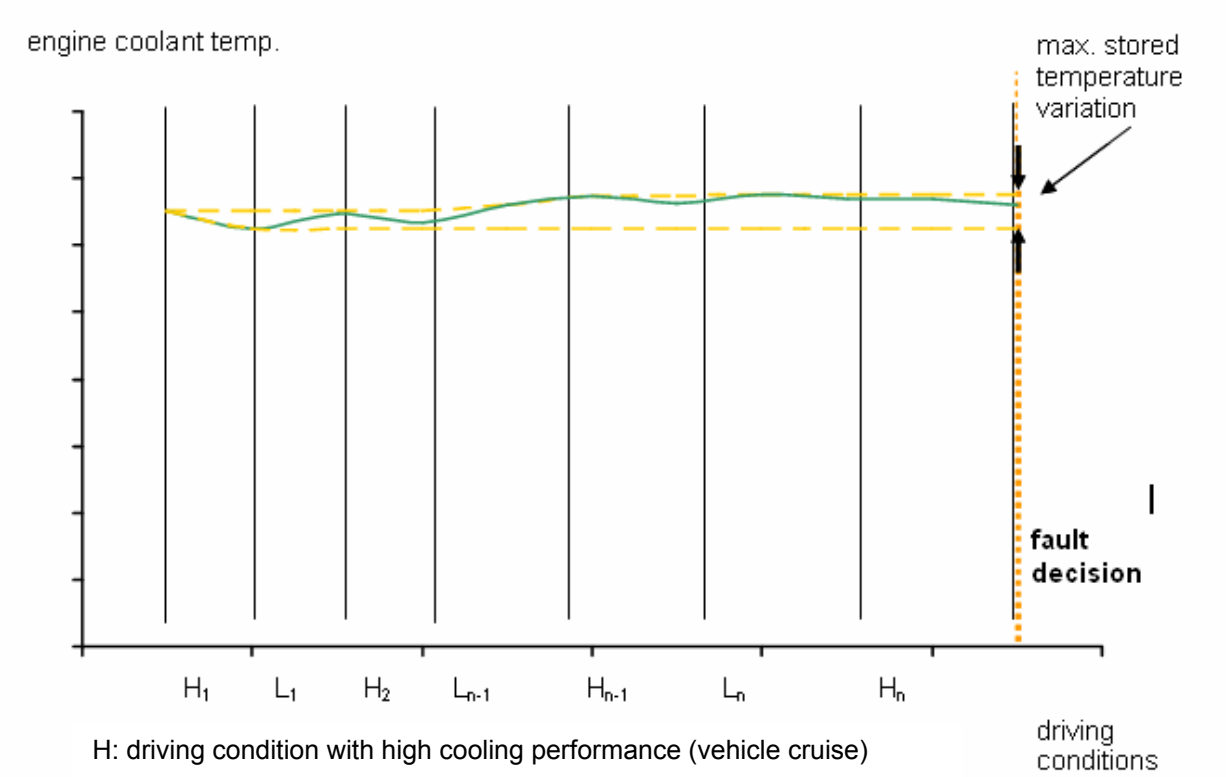


Figure 105: Flow Chart Coolant Temperature Sensor Rationality (P0116)

10.2.8 Engine Coolant Temperature Sensor Stuck (P0116)

After engine start the system stores continuously the lowest and highest ECT above the thermostat control temperature for a driving cycle. In case that after several driving conditions the difference between ECT max and ECT min is lower than the threshold the sensor is stuck, independent of start temperature (Figure 106). Figure 107 is a flow chart of the function.



H: driving condition with high cooling performance (vehicle cruise)

L: driving conditions with low cooling performance (idle)

Figure 106: Coolant temperature Sensor Stuck Overview

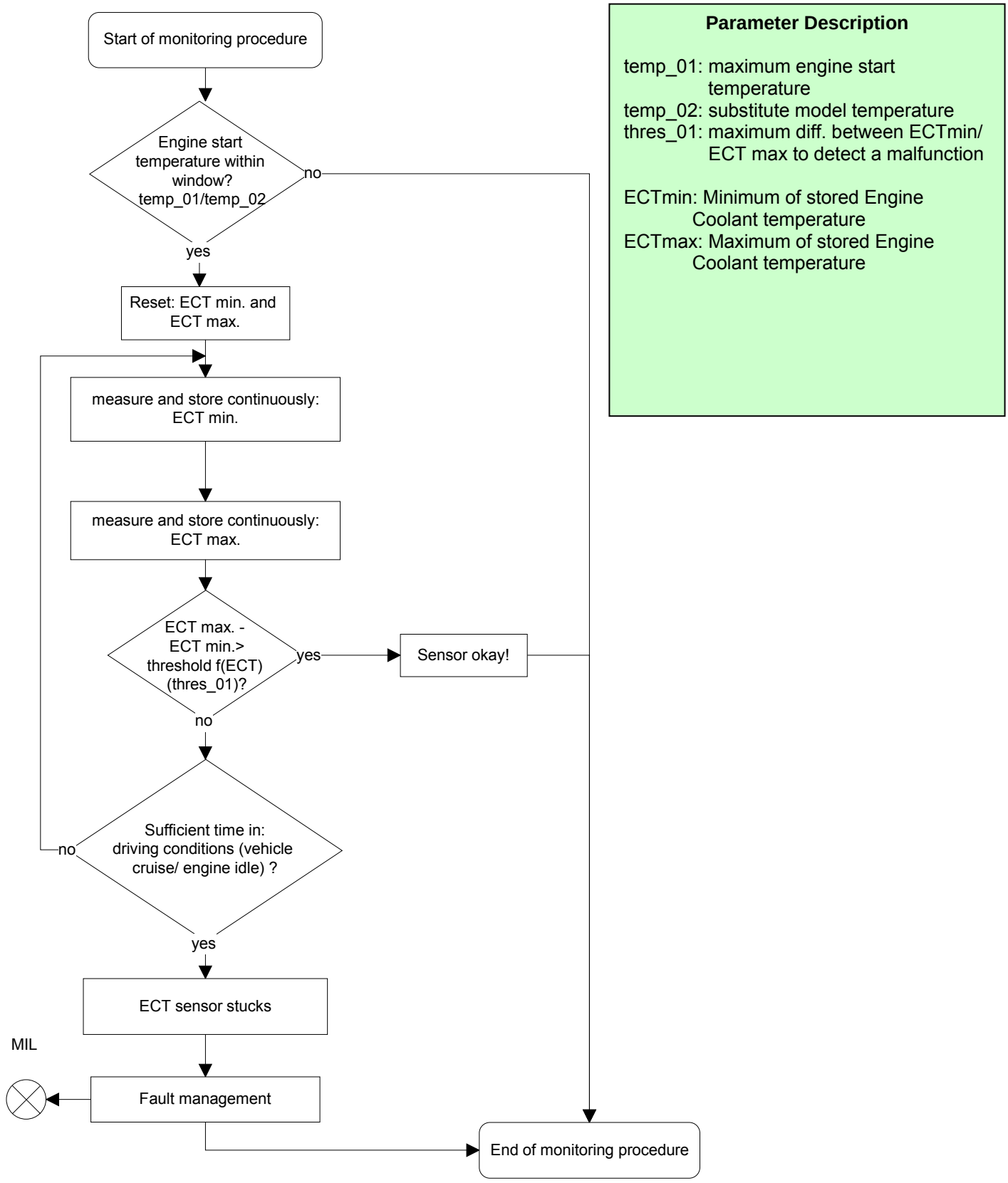


Figure 107: Flow Chart Engine Coolant Temperature Sensor Stuck (P0116)

10.2.9 Engine Coolant Temperature Sensor Out of Range Check (P0115 / P0117)

The signal of Engine Coolant Temperature Sensor is evaluated and considered to be electrically out of range if either the upper or the lower thresholds is exceeded.

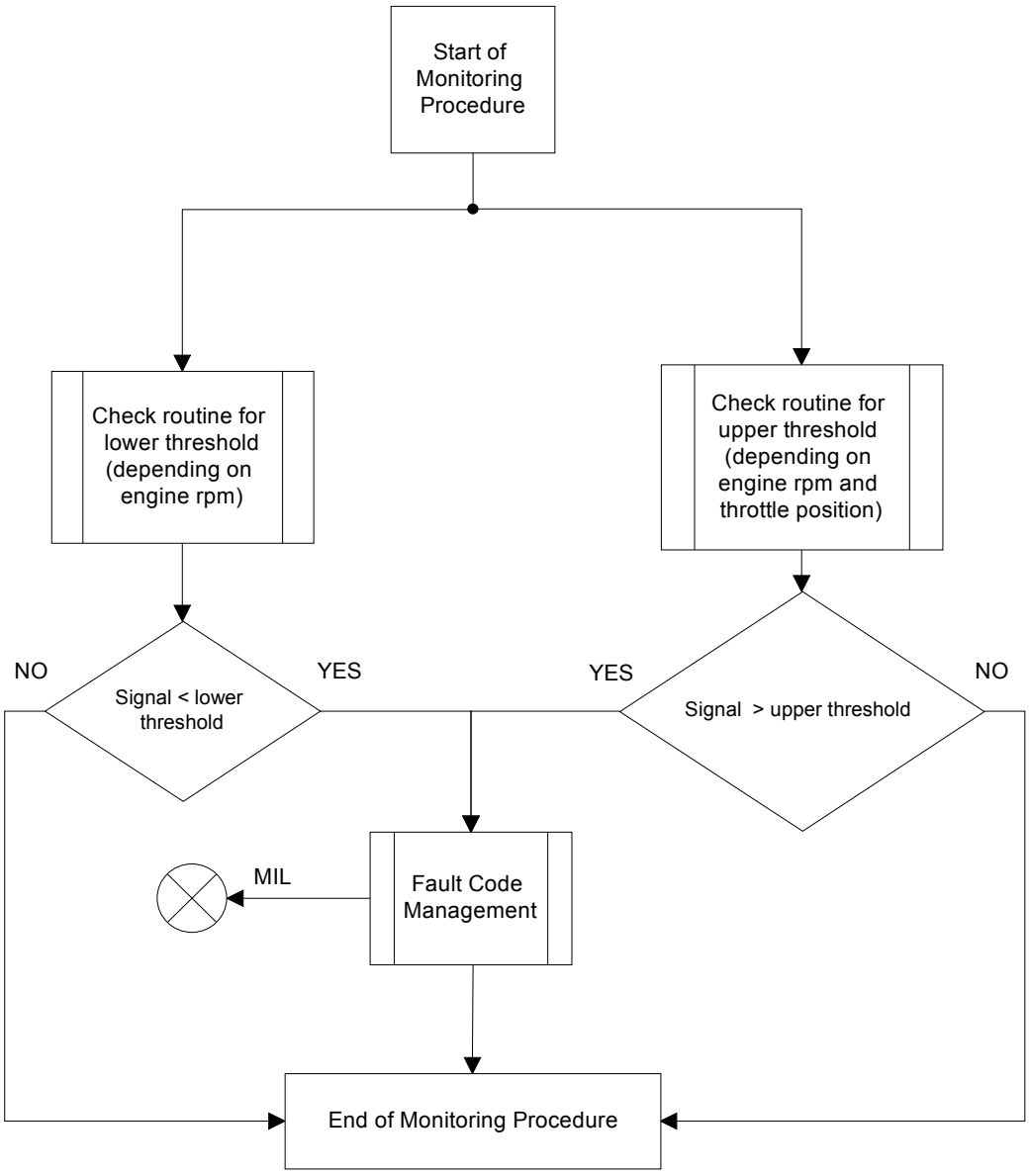


Figure 108: Flow Chart ECT Sensor Out of Range Check (P0115 / P0117)

11 COLD START EMISSION REDUCTION STRATEGY MONITORING

11.1 General Description

This strategy comprises several different measures, initiated by the ECM, in order to reduce cold start exhaust gas emissions. The key parameters in the cold start emission reduction strategy (CSERS) are controlled by components which are included in and covered by the OBD II system. Any malfunction of one of these components would be indicated by the MIL.

The strategy is utilized to attain the catalyst operating temperature as quickly as possible. In terms of emission control, the cold start phase corresponds to the catalyst heating phase:

- The idle speed is increased within the specially defined “engine idle state” during the cold start phase. This measure is called “catalyst-heating idle speed increase” (refer to chapter 15.4.2)
- The ignition timing is retarded during the entire cold start phase
- The VVT camshaft timing is adapted in order to achieve optimum cylinder charging efficiency (refer to chapter 13.4)
- A cold-start specific high pressure adaptation in the fuel system is executed (refer to chapter 6.3.3)

These cold start measures are monitored by comparing the individual measured values/ranges to modeled values/ranges. Error detection is based on identifying deviations that result from these comparisons.

The following components influence the key parameters for the warm-up strategy:

1. Injection valves
2. Throttle unit
3. MAF / MAP
4. Ambient pressure sensor
5. Intake air temperature sensor
6. Ignition coils
7. Variable valve timing system
8. Camshaft/crankshaft alignment
9. Phase sensor
10. Engine speed sensor
11. Fuel pressure sensor

11.2 Monitoring function description

All of the components listed above are monitored by the OBD system during cold start at least for circuit continuity.
The components with influence on injection and ignition are also monitored by the misfire diagnostic function during the cold start. For all concepts which are not applied to chapter 11.4 a pull-back on ignition retard is allowed only in certain range during a cold start condition. This range will be determined by definition of the maximum value for ignition retard.

11.3 Parameters of cold start condition

The parameters which determine cold start conditions are:
1. Mass air integral below threshold
2. Engine coolant start temperature within a range
3. Altitude below threshold

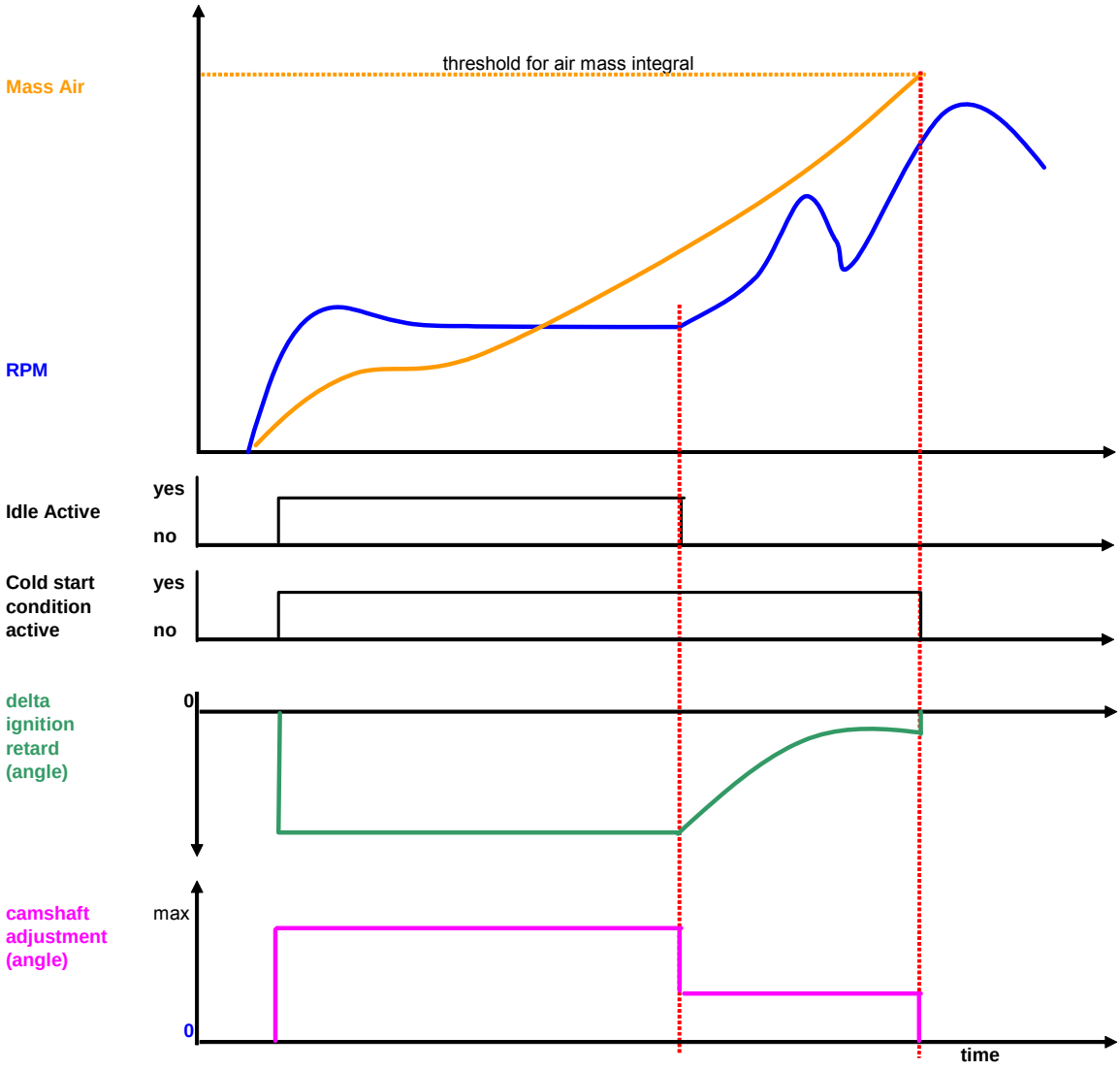


Figure 109: Cold start emission reduction strategy monitoring

11.4 Ignition timing monitor during cold start

The final ignition timing request is monitored, based on the ignition timing efficiency.
Monitoring of final commanded spark timing is based on monitoring spark efficiency during state “catalyst heating active”.
The spark timing monitor will be performed for two different engine operation modes:
“idle” and “off-idle” (minimum duration for each mode has to be exceeded).

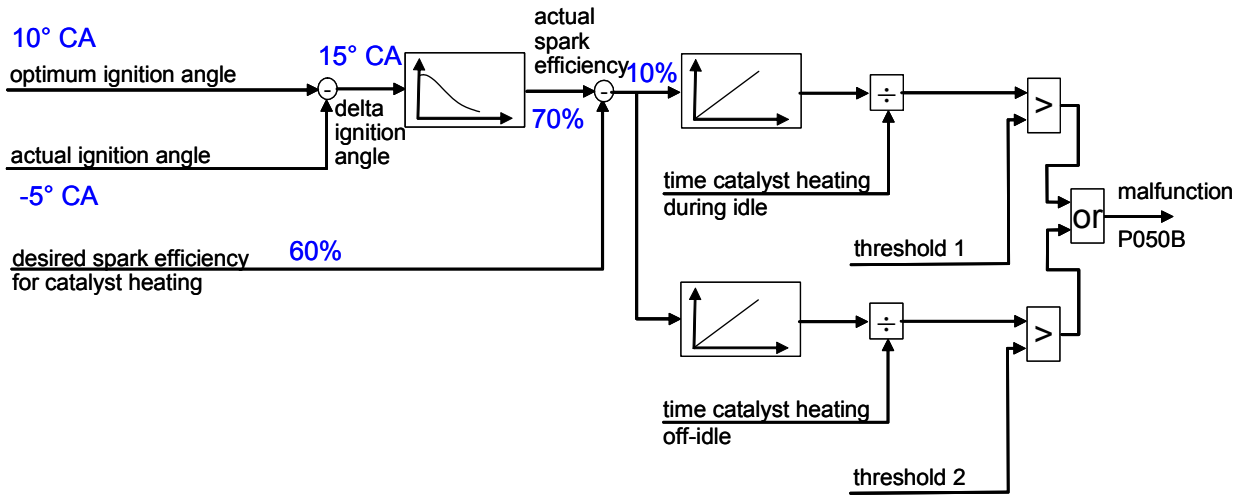


Figure 110: Overview - cold start ignition timing monitor

11.4.1 Signal Range Fault in Idle Speed Range: P050B

Monitoring Strategy
This monitoring function assesses whether the difference between the actual ignition timing efficiency and the setpoint ignition timing efficiency exceeds an upper defined threshold value in idle speed.

Enable Conditions
- Engine running in idle speed
- Ignition timing retard for catalyst heating is active
- Requested ignition timing efficiency < threshold value (enough spark retard commanded)

Malfunction Criteria
The monitoring function is activated only when the requested ignition timing efficiency is low enough that the monitoring threshold can be exceeded when a malfunction is present.
To detect a fault, the difference between the actual ignition timing efficiency and the setpoint ignition timing efficiency is integrated, and the corresponding time accumulated to generate a quotient of these two values in a later phase. The calculation of the integrator value and the time counter is temporarily stopped when the setpoint ignition timing efficiency exceeds a calibrated threshold value. As soon as the efficiency is again below this threshold value, the integration and the time counter are continued.
When a calibrated minimum dwell time in idle speed is reached and the catalyst heating phase has ended, the value of the quotient described above is determined and used as a basis for assessing faults. When the value of this quotient exceeds a calibrated threshold, a fault is detected.

Flowchart

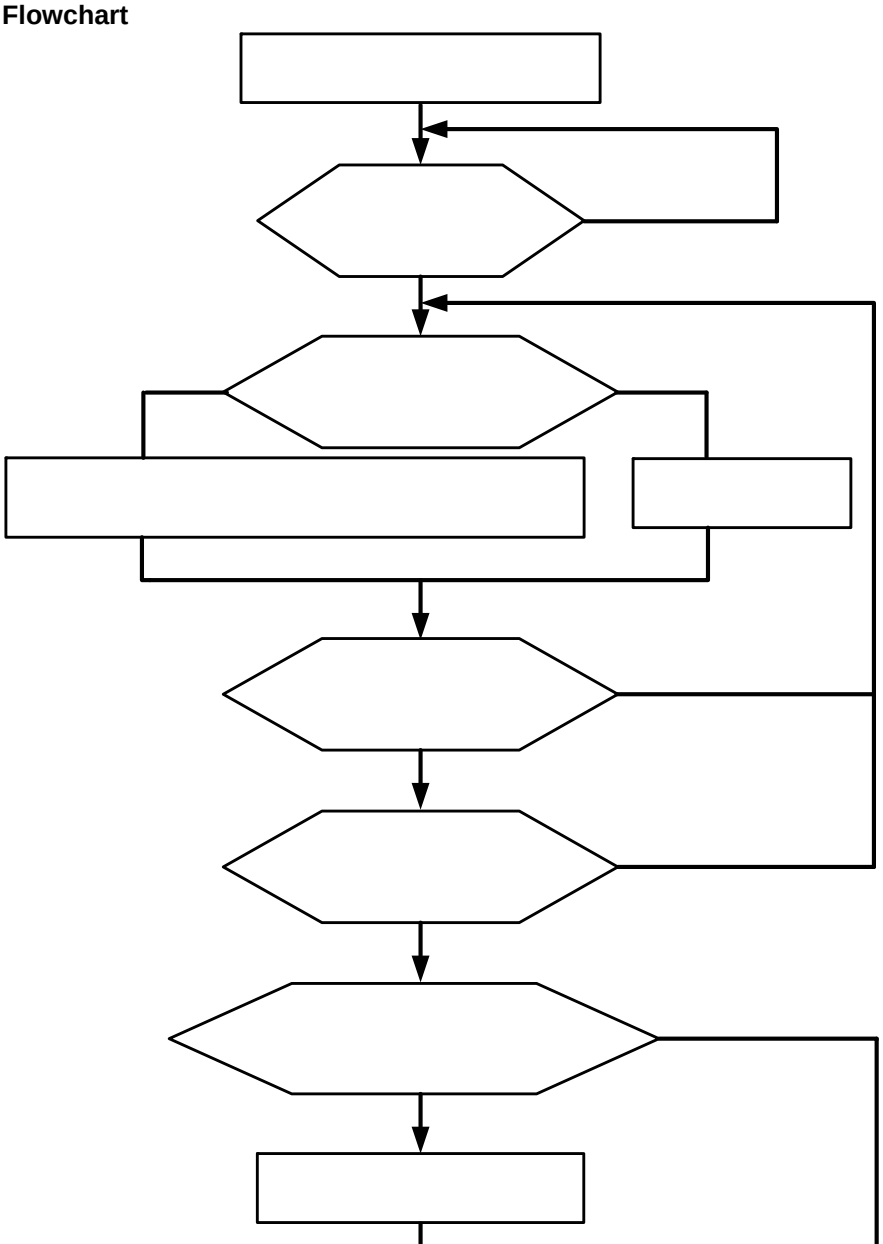


Figure 111: Flow chart ignition timing monitoring - idle speed

In-use monitoring performance ratio

Incrementing the numerator:
The numerator is incremented when the conditions for the defined "idle speed" operating state are fulfilled for longer than a calibratable minimum dwell time, and when the catalyst heating is completed.
Incrementing the denominator:
The denominator is incremented when the conditions for incrementing the general denominator are fulfilled, and when, in accordance with CCR (d) (4.3.2.) (E) (ii), retarded ignition timing for catalyst heating has been active for a cumulative time greater than or equal to ten seconds.

11.4.2 Signal Range Fault in Off-Idle Operation: P13EA

Monitoring Strategy
This monitoring function assesses whether the difference between the actual ignition timing efficiency and the setpoint ignition timing efficiency exceeds an upper or falls below a lower defined threshold.

Enable Conditions
- Engine running in off-idle
- Ignition timing retard for catalyst heating active
- Requested ignition timing efficiency < threshold value (enough spark retard commanded)

Malfunction Criteria
The monitoring function is activated only when the requested ignition timing efficiency is low enough that the monitoring threshold can be exceeded when a malfunction is present.
To detect a fault, the difference between the actual ignition timing efficiency and the setpoint ignition timing efficiency is integrated, and the corresponding time is accumulated to generate a quotient of these to values in a later phase. The calculation of the integrator value and the time counter are temporarily stopped when the setpoint ignition timing efficiency exceeds a calibrated threshold value. As soon as the efficiency is again below this threshold value, the integration and the time counter are continued.
When a calibrated minimum dwell time in off-idle operation is reached and the catalyst heating phase has been completed, the value of the quotient described above is determined and used as a basis for assessing faults. When the value of this quotient exceeds a calibrated threshold, a fault is detected.

Flowchart

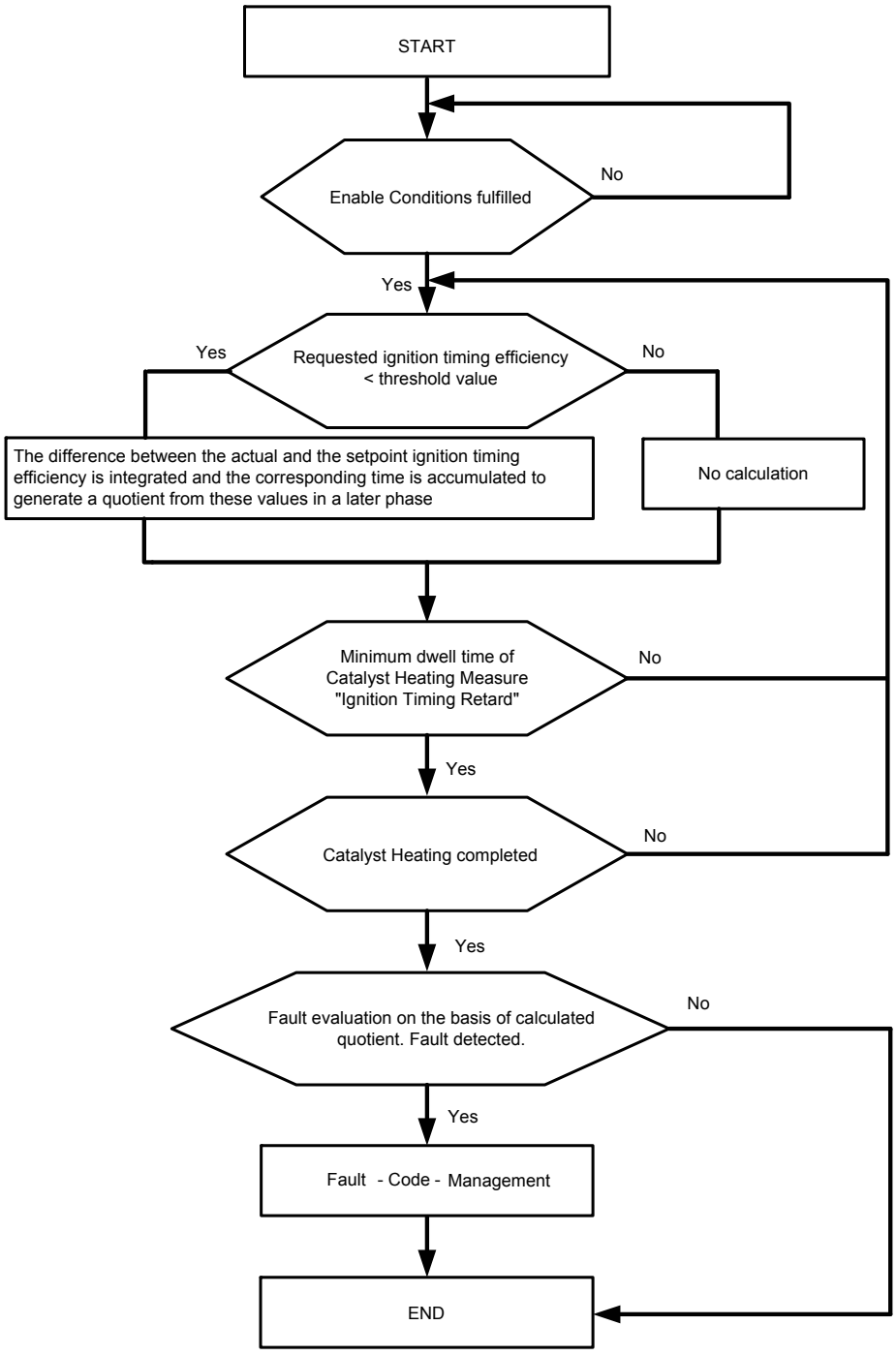


Figure 112: Flow chart ignition timing monitoring – off-idle

In-use monitoring performance ratio

Incrementing the numerator:

The numerator is incremented when the conditions for the defined "off-idle" operating state are fulfilled for longer than a calibrated minimum dwell time, and when catalyst heating is completed.

Incrementing the denominator:

The denominator is incremented when the conditions for incrementing the general denominator are fulfilled, and when, in accordance with CCR (d) (4.3.2.) (E) (ii), retarded ignition timing for catalyst heating has been active for a cumulative time greater than or equal to ten seconds.

12 AIR CONDITIONING (A/C) SYSTEM COMPONENT MONITORING

12.1 General Description

The engine control module recognizes the air conditioning status (on or off) as a torque request and compensates the engine torque demand accordingly.
The status of the air conditioning system does not result in use of a different strategy regarding ignition or fuel injection.
The components of the air conditioning system are not used for OBD functions and can not disable monitors.
This applies to both separate and integrated climatic control modules. Integrated climatic control modules may be a separated part of the ECM as “box in a box” unit.

12.2 Monitoring Concept

The air conditioning system is not monitored by the OBD II system for the following reasons:

- Sensors of the air conditioning system are not used within OBD as an input signal.
- Actuators of the air conditioning system are not used as an OBD output component.
- Air conditioning system components can not disable any of the OBD monitors.
- Any failure mode of the air conditioning system does not cause exhaust emissions to exceed 1.5 times the applicable standard.
- Possible failures of the air conditioning system may result in reduction or loss of cooling efficiency during SC03. In this case the vehicle runs with lower load and the emission would not increase.

Determination of the influence on exhaust emissions of the air conditioning (AC) under the condition of following failure modes:
1. AC switched/commanded on → AC compressor mechanically disabled
Result:
The FTP 75 / SC03 results are within normal variation on all concepts.
Therefore there is no other strategy used than the mentioned torque compensation.

2. AC switched/commanded off → AC compressor running always
Result:
The FTP 75 results are higher than the comparable results from a FTP 75 conducted according legal requirements caused by additional load. The FTP 75 results do not exceeded the applicable standard.
Therefore the failure modes of the AC do not exceed the criteria of “1.5 times of any applicable standard.

13 VARIABLE VALVE TIMING AND/OR CONTROL (VVT) SYSTEM MONITORING

13.1 Intake and Exhaust Camshaft Adjustment, Bank 1/2

13.1.1 General Description

The variable valve timing system allows displacement in a uniform direction of the valve timing of all the valves driven by each camshaft. Therefore the size and position of the valve overlap can be changed on engines with two overhead camshafts and adjusted to the individual gas exchange rate, thereby improving the operating characteristics at part load and full load.

Intake camshaft adjustment



Exhaust camshaft adjustment

Figure 113: Variable Valve Timing system

Monitoring of the camshaft adjustment continuously checks whether the camshaft adjustment angle reaches the setpoint value within a defined period of time following an adjustment request. At this point a distinction is made between two fault types: "camshaft adjustment too slow" and "camshaft adjustment setpoint value not attained".

13.1.2 Camshaft Adjustment Slow Response, P000A/P000B/P000C/P000D

Intake side, bank 1: P000A; intake side, bank 2: P000C
Exhaust side, bank 1: P000B; exhaust side, bank 2: P000D

Monitoring Strategy
The difference between the setpoint value and the actual value of the camshaft adjustment angle is compared against a threshold value at a defined point in time.

Enable Conditions
- Modeled oil temperature within a defined range
- Engine speed greater than threshold value
- Time after engine start greater than threshold value

Malfunction Criteria

If all enable conditions are fulfilled, a continuous comparison of setpoint and actual values will detect an adjustment request. If the difference between the setpoint and actual value exceeds a defined angle, the two values are stored. After a defined time interval the setpoint and actual values are compared again. If the difference between setpoint and actual values still exceeds a defined angle, a fault is diagnosed.

The setpoint values are continuously monitored from the time an adjustment request is detected until the fault diagnosis produces a result. If an adjustment request leads to a reversal of direction during this period, the current monitoring is canceled and restarted at the next adjustment request. If a fault is detected, the type of fault is determined after a defined monitoring period has elapsed. The actual value at the start of the monitoring is compared against the actual value at the end of the monitoring period. If the difference between the two actual values is greater than a defined threshold value, the fault "camshaft adjustment too slow" (slow response) is detected. If the threshold value is not exceeded, the fault "camshaft adjustment setpoint value not attained" (target error) is detected.

A fault is registered in the fault memory only if the fault has occurred a defined number of times, as ascertained by means of a fault counter that registers the monitoring results "camshaft adjustment too slow" and "camshaft adjustment setpoint value not attained". Following a fault entry the fault counter is reset.

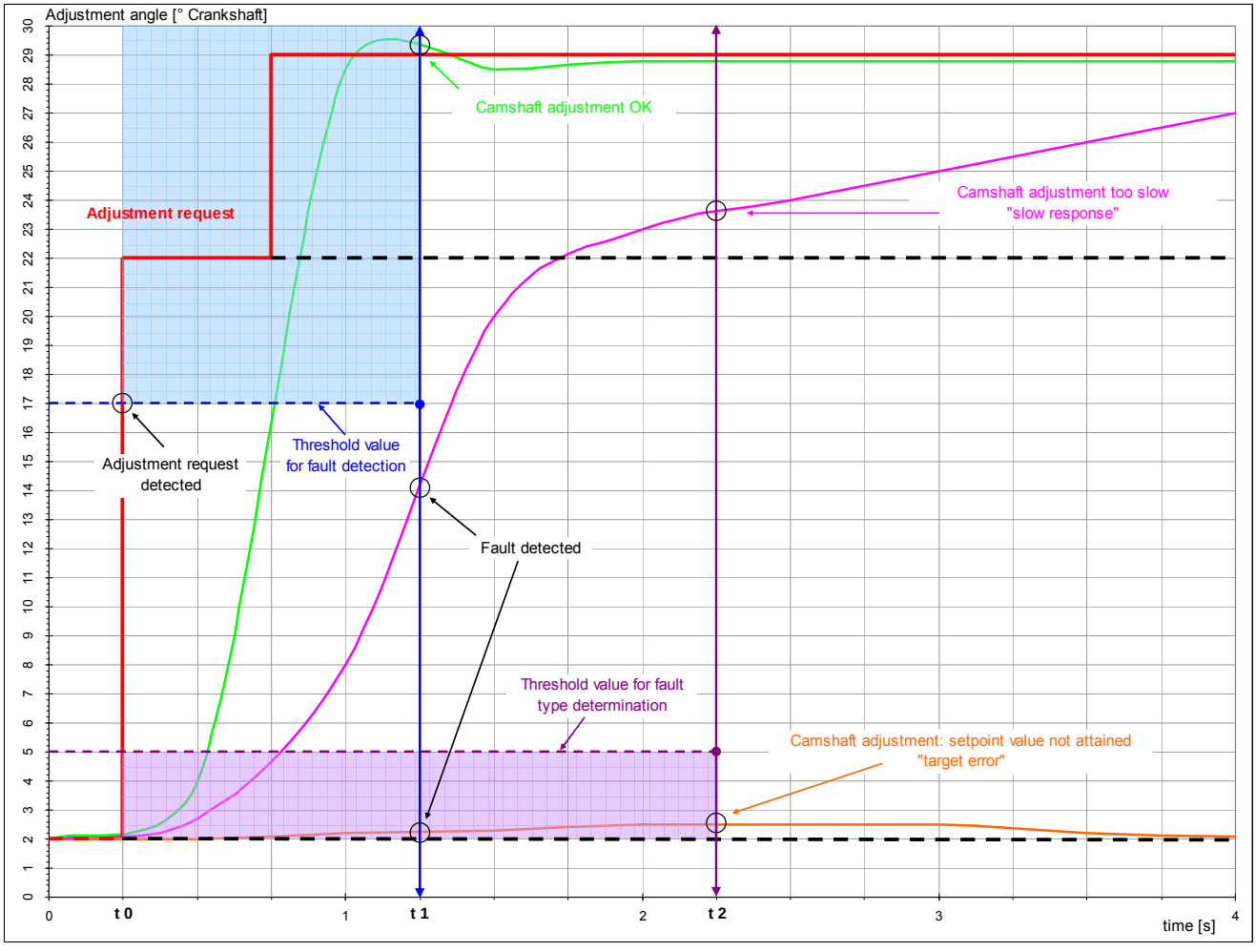


Figure 114: Camshaft adjustment monitoring mode of operation

Flowchart

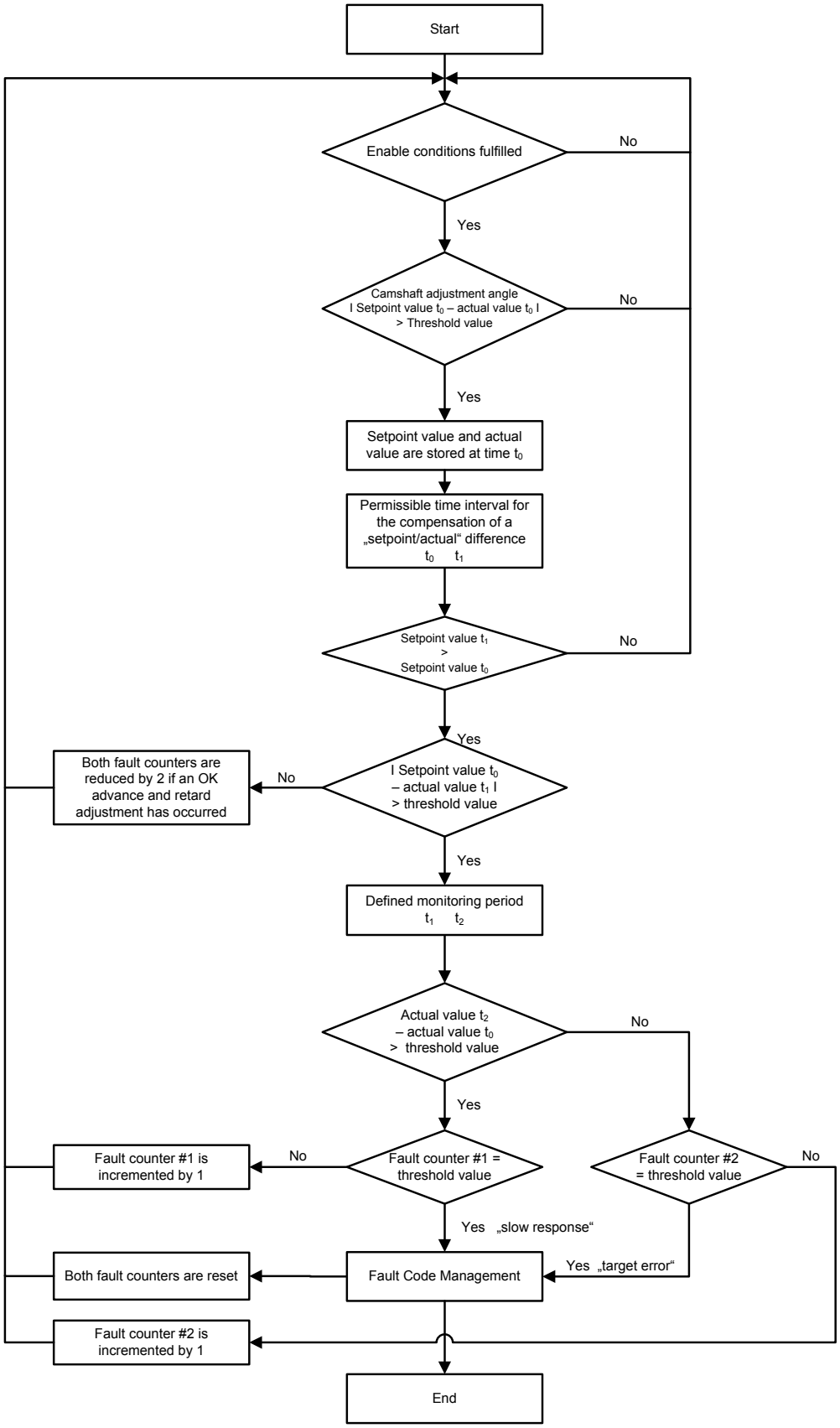


Figure 115: Flowchart of camshaft adjustment monitoring

In-Use Monitor Performance Ratio

Numerator:

The numerator is incremented by one after the cycle flag of the camshaft adjustment monitoring is set.

Denominator:

The denominator is incremented by one when the conditions for incrementing the general denominator according to CCR (d) (4.3.2.) (F) (ii) are fulfilled and the camshaft is changed by a defined value cumulatively for 10 s or twice for 2 s.

13.1.3 Camshaft Adjustment Target error, P0011/P0014/P0021/P0024

Intake side, bank 1: P0011; intake side, bank 2: P0021;
Exhaust side, bank 1: P0014; exhaust side, bank 2: P0024;

Monitoring Strategy

The difference between the setpoint value and the actual value of the camshaft adjustment angle is compared against a threshold value at a defined point in time.

Enable Conditions

- Modeled oil temperature within a defined range
- Engine speed greater than threshold value
- Time after engine start greater than threshold value

Malfunction Criteria

Monitoring of the camshaft adjustment continuously checks whether the camshaft adjustment angle reaches the setpoint value within a defined period of time following an adjustment request. At this point a distinction is made between two fault types: "camshaft adjustment too slow" and "camshaft adjustment setpoint value not attained".

If all enable conditions are fulfilled, a continuous comparison of setpoint and actual values will detect an adjustment request. If the difference between setpoint and actual values exceeds a defined angle, the two values are stored. After a defined time interval the setpoint and actual values are compared again. If difference between the setpoint and actual values still exceeds a defined angle, a fault is diagnosed.

The setpoint values are continuously monitored from the time an adjustment request is detected until the fault diagnosis produces a result. If an adjustment request leads to a reversal of direction during this period, the current monitoring is canceled and restarted at the next adjustment request. If a fault was detected, the type of fault is determined after a defined monitoring period has elapsed. The actual value at the start of the monitoring is compared against the actual value at the end of the monitoring period. If the difference between the two actual values is greater than a defined threshold value, the fault "camshaft adjustment too slow" (slow response) is detected. If the threshold value is not exceeded, the fault "camshaft adjustment setpoint value not attained" (target error) is detected.

A fault is registered in the fault memory only if the fault has occurred a defined number of times, as ascertained by means of a fault counter that registers the monitoring results "camshaft adjustment too slow" and "camshaft adjustment setpoint value not attained". Following a fault entry the fault counter is reset.

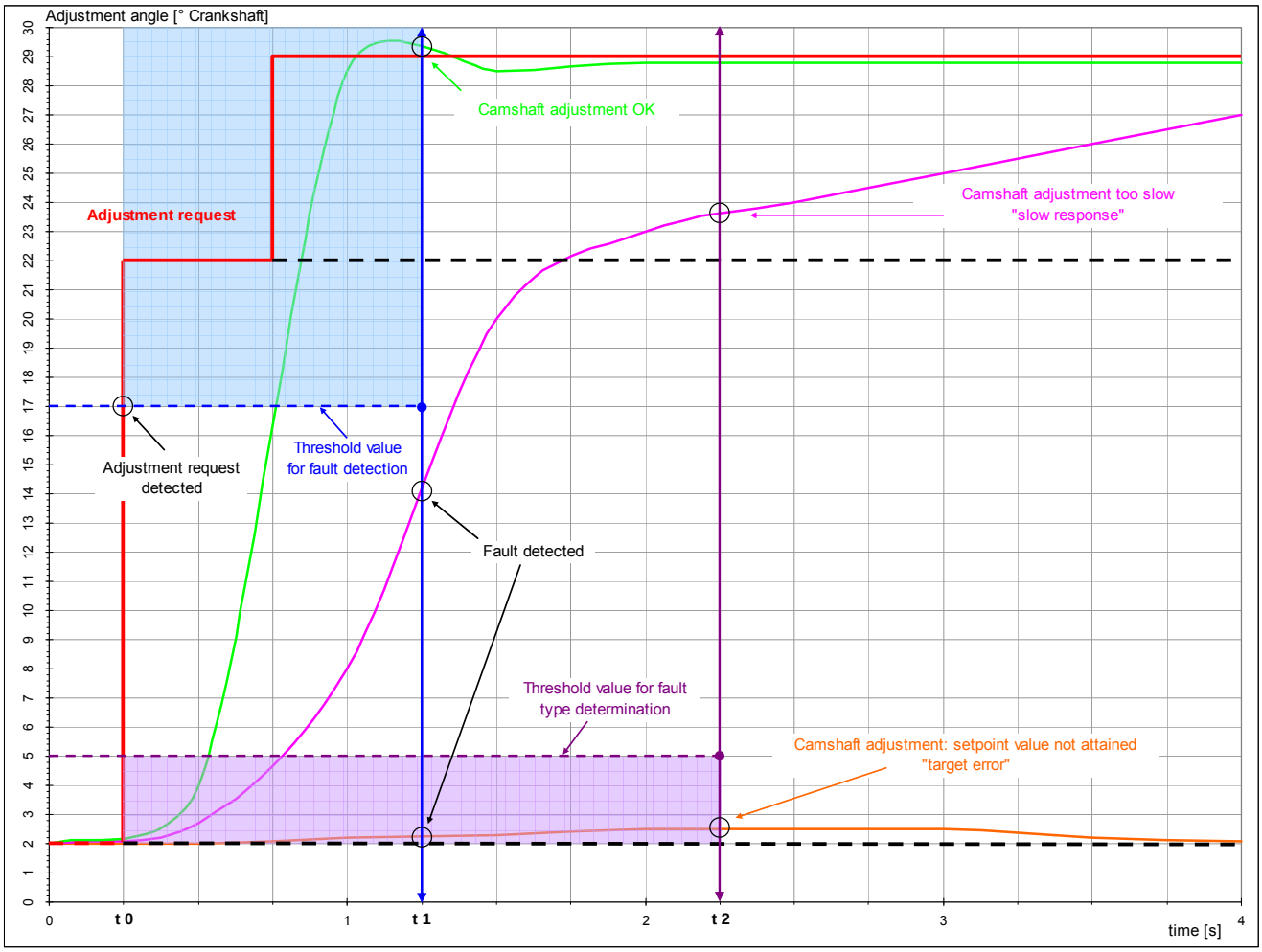


Figure 116: Camshaft adjustment monitoring mode of operation

Flowchart

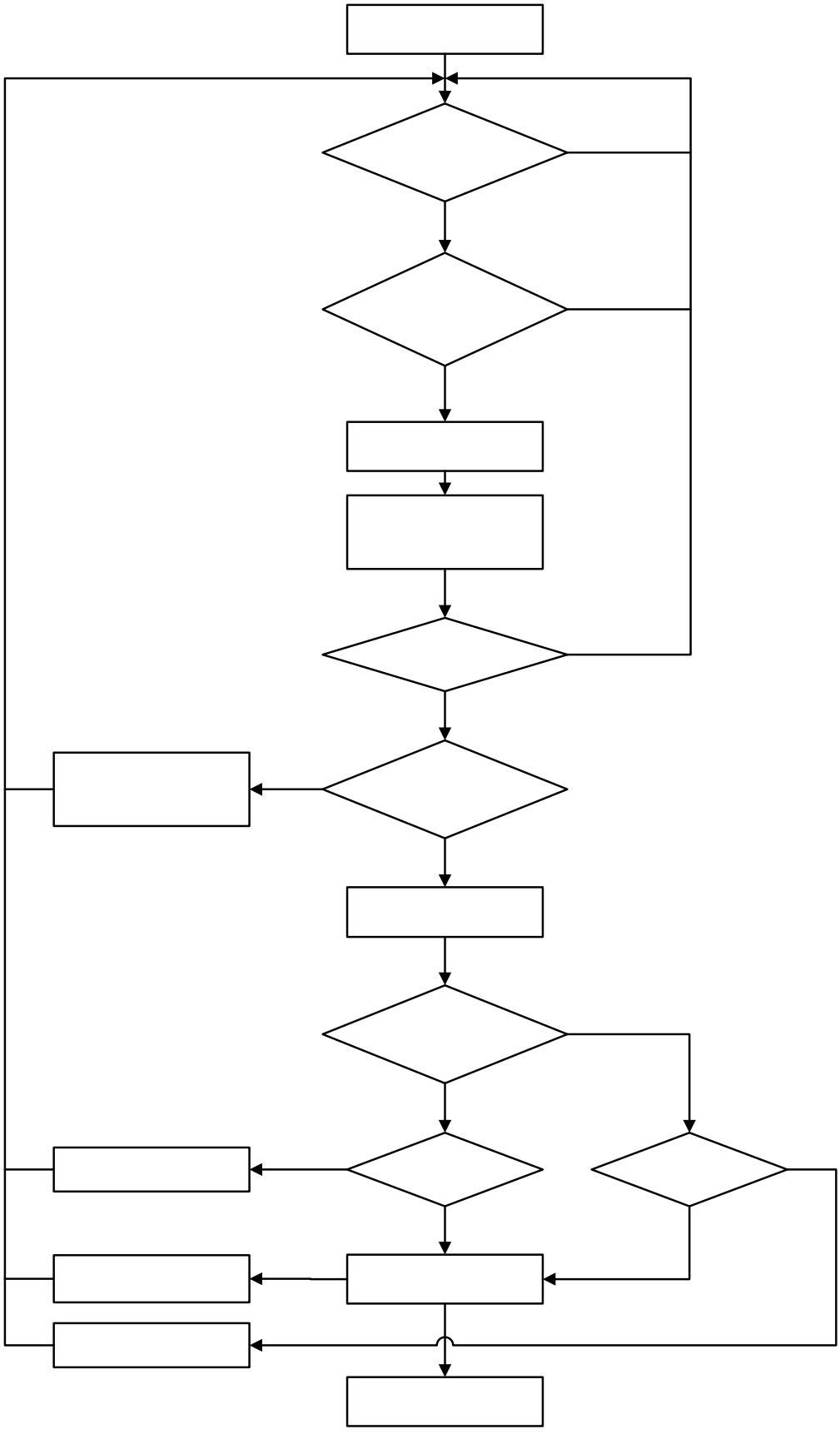


Figure 117: Flowchart of camshaft adjustment monitoring

In-Use Monitor Performance Ratio

Numerator:

The numerator is incremented by one after the cycle flag of the camshaft adjustment monitoring is set.

Denominator:

The denominator is incremented by one when the conditions for incrementing the general denominator according to CCR (d) (4.3.2.) (F) (ii) are fulfilled and the camshaft is changed by a defined value cumulatively for 10 s or twice for 2 s.

13.2 VVT system monitoring during cold start

The camshaft control is monitored by the camshaft timing monitoring function.
This function monitors whether the actual camshaft positions are close enough to the setpoint positions for the catalyst heating phase.

Signal Range Fault

Intake Side, Bank 1: P052A; Intake Side, Bank 2: P052C
Outlet Side, Bank 1: P054A; Outlet Side, Bank 2: P054C

Monitoring Strategy

This monitoring function assesses whether the difference between the actual camshaft position and the setpoint camshaft position exceeds an upper or falls below a lower defined threshold value for longer than a defined time period.

Enable Conditions

- Engine running
- Camshaft control activated
- Commanded camshaft timing correction for catalyst heating is active

Malfunction Criteria

A malfunction is detected when the camshaft actuator is blocked and the camshaft will not reach a setpoint value within a defined time period. To this purpose, the difference between the setpoint value and the actual value of each camshaft is compared to a calibrated threshold value which is determined based on the engine speed and the modeled oil temperature.

Flowchart

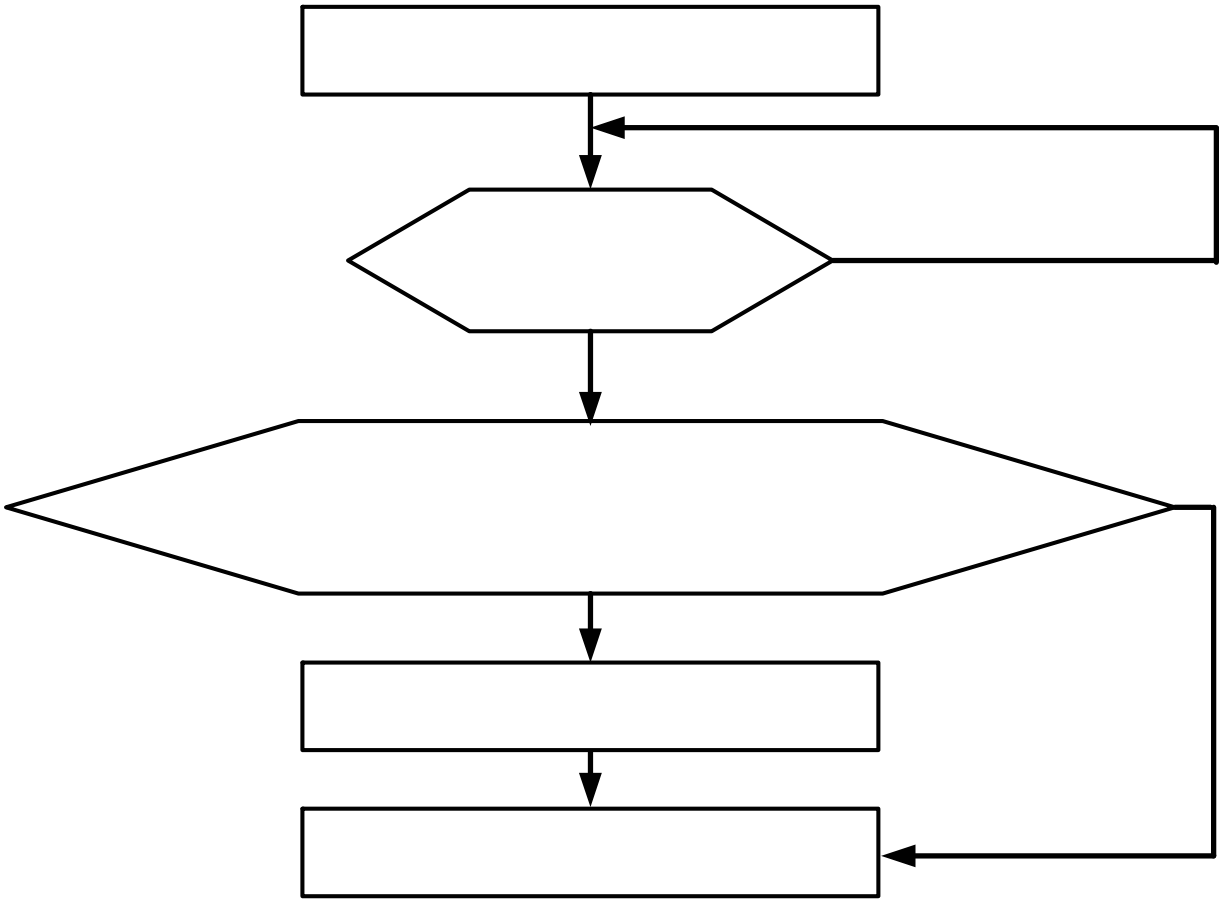


Figure 118: Flow chart camshaft monitoring, signal range

In-Use Monitoring Performance Ratio

Incrementing the Numerator:

The numerator is incremented when the engine is running, the camshaft control is activated, the catalyst heating phase is active, and the defined minimum waiting time of the diagnostic has elapsed.

Incrementing the Denominator:

The denominator is incremented when the conditions for incrementing the general denominator are fulfilled, and when, in accordance with CCR (d) (4.3.2.) (E) (ii), the commanded camshaft timing correction for catalyst heating has been active for a cumulative time greater than or equal to ten seconds.

Difference actual mi

14 COMPREHENSIVE COMPONENTS MONITORING

14.1 Injection valve

Check is performed while using 0
General Description

The gearbox is fitted with a oil temperature sensor, 2 rotation speed sensors (in/out), a shift lever sensor and 1 for reverse gear. Based on these sensors the diagnosis is checking if the gearbox is working correctly. For controlling the gearbox there are 7 pressure regulators and 2 magnetic valves necessary.
With the pressure regulators the clutches, the cooling, the system are controlled. The magnetic valves are need for the selection of the clutches. Also there's one valve for thermo management. BUS system is CAN.

1) Start Stop

For start stop function there is an Electrical oil pump needed. It is controlled via driver. The ATCU detects temperature and failure of EOP via CAN.

2) Plausibility Checks

2a) Shift lever diagnosis
Based on the driver action the movement of the shift lever were checked by the shift lever sensors with several plausibility checks. Also the sensors can detect manual shifting.

Output Stage Check

14.2 Ignition coil

Check is performed while using 0
General Description

The gearbox is fitted with a oil temperature sensor, 2 rotation speed sensors (in/out), a shift lever sensor and 1 for reverse gear. Based on these sensors the diagnosis is checking if the gearbox is working correctly. For controlling the gearbox there are 7 pressure regulators and 2 magnetic valves necessary.
With the pressure regulators the clutches, the cooling, the system are controlled. The magnetic valves are need for the selection of the clutches. Also there's one valve for thermo management. BUS system is CAN.

1) Start Stop

For start stop function there is an Electrical oil pump needed. It is controlled via driver. The ATCU detects temperature and failure of EOP via CAN.

2) Plausibility Checks

2a) Shift lever diagnosis
Based on the driver action the movement of the shift lever were checked by the shift lever sensors with several plausibility checks. Also the sensors can detect manual shifting.

Output Stage Check

14.3 Idle Speed Control

14.3.1 Idle Speed Control (warm engine)

14.3.1.1 General Description

The idle speed should be as constant as possible under any operating condition. It should be set so as to allow a fast throttle response while also maintaining optimum exhaust gas emission levels and fuel consumption. The idle speed control regulates the air mass provided to the engine at idle speed.

14.3.1.2 Engine Speed Less Than Setpoint Value – P0506

Monitoring Strategy

The difference between the setpoint engine idle speed and the actual engine idle speed is compared against a calibrated threshold value.

Enable Conditions

- Vehicle speed = 0 km/h
- Engine running at idle speed (accelerator pedal angle = 0)
- Altitude < 2700 m above sea level
- Engine temperature > threshold value
- Intake air temperature > threshold value

Malfunction Criteria

If the engine speed remains below the threshold value for longer than a defined time period, a fault is detected. A "low engine speed" fault is present if the difference between the setpoint engine speed and the actual engine speed remains greater than a positive threshold value for longer than a defined time period and if the integrator of the idle speed control has reached its maximum.

Flowchart

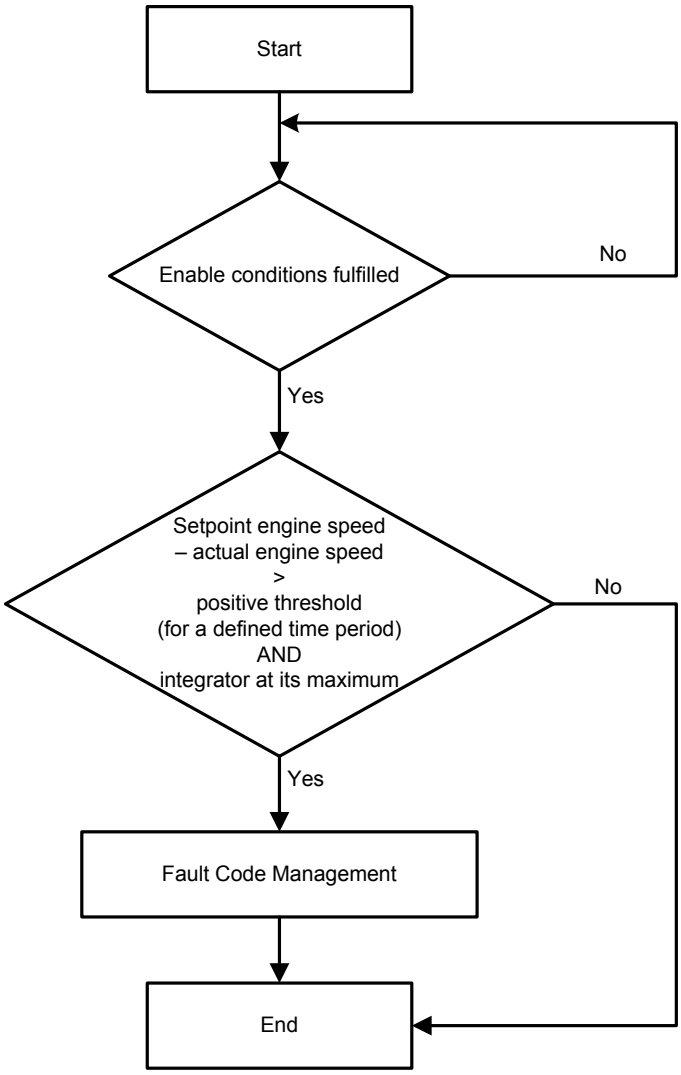


Figure 119: Engine speed below setpoint value – P0506

14.3.1.3 Engine Speed Greater Than Setpoint Value – P0507

Monitoring Strategy
The difference between the setpoint engine idle speed and the actual engine idle speed is compared against a calibrated threshold value.

Enable Conditions
- Vehicle speed = 0 km/h
- Engine running at idle speed (accelerator pedal angle = 0)
- Altitude < 2700 m above sea level
- Engine temperature > threshold value
- Intake air temperature > threshold value

Malfunction Criteria

If the engine speed remains greater than the threshold value for longer than a defined time period, a fault is detected. An "engine speed too high" fault is present if the difference between the setpoint engine speed and the actual engine speed remains below a negative threshold value for longer than a defined time period and if the integrator of the idle speed control has reached its minimum.

Flowchart

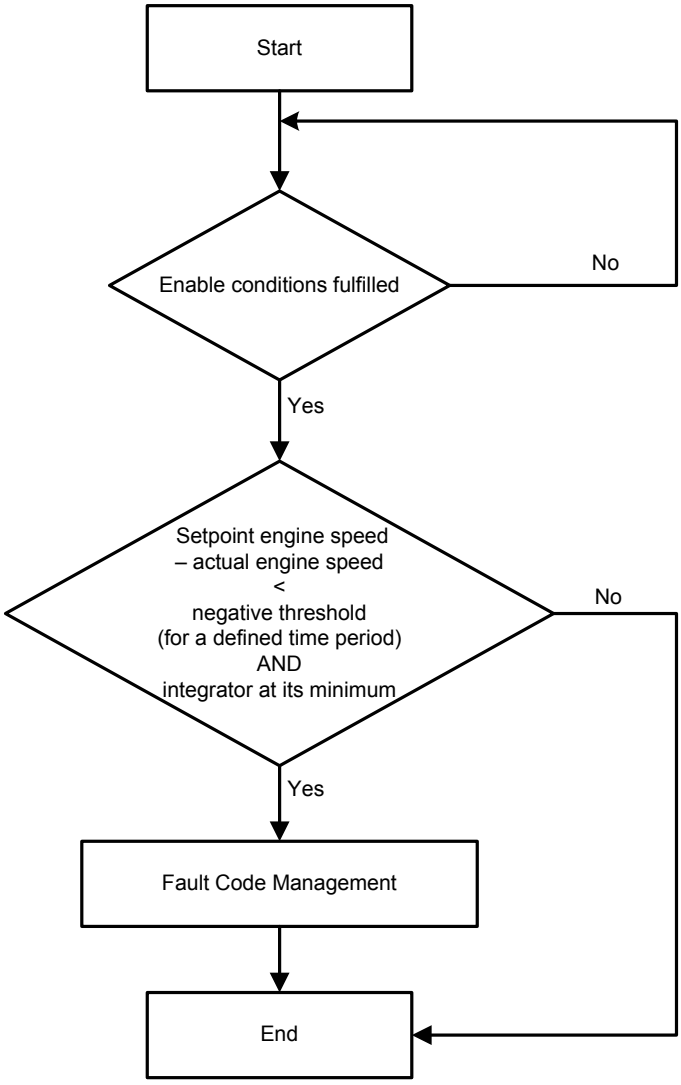


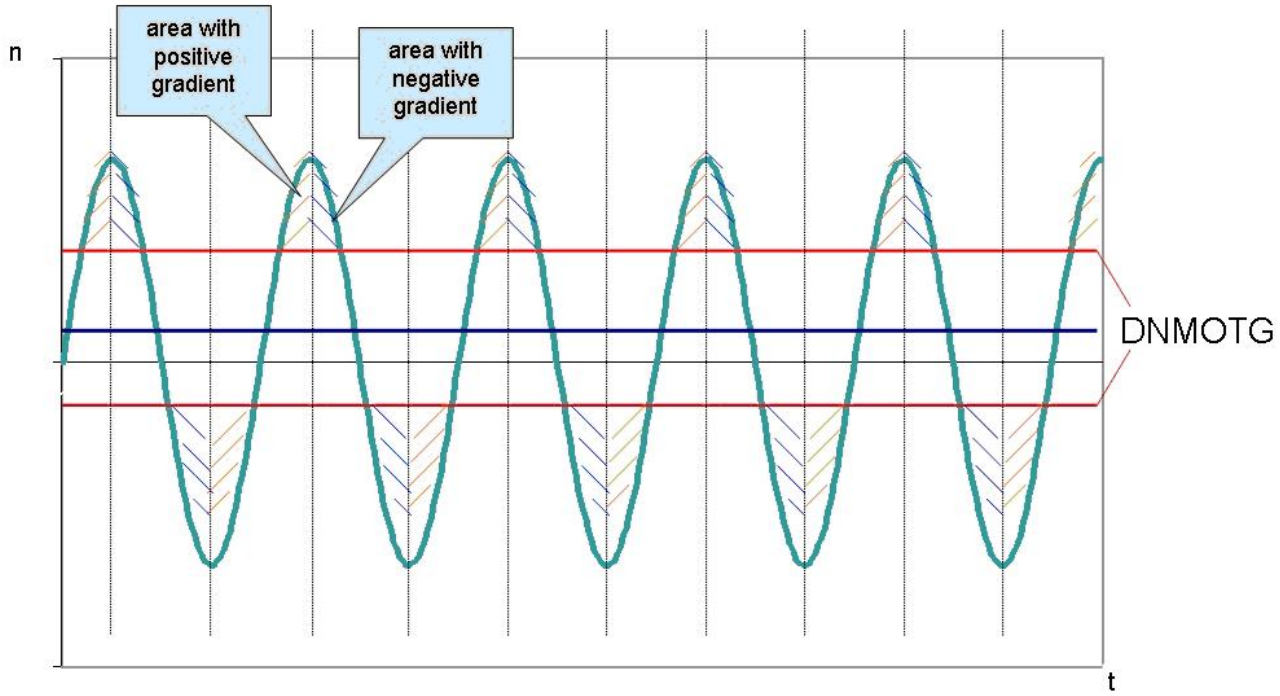
Figure 120: Engine speed greater than setpoint value – P0507

14.3.1.4 Rationality Fault – P0506

Monitoring Strategy
Monitoring for engine surges or impermissible engine speed oscillations

Enable Conditions
- Vehicle speed = 0 km/h
- Engine running at idle speed (accelerator pedal angle = 0)
- Altitude < 2700 m above sea level
- Engine temperature > threshold value
- Intake air temperature > threshold value

Malfunction Criteria
A rationality fault is detected when engine speed oscillations greater than the setpoint idle speed oscillation repeatedly occur and the total sum of the areas formed by these positive and negative engine speed gradients exceeds a calibrated threshold (see illustration below).



DNMOTG: Setpoint idle speed oscillation

Figure 121: Fault detection of engine surges or engine speed oscillations - rationality fault

Flowchart

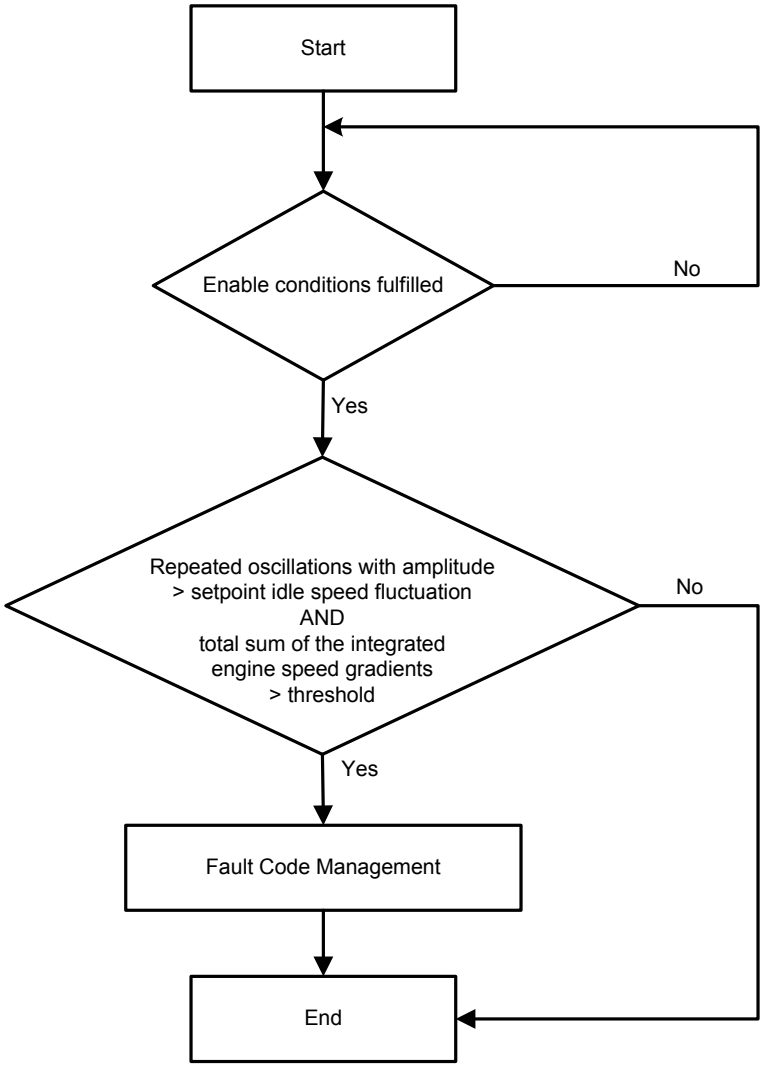


Figure 122: Rationality fault – P0506

In-Use Monitor Performance Ratio

Incrementing the numerator

The numerator is incremented when the dwell time at idle speed that would be necessary for the integration part of the idle controller to reach its maximum given an existing fault has elapsed and the additional waiting period of the diagnostic has elapsed.

Incrementing the denominator

The denominator is incremented when the conditions for incrementing the general denominator in accordance with CCR (d) (4.3.2.) (E) (ii)) are fulfilled.

14.3.2 Idle control check during cold start

The idle speed increase helps the catalyst reach its operating temperature faster by completing more combustion cycles per time unit than in normal idle speed and thus achieving higher mass air flow rates.

14.3.2.1 Signal Range Fault: P050A

Monitoring Strategy
The engine speed must not exceed the upper threshold value or fall below the lower threshold value for longer than a defined time period.

Enable Conditions
- Altitude less than 2700 meters above sea level
- Engine running in idle speed (accelerator pedal position = 0)
- Vehicle speed = 0
- catalyst heating active

Malfunction Criteria
A malfunction is detected when the engine speed exceeds the upper or falls below the lower threshold value for longer than the defined time period. An overspeed malfunction is detected when the difference between the actual engine speed and the setpoint engine speed exceeds the upper threshold value for longer than a defined time period.
An underspeed malfunction is detected when the difference between the actual engine speed and the setpoint engine speed falls below the lower threshold value for longer than a defined time period.

Flowchart

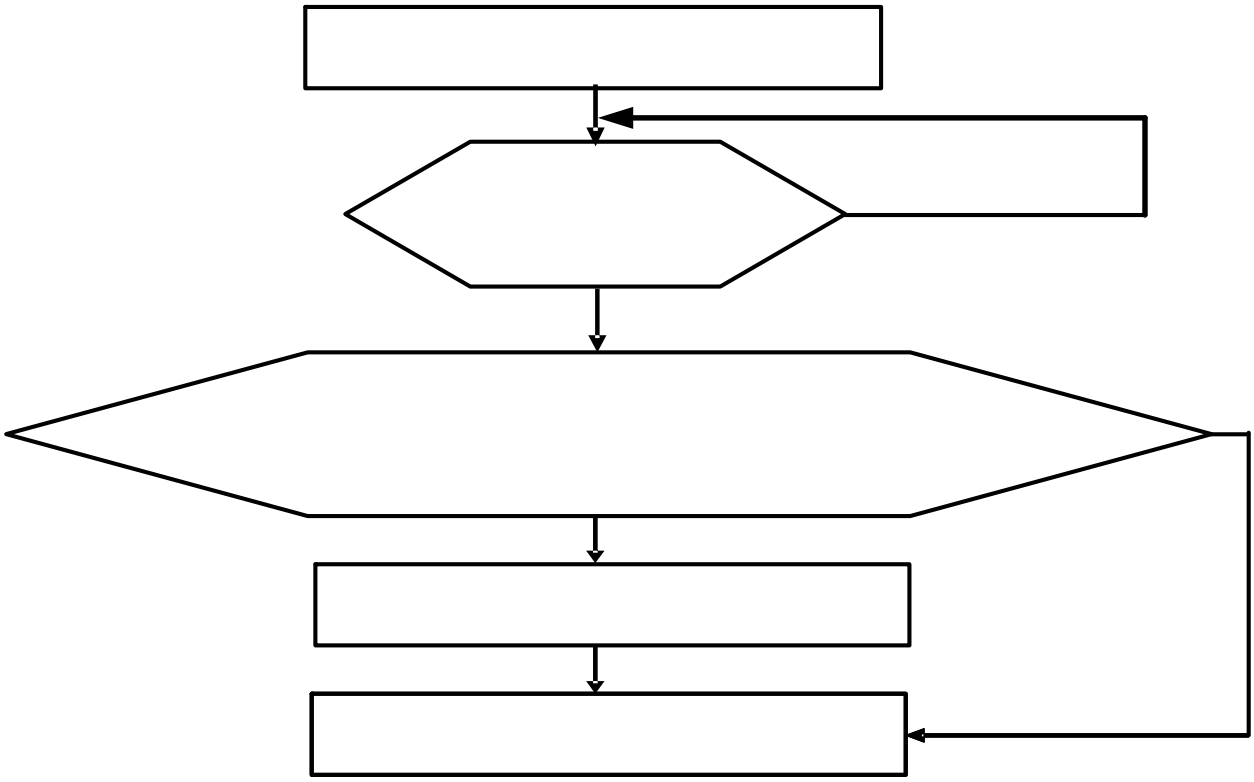


Figure 123: Flow chart catalyst-heating idle speed increase, signal range fault

In-use monitoring performance ratio

Incrementing the numerator

The numerator is incremented when the dwell time in idle speed that would be necessary for the integration part of the idle controller to reach its maximum in case of an existing fault, has elapsed, and the additional waiting period of the diagnostic has passed.

Incrementing the denominator

The denominator is incremented when the conditions for incrementing the general denominator are fulfilled, and when, in accordance with CCR (d) (4.3.2.) (E) (ii), the commanded idle speed increase for catalyst heating has been active for a cumulative time greater than or equal to ten seconds.

14.3.2.2 Rationality Fault: P050A

Monitoring Strategy

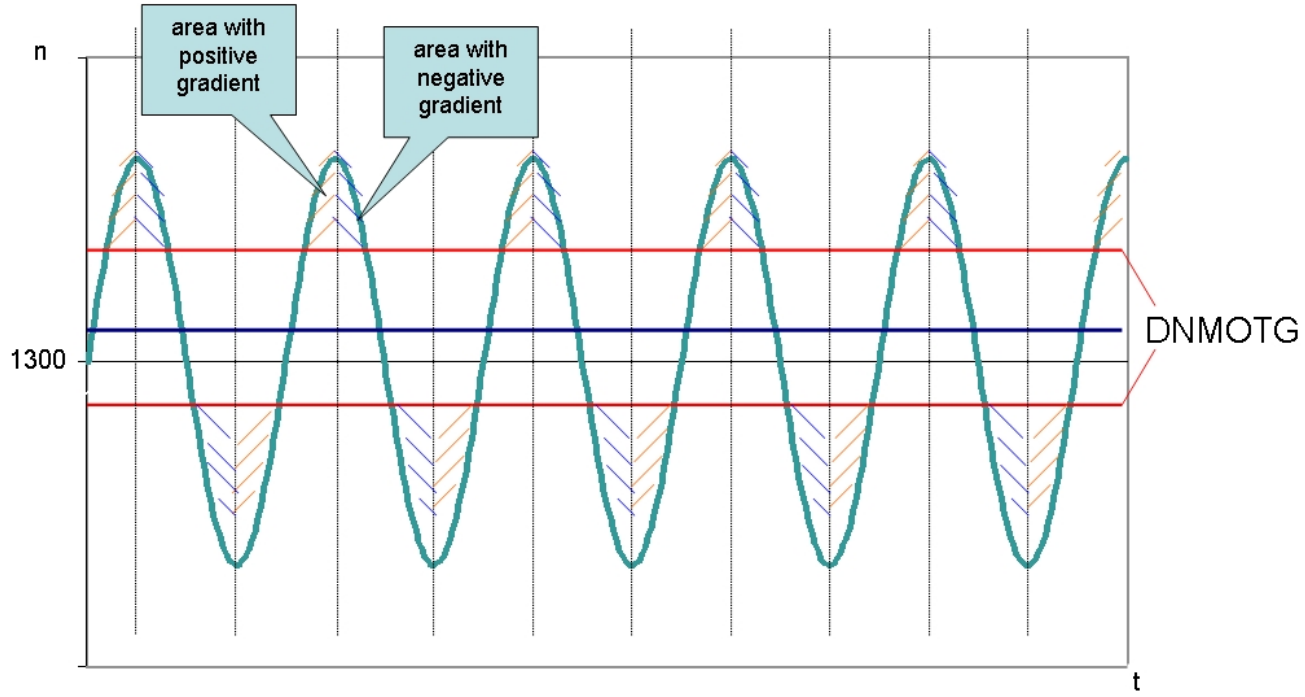
Monitoring for engine surge or impermissible engine speed oscillations

Enable Conditions

- Altitude less than 2700 meters above sea level
- Engine running in idle speed (accelerator pedal position = 0)
- Vehicle speed = 0
- Commanded idle speed increase for catalyst heating is active

Malfunction Criteria

A rationality fault is detected when engine speed oscillations greater than the setpoint idle speed fluctuation permanently occur and the total sum of the areas formed from these positive and negative engine speed gradients exceed a calibratable threshold (see illustration below).



DNMOTG: setpoint idle speed fluctuation

Figure 124: Catalyst-Heating Idle Speed Increase, Rationality Fault

Flowchart

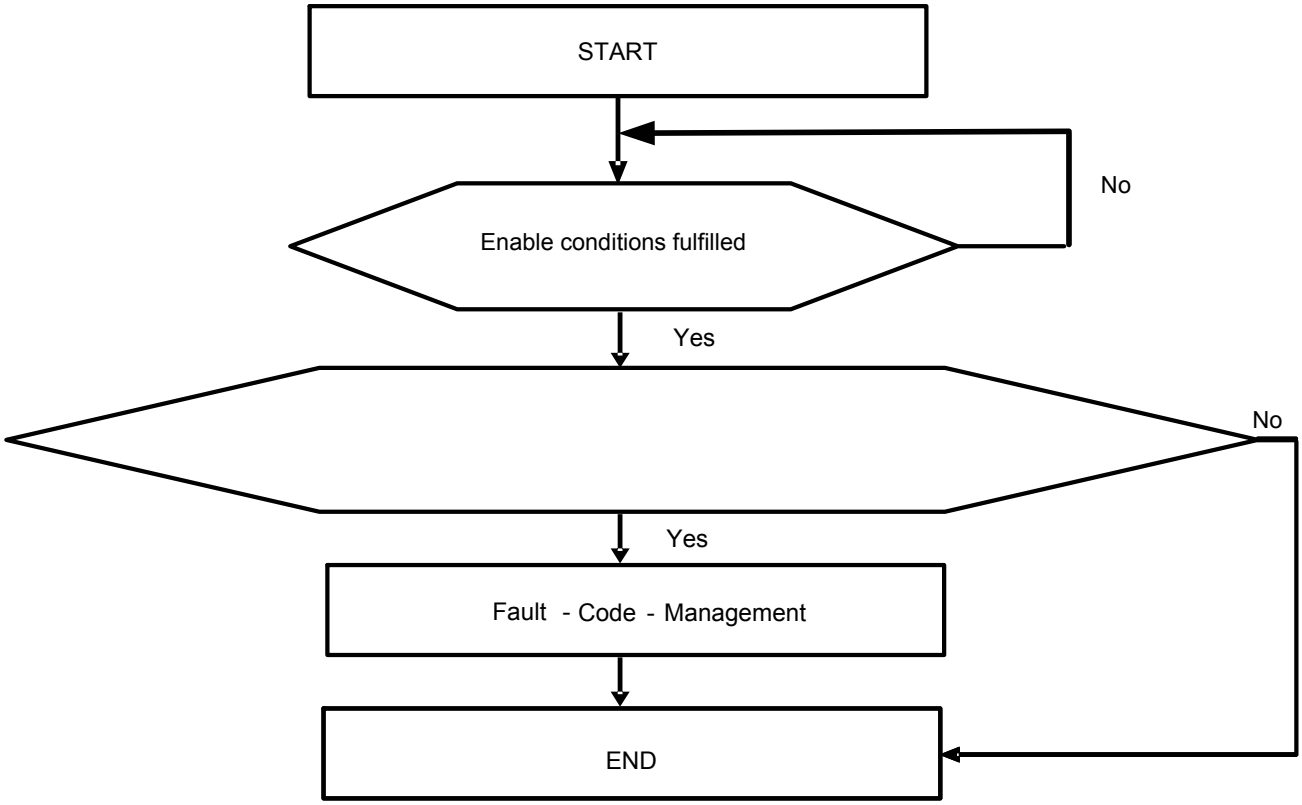


Figure 125: Flowchart Catalyst-Heating Idle Speed Increase, Rationality Fault

14.4 Engine speed sensor

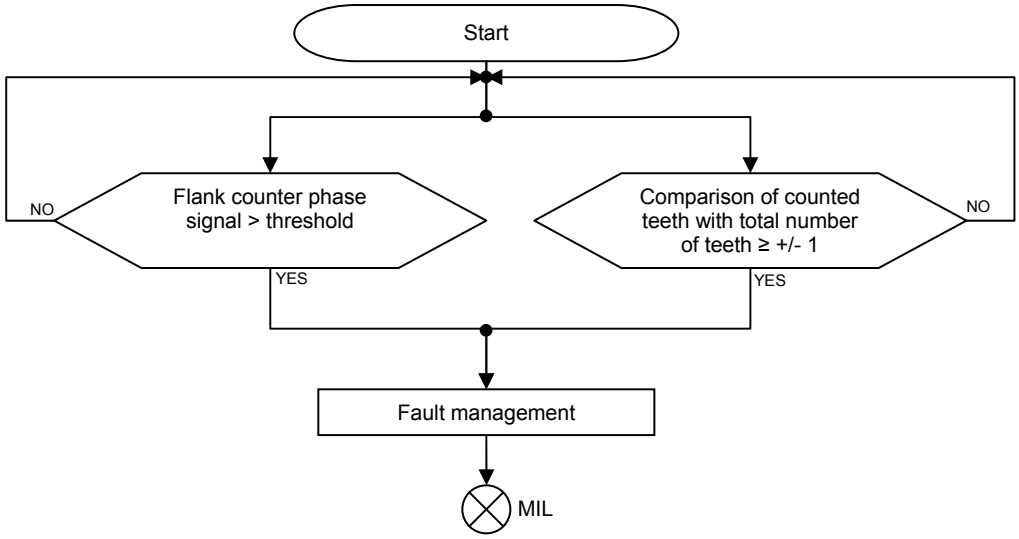


Figure 126: Flow chart engine speed sensor

14.5 Signal range check for input sensor

Refer to Input / Output table in applicable OBD Group submission for list of sensors.

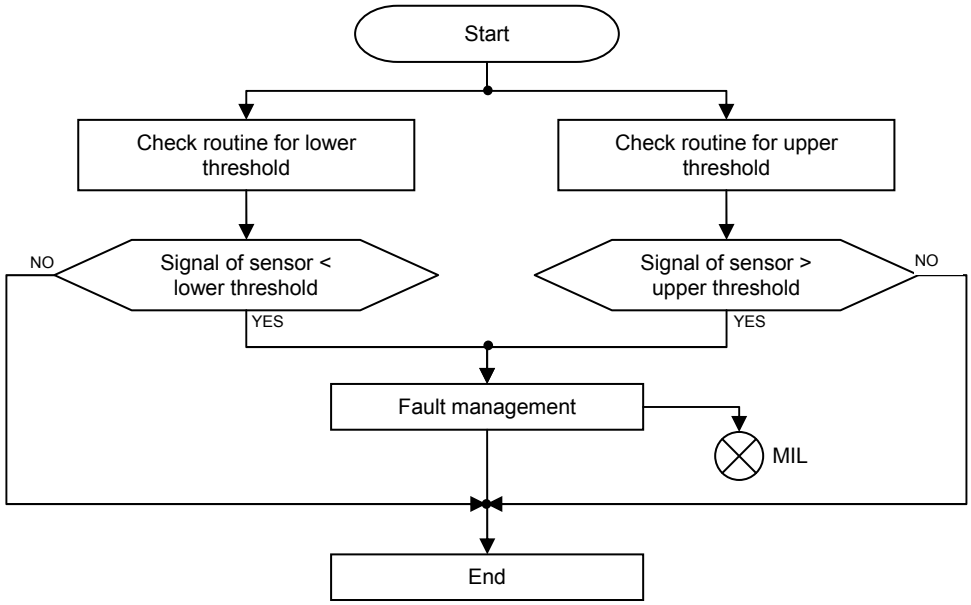


Figure 127: Flow chart signal range check for input sensor

14.6 Mass air flow sensor monitoring (MAF)

14.6.1 Single MAF Sensor System

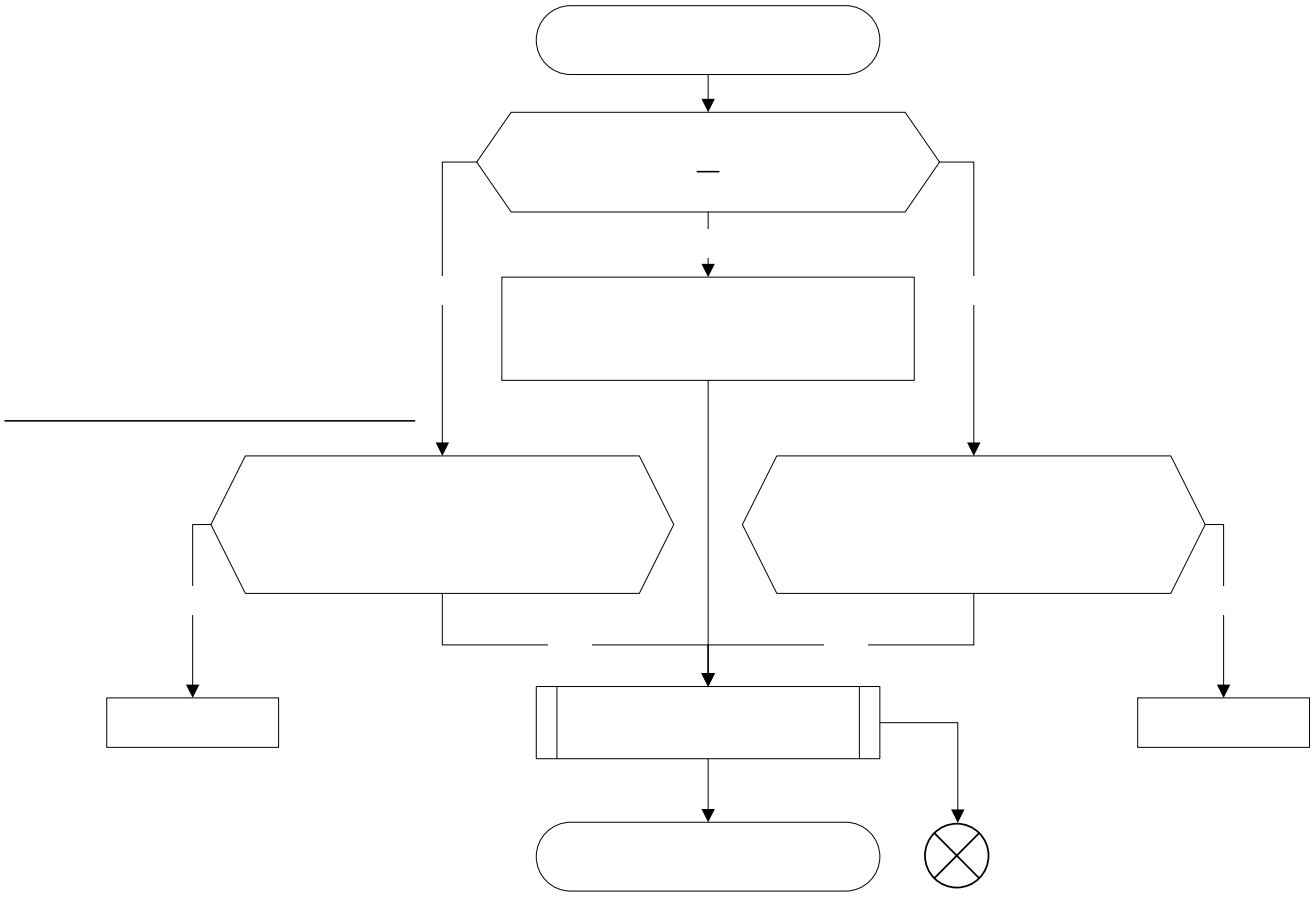


Figure 128: Flow chart rationality mass air flow sensor (one MAF system)

14.6.2 Correlation Air temperature intake manifold/ MAF intake air

General description

The main parts, that belong to the cross check, are shown in Figure 129.

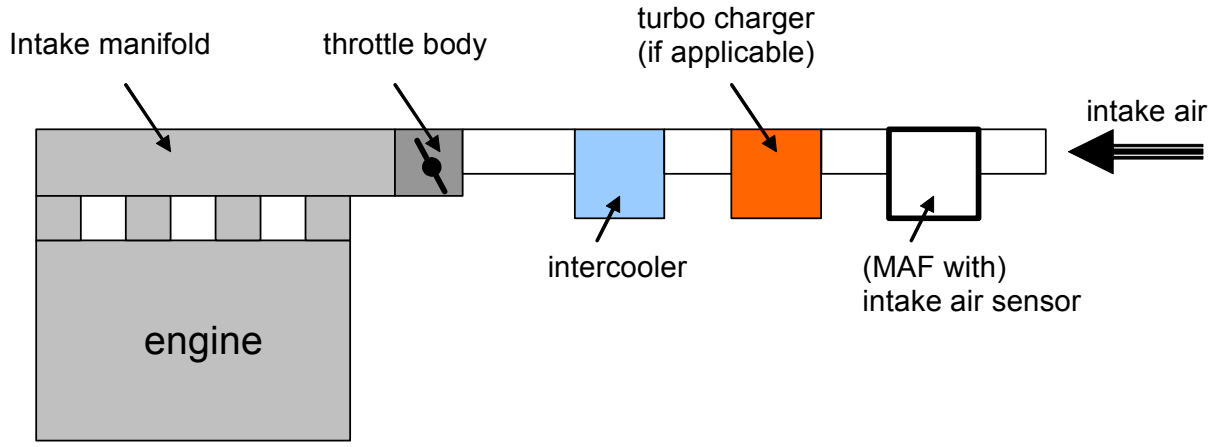


Figure 129: Overview - main parts for cross check

To run a cross check it is necessary to compare the two temperature signals during the cold start. In this case the MAF air temperature and intake manifold air temperature have to be in an sufficient range.

Monitor structure

In case that the difference between MAF air temperature and the intake manifold air temperature is to big during a cold-start, the monitoring system detects a “correlation fault” between these both sensor signals.

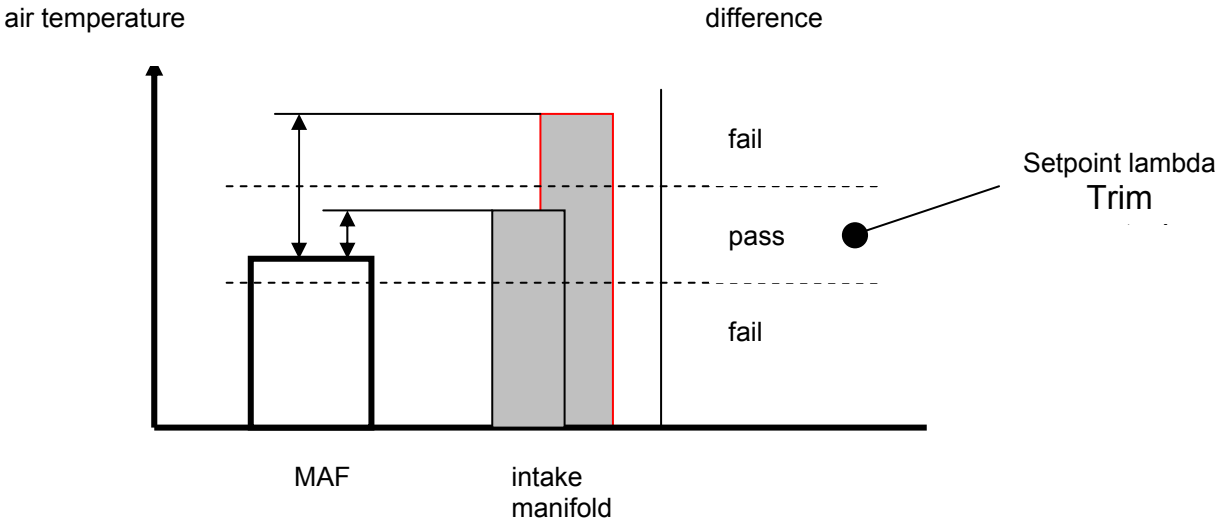


Figure 130: Correlation air temperature intake manifold / MAF intake air

Flowchart

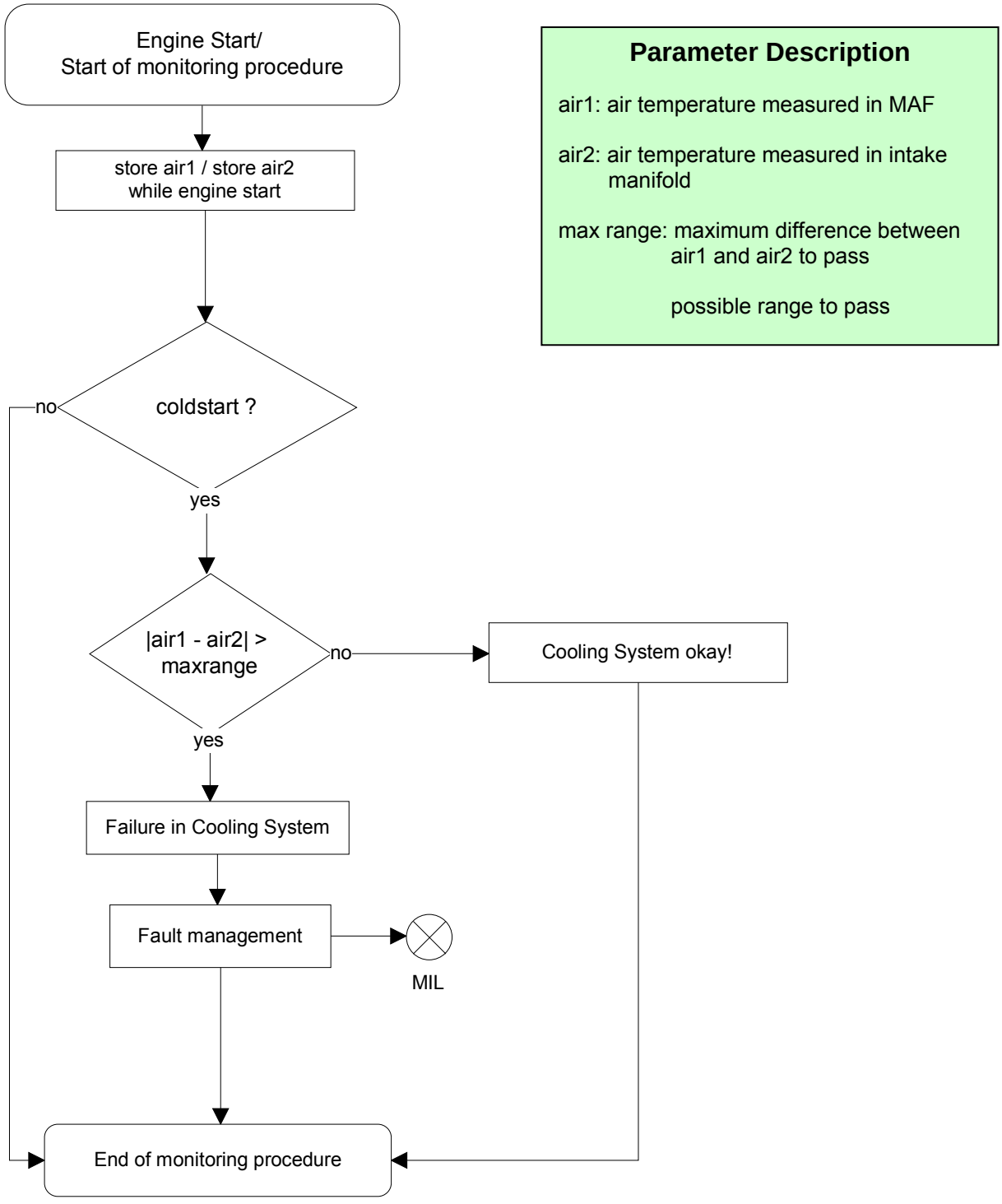


Figure 131: Flow chart - correlation air temperature intake manifold / MAF intake air

14.7 Vehicle speed sensor (VSS)

14.7.1 Vehicle Speed Signal Monitoring via ESP/ABS

14.7.1.1 General Description

The vehicle speed signal faults detected by the ESP/ABS control module are transmitted to the ECM via the FlexRay/CAN bus by means of an OBD error nibble (= half-byte = 4 bits) which contains the fault information of each wheel speed sensor. Obtaining the fault information, the ECM forwards it to its fault memory. A fault code is only registered in the ECM if none of the wheel speed sensors provides the ESP/ABS control module with a valid signal, and thus the MIL is commanded on if none of the wheel speed sensors is fault-free.

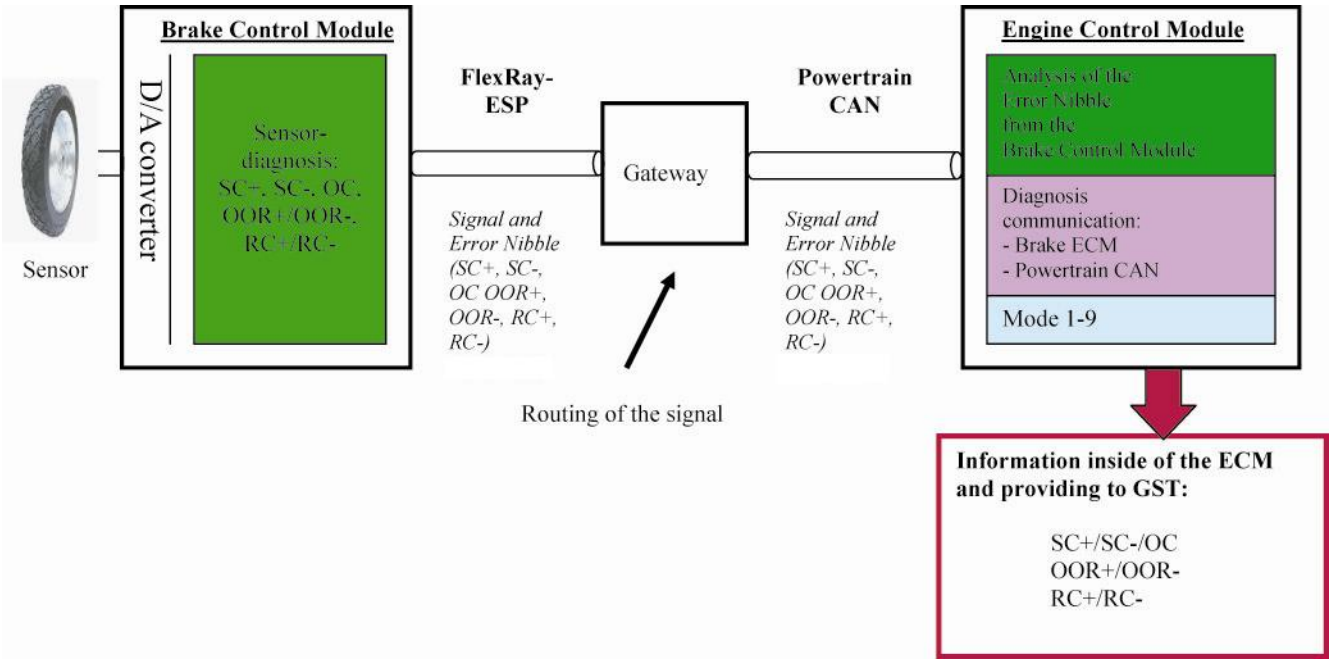


Figure 132: Schematic presentation of brake control module and engine control module

14.7.1.2 Vehicle Speed Signal faulty – P0501/P0502

Monitoring Strategy
The EPS/ASB fault memory is read out.

Enable Conditions
These diagnostics in the brake control module are run continuously; hence no enable conditions are defined.

Malfunction Criteria
In the ESP/ABS control module, the individual fault states of the wheel speed sensors are mapped to an error nibble, and in the ECM they are classified either as electrical faults or rationality faults and assigned to a P-Code, respectively. The MIL is commanded on if none of the individual signals from the wheel speed sensors is assessed as fault-free.

ESP/ABS control module	Error nibble	ECM		
Short to ground	$0001	Electrical faults	P0502	MIL ON, if no wheel speed sensor is available
Short to battery	$0010			
Open circuit	$0011			
Signal too high	$0100	Rationality faults	P0501	
Signal too low	$0101			
Rationality check, high	$0110			
Rationality check, low	$0111			

Figure 133: Fault states mapped to error nibble

14.7.2 Vehicle Speed Signal Monitoring via Deceleration Fuel Cut-Off Check

14.7.2.1 General Description
The ECM receives the vehicle speed signal via the FlexRay/CAN bus from the ESP/ABS control module. The ESP/ABS control module calculates the vehicle speed from the signals of the four wheel speed sensors and sends the information to the ECM.
The ECM monitors the incoming vehicle speed information regarding signal range validity and rationality.

14.7.2.2 Vehicle Speed Signal too high – U0415

Monitoring Strategy
The vehicle speed signal must not exceed an upper threshold.

Enable Conditions
No enable conditions defined.

Malfunction Criteria
The vehicle speed signal sent from the ESP/ABS control module to the ECM is monitored and must not exceed an upper threshold. When the upper vehicle speed threshold is exceeded, a failure is detected.

Flowchart

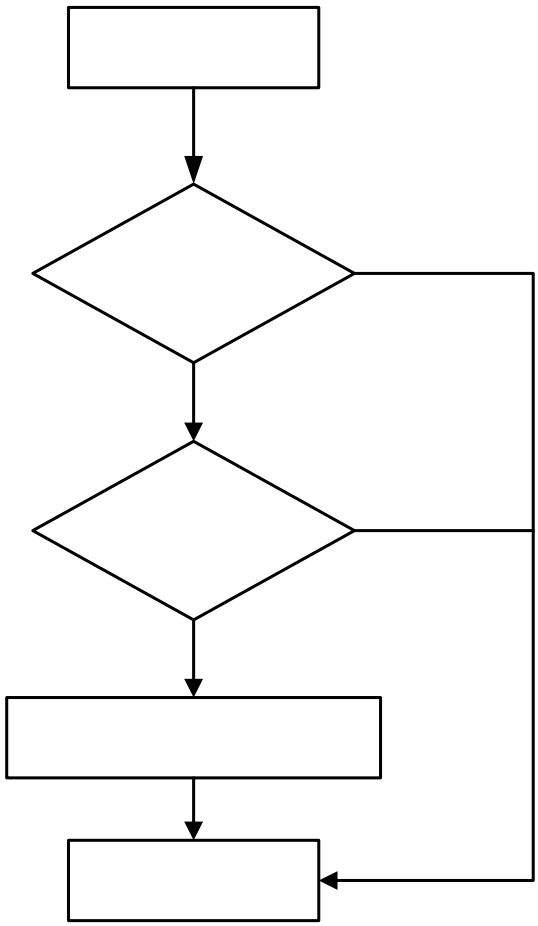


Figure 134: Vehicle speed signal too high

Flowchart

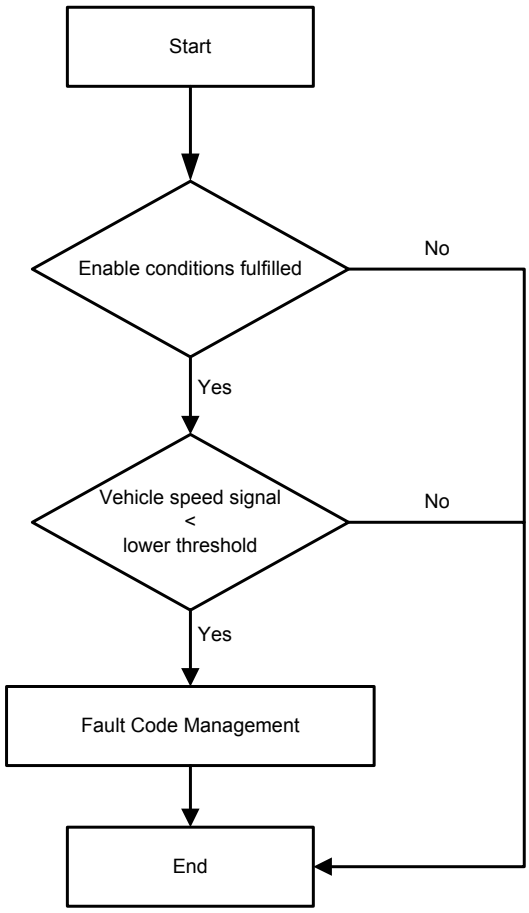


Figure 135: Rationality check of the vehicle speed signal during deceleration fuel cut-off

14.7.2.3 In-Use Monitor Performance Ratio

Incrementing the numerator
The numerator is incremented after the enable conditions (i.e. the deceleration fuel cut-off is active, the engine temperature is greater than a threshold, the engine speed is within a defined engine speed range) of the deceleration fuel cut-off rationality check have been fulfilled beyond the fault confirmation time.

Incrementing the denominator
The denominator is incremented when the conditions for incrementing the general denominator (according to CCR (d) (4.3.2) (E) (ii)) are fulfilled.

14.8 Throttle position sensor (throttle unit with E-gas actuator)

The throttle body consists of two potentiometers (reversed voltage logic). During the first start, the potentiometer characteristics are adapted and stored. The diagnosis monitors the corrected values of potentiometer 1 and 2. In case of a higher difference than a threshold value both signals are compared to the engine load to determine and disable the faulty one. A fault code will be stored and the MIL will be illuminated.

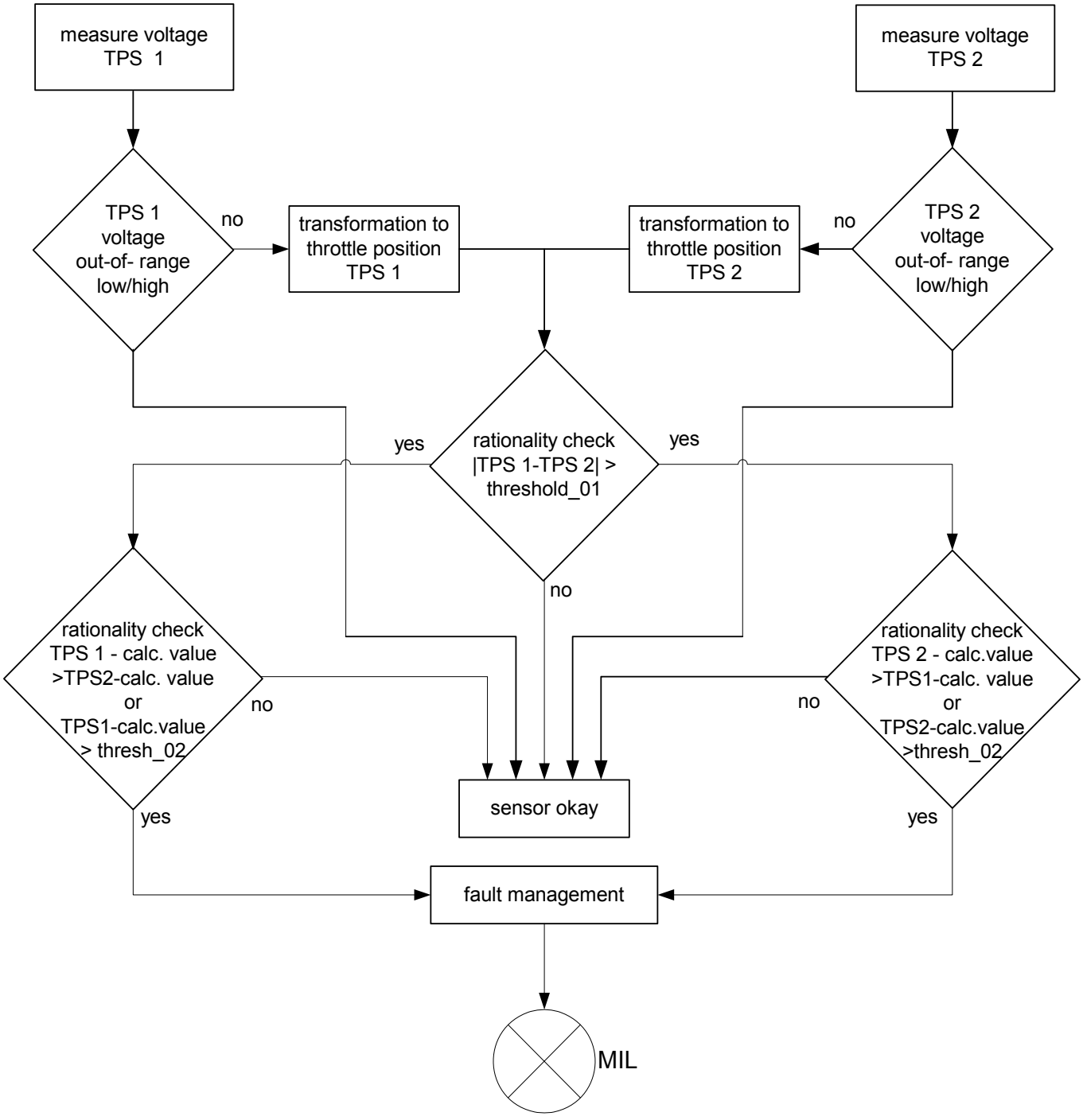


Figure 136: Flow chart throttle position sensor (TPS)

14.9 Accelerator pedal position sensor (APPS)

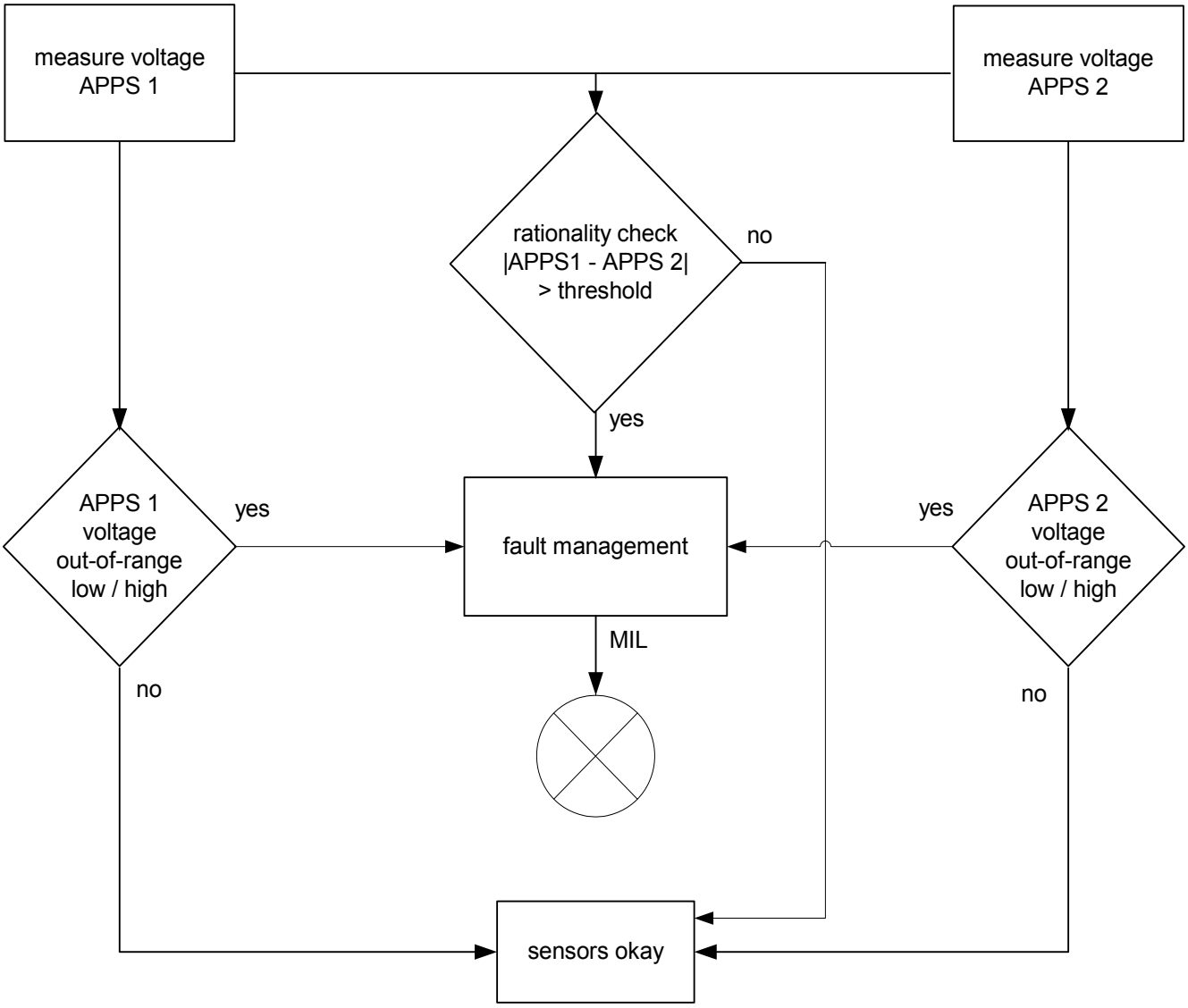


Figure 137: Flow chart accelerator pedal position sensor

14.10 Camshaft position (CMP) sensor

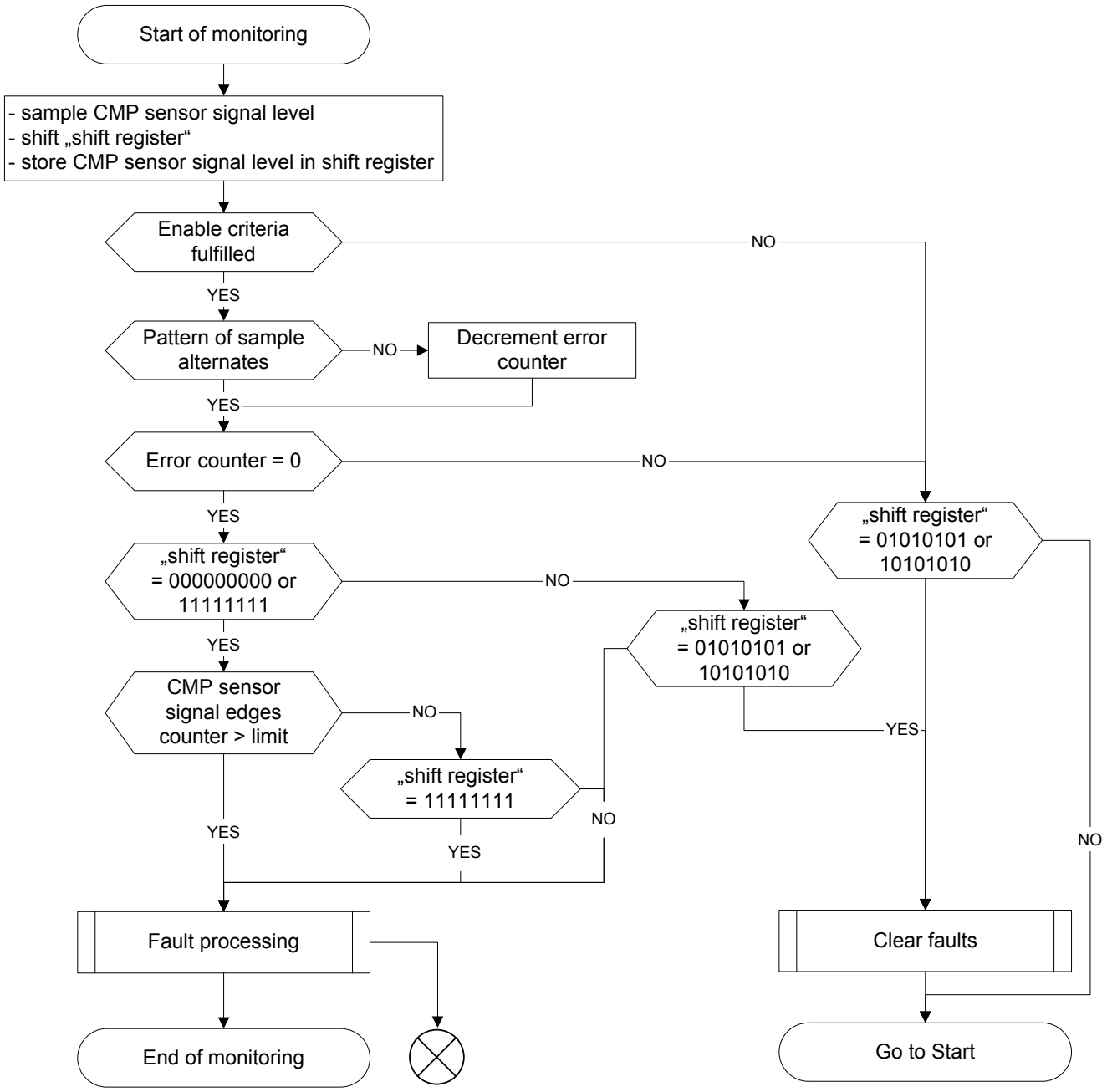


Figure 138: Flow chart for camshaft position (CMP) sensor monitoring

14.11 Boost pressure control valve

Not applicable.

14.12 Boost pressure sensor

Not applicable.

14.13 Atmospheric Pressure Sensor

14.13.1 General description

The atmospheric pressure sensor monitor checks for circuit continuity, out of range signals and a rationality check.

14.13.2 Monitoring function description

Circuit Continuity
If the atmospheric pressure exceeds an upper limit for too long, a short circuit to battery is detected and a Atmospheric Pressure Circuit High fault is set.

If the atmospheric pressure stays below a lower limit for too long, a short circuit to ground is detected and a Atmospheric Pressure Circuit Low fault is set.

Range Check
If the atmospheric pressure exceeds an upper limit for too long, out of range high is detected, and a Atmospheric Pressure Circuit fault is set.

If the atmospheric pressure stays below a lower limit for too long, out of range low is detected, and a Atmospheric Pressure Circuit fault is set.

Key On, Engine Off (KOEO) Check
The KOEO check compares the atmospheric pressure at KOEO with the value stored at the last engine shut down. If this is not the same, and the atmospheric pressure is not similar to the upstream throttle pressure at KOEO, an Atmospheric Pressure Circuit Range/Performance fault is set.

14.13.3 Flow charts atmospheric sensor monitoring

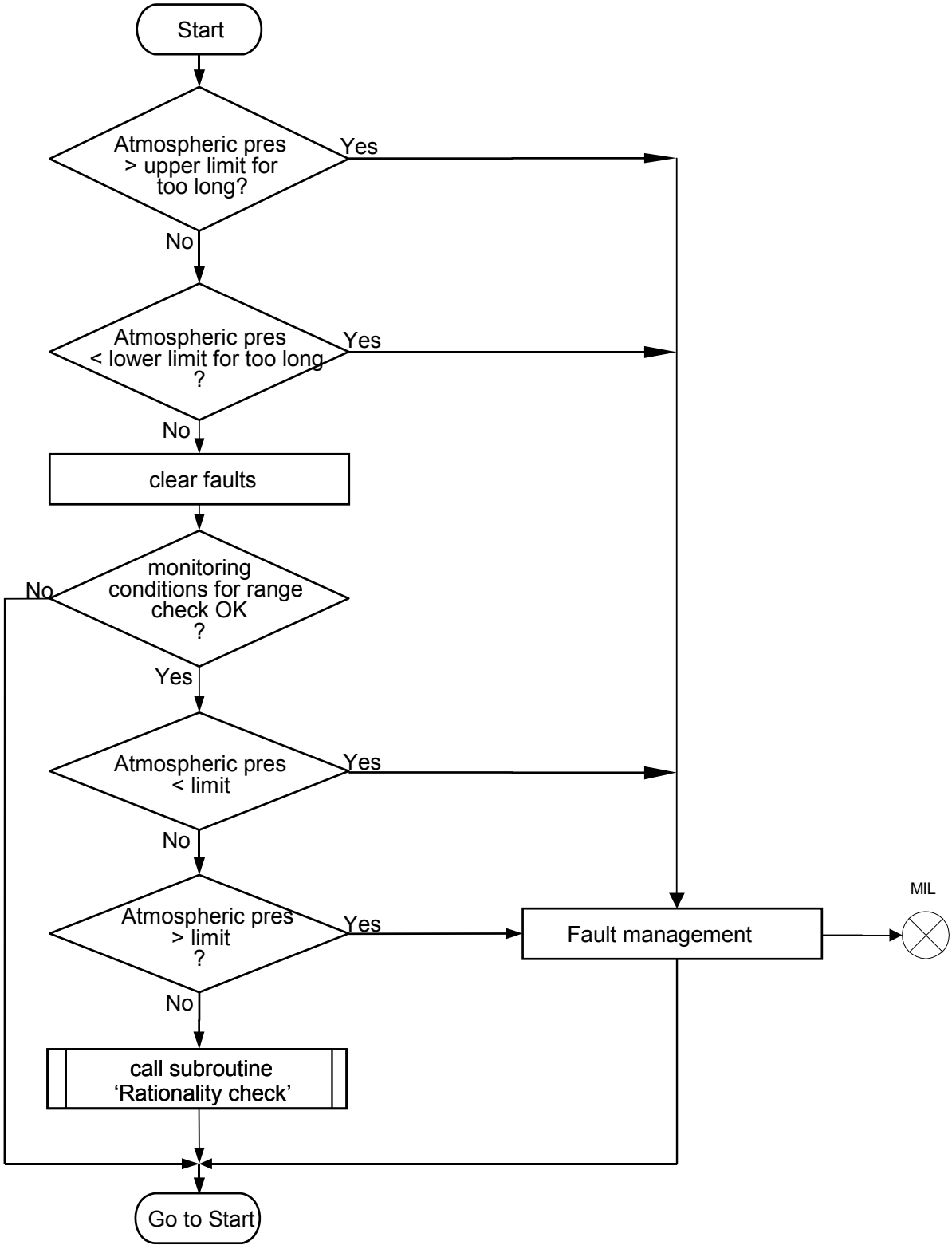


Figure 139: Flow chart atmospheric sensor monitoring

Flow chart atmospheric sensor monitoring - sub-routine “rationality check”

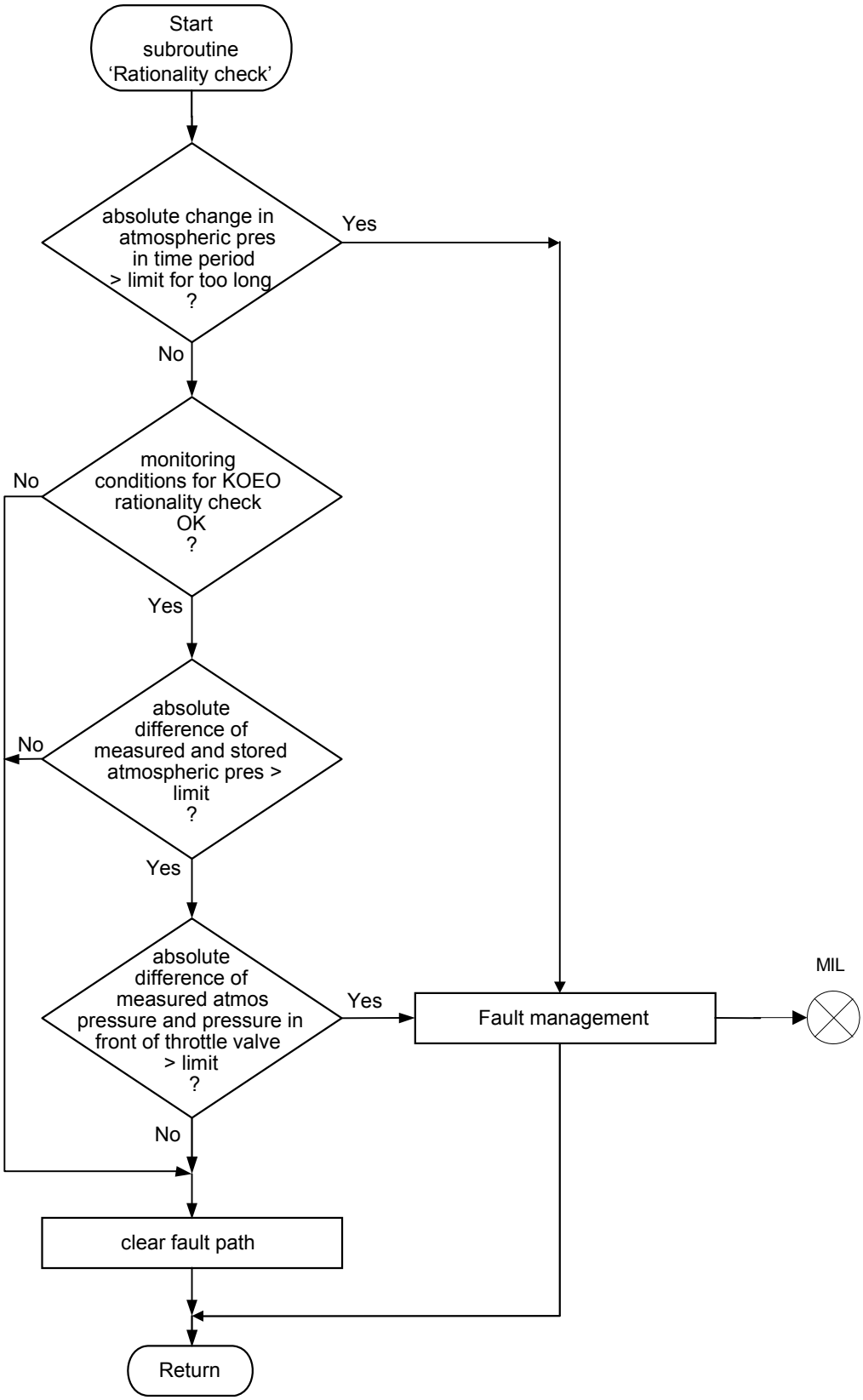


Figure 140: Flow chart atmospheric sensor monitoring - sub-routine “rationality check”

14.14 Ambient Air Temperature (AAT) Monitor

14.14.1 Concepts receiving AAT over CAN

General Description
The AAT monitor checks that the measured AAT value is valid. It checks that the CAN message is received & uncorrupted; that the AAT value received is valid and that the AAT is plausible.

Monitoring Strategy
The monitor comprises four parts:

1. CAN message check – if the CAN message containing AAT is not received, or is incomplete or corrupted, a fault is detected
2. AAT is compared to upper and lower limits; if outside of these limits an out-of-range fault is detected
3. Rationality check at cold start – immediately after a cold start, AAT is compared to Intake Air Temperature; if the difference between the two is outside of limits, a fault is detected
4. Rationality check at normal engine temperature – AAT is compared to a modelled value; if the difference is outside of limits, a fault is detected.

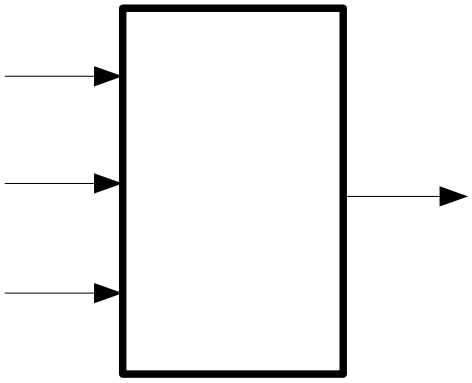


Figure 141: Modeling of ambient air temperature

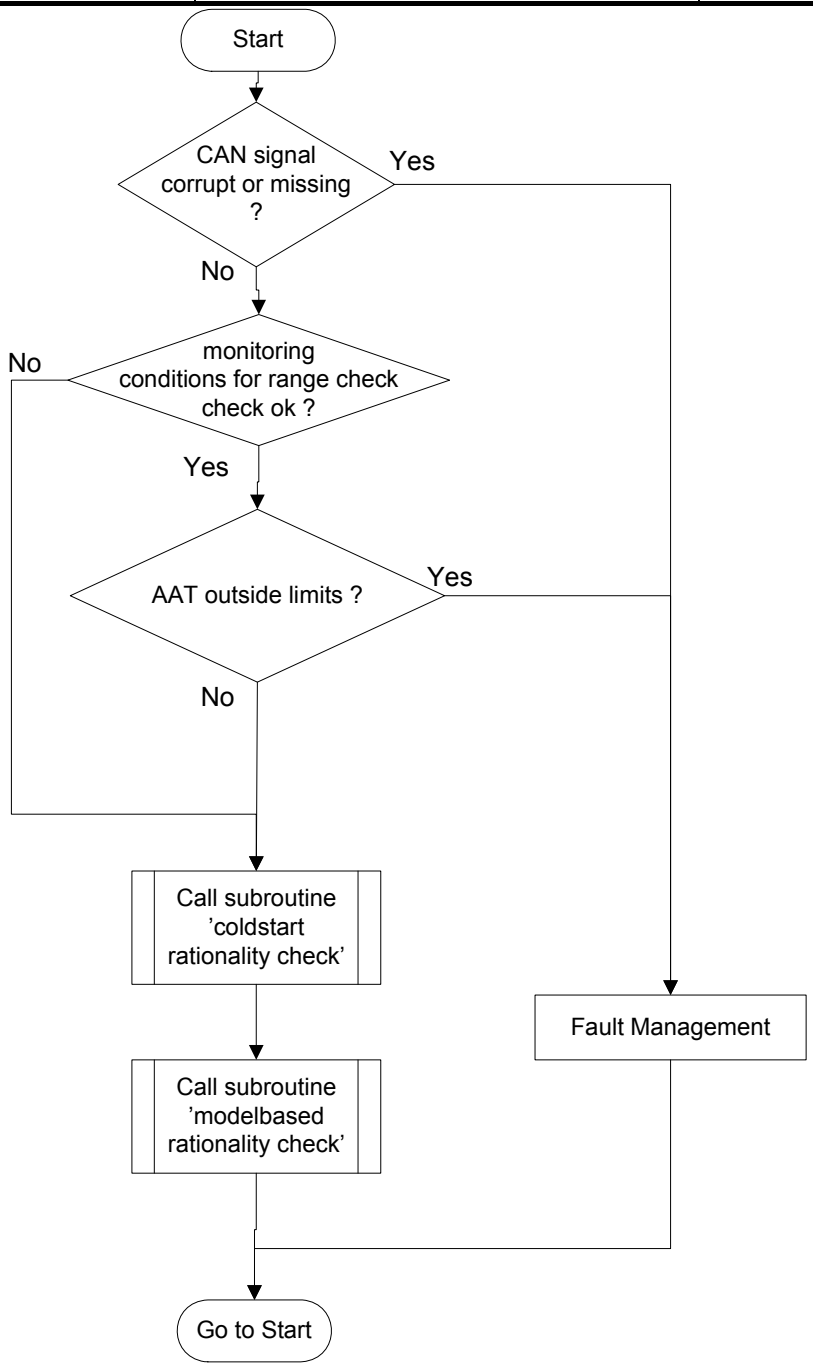


Figure 142: Flow chart for ambient air temperature monitoring

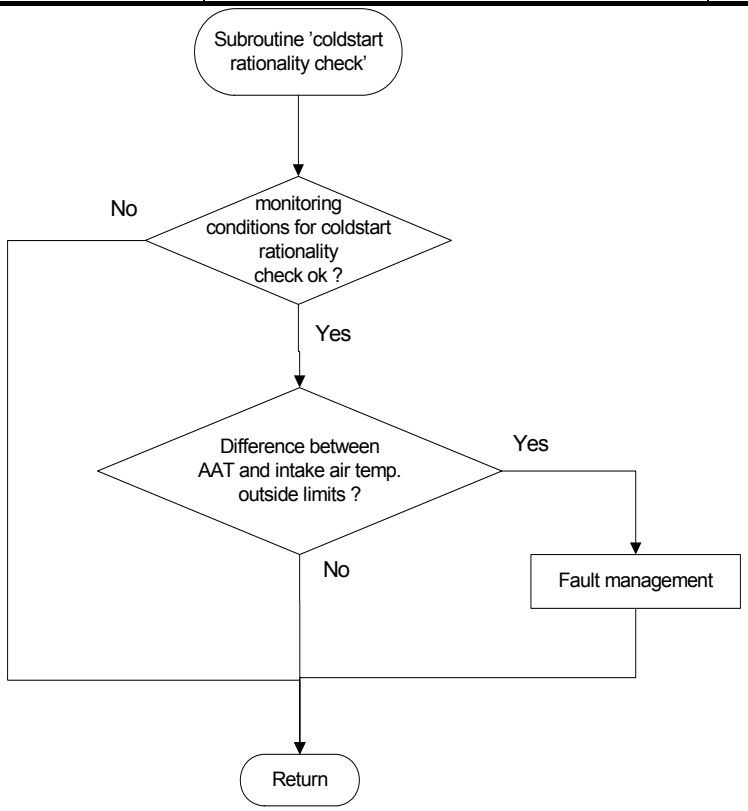


Figure 143: Flow chart for cold start rationality check

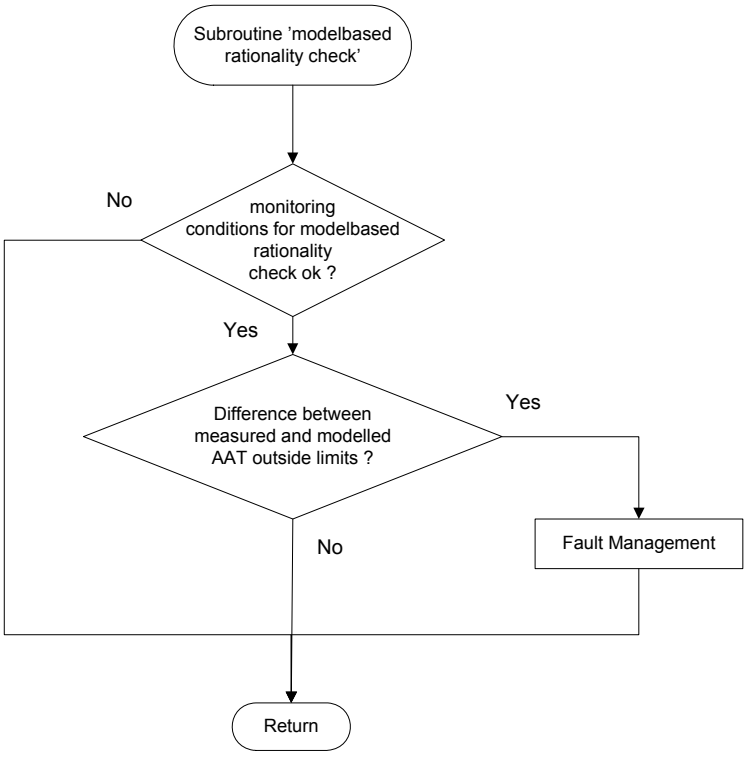


Figure 144: Flow chart for model based rationality check

14.15 Knock sensor monitoring (KS)

14.15.1 General description

The knock sensor signals are evaluated and processed in a custom integrated circuit (IC). This IC is controlled by the ECM microprocessor and the processed signals from the knock IC are sent to the microprocessor for knock control and diagnosis.

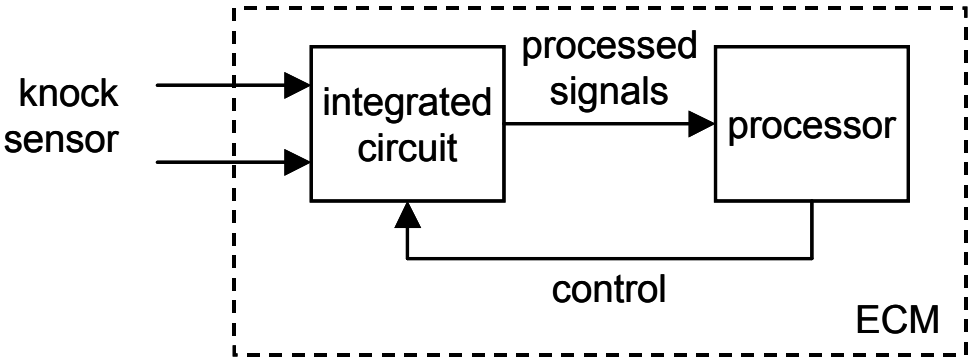


Figure 145: Overview knock sensor signal

The knock sensor monitor checks for electrical circuit faults and signal plausibility. In some cases, it can also detect excessive engine noise due to (for example) piston or valve gear problems.

14.15.2 Monitoring function description

Zero test
For monitoring purposes the knock sensor signals can be switched off and the integrated circuit is operated with a “zero signal“ as input. The zero signal is integrated in the circuit and the integrator output at the beginning (int_beg) and at the end (int_end) of a monitoring window is used for diagnostics.

Integrator check
The first part monitors the integrator value at the beginning of the measuring window, which is typically about 715 mV. If the absolute value of the difference between integrator and 715 mV exceeds a limit on a number of occasions, a Knock Control System Error fault is set.

Integrator gradient check
A second check is performed by monitoring the gradient of the integrator. The difference in the integrator output between the end and beginning of the measuring window is compared against a limit. If the absolute value of this difference exceeds the limit on a number of occasions, a Knock Control System Error fault is set.

Monitoring structure pulse test
For monitoring purposes the knock sensor signals can be switched off and the integrated circuit is operated with a “test pulse“ as input.

For an advanced diagnosis a test pulse can be generated at the input of the knock control circuit. In this mode, the test pulse signal is integrated instead of the signal from the knock sensors.

The integral of the test pulse is calculated in a monitoring window. The test pulse signal is integrated in the circuit and the integrator output at the beginning (int_beg) and at the end (int_end) of a monitoring window is used for diagnostics.

Therefore the content of the signal integrator at the beginning of the measuring window is subtracted from its content at the end of the window. If the difference is below a limit for a number of samples, a Knock Control System Error fault is set.

Monitoring structure knock sensor monitor

A reference signal (uref) is calculated based on the knock sensor signal. This reference value represents the basic noise of the current cylinder being monitored.

If uref exceeds the upper limit for a number of samples, a Knock Sensor Circuit High fault is set.

If uref stays below the lower limit for a number of samples, a Knock Sensor Circuit Low fault is set.

14.15.3 Flow charts knock control monitoring

Flow chart knock control monitoring - zero test

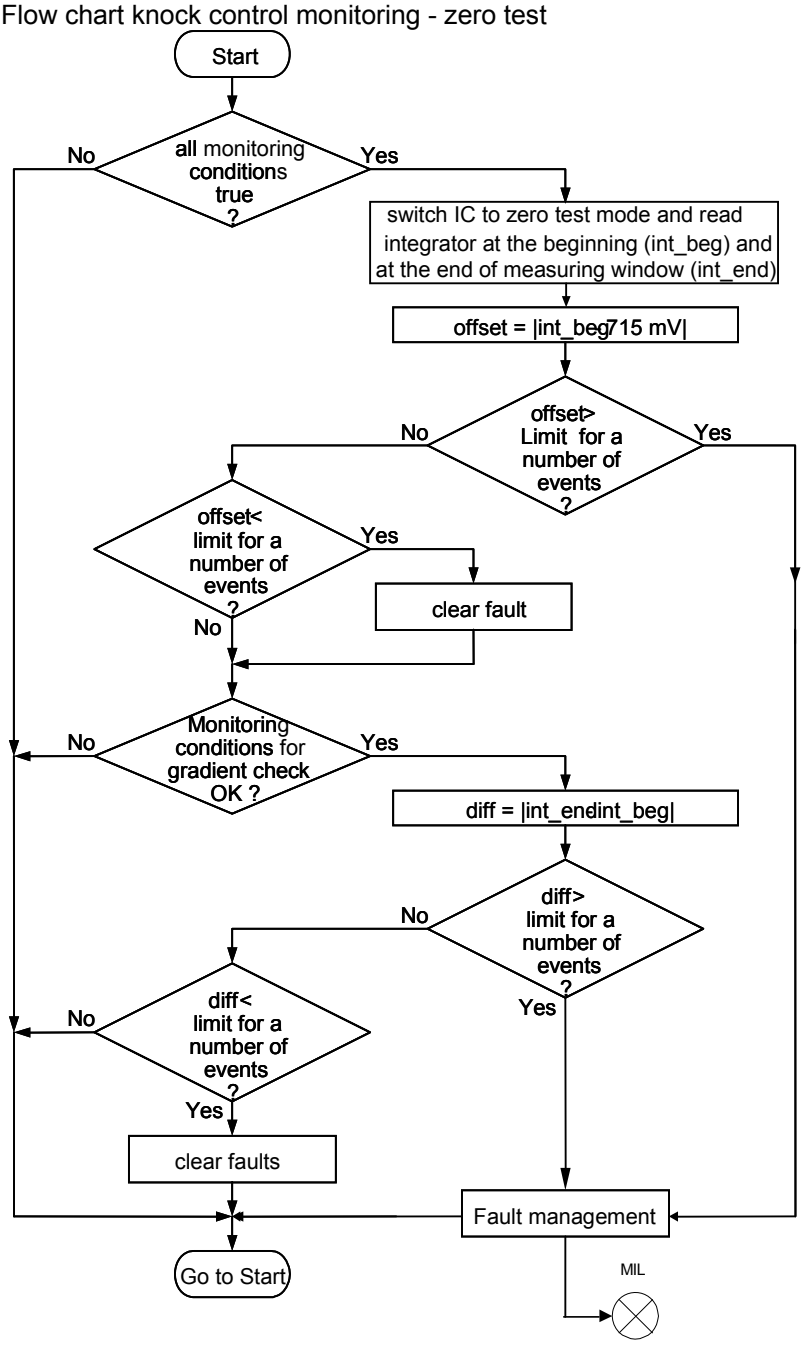


Figure 146: Flow chart knock control monitoring - zero test

Flow chart knock control monitoring - pulse test

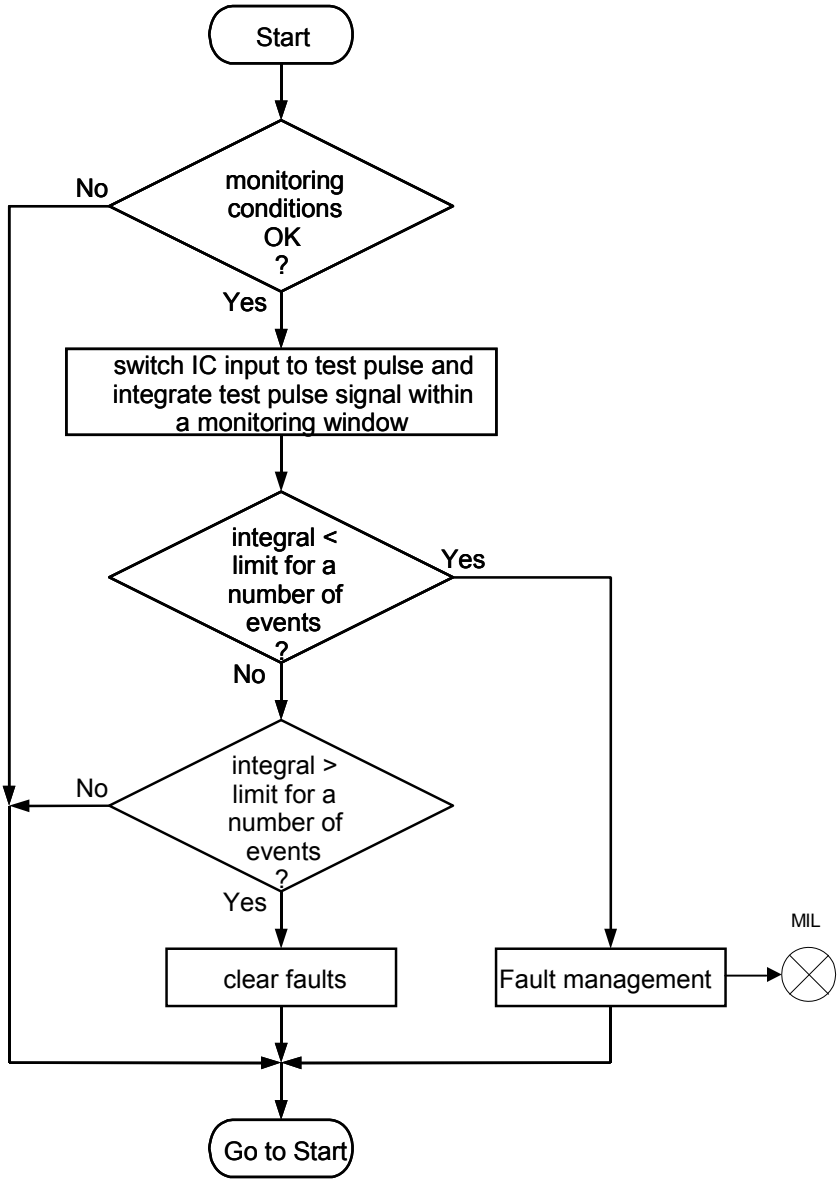


Figure 147: Flow chart knock control monitoring - pulse test

Flow chart knock control circuit monitoring

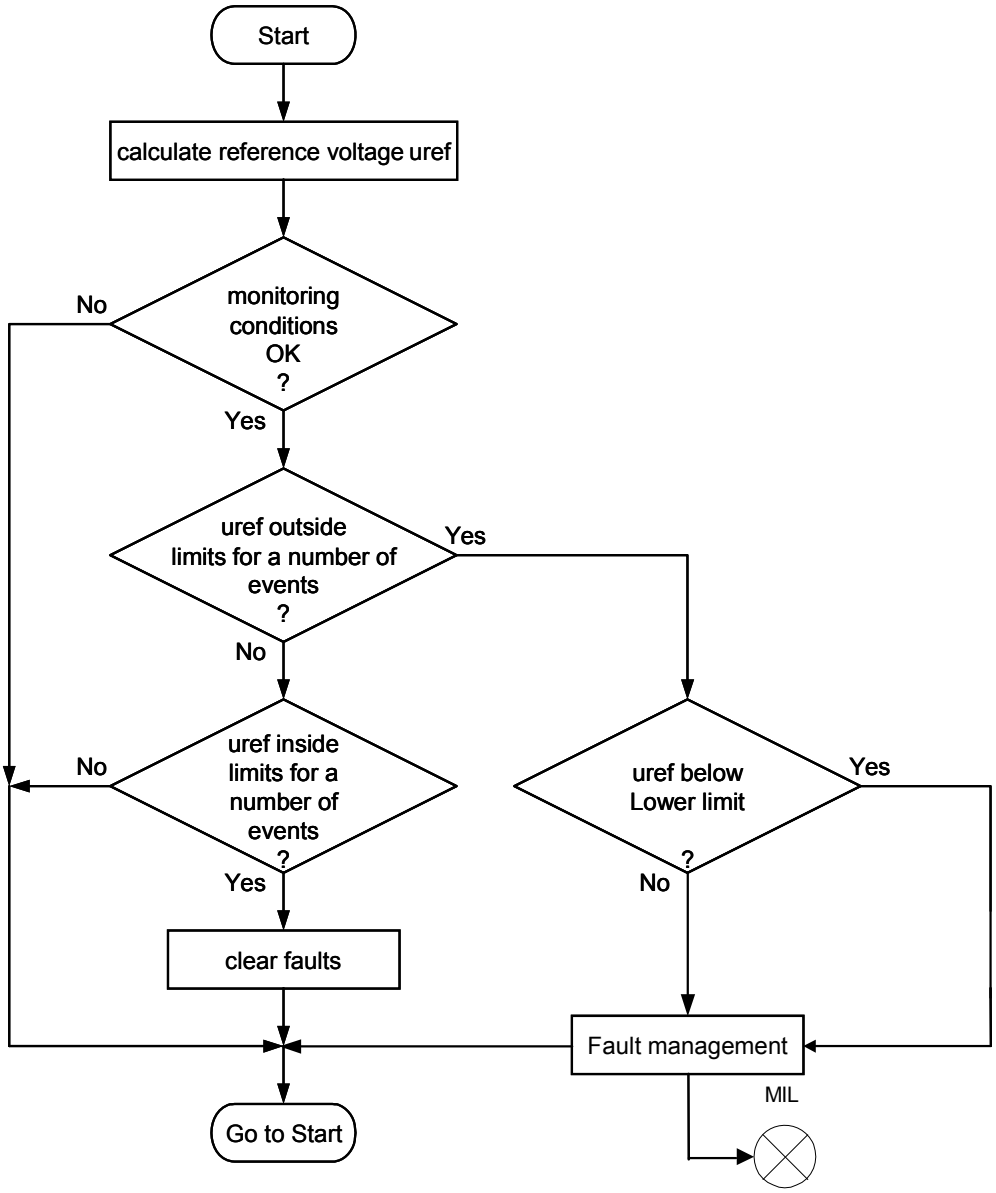


Figure 148: Flow chart knock control circuit monitoring

14.16 Diagnosis of Double Clutch Transmission

General Description

The gearbox is fitted with a oil temperature sensor, 2 rotation speed sensors (in/out), a shift lever sensor and 1 for reverse gear. Based on these sensors the diagnosis is checking if the gearbox is working correctly. For controlling the gearbox there are 7 pressure regulators and 2 magnetic valves necessary.
With the pressure regulators the clutches, the cooling, the system are controlled. The magnetic valves are need for the selection of the clutches. Also there's one valve for thermo management. BUS system is CAN.

1) Start Stop

For start stop function there is an Electrical oil pump needed. It is controlled via driver. The ATCU detects temperature and failure of EOP via CAN.

2) Plausibility Checks

2a) Shift lever diagnosis
Based on the driver action the movement of the shift lever were checked by the shift lever sensors with several plausibility checks. Also the sensors can detect manual shifting.

14.17 Output Stage Check

The output stages are integrated in manufacturer specific IC's:

The IC has a binary diagnostic line (e.g. SJ401).
If the control line of one stage has a different signal than the output line, the logic circuit inside the IC detects a malfunction. The logic circuit within the IC can separate the type of fault to a short circuit to minus, an open line, or a short circuit to plus. The check result will be sent to the ECM via diagnosis line.

U_{batt}=16V	normal working situations	short circuit to ground	Short circuit to battery	wiring defective
U_{in}	low high	high	low	high
U_{out} / I_{out}	low high	<0.25-0.37 U_{Batt}	>2.2-3.0A	<0.65-0.84 U_{Batt}
Fault detection	no fault	fault	fault	fault

U_{batt}=8V	normal working situations	short circuit to ground	Short circuit to battery	wiring defective
U_{in}	low high	high	low	high
U_{out} / I_{out}	low high	<0.22-0.4 U_{Batt}	>2.2-3.0A	<0.54-0.78 U_{Batt}
Fault detection	no fault	fault	fault	fault

U_{in} input voltage
U_{out} output voltage
I_{out} output current

Figure 149: Signal tables of output stage check

To identify which components use the output stage check please refer to the respective OBD Group summary matrix.

14.18 Engine off timer monitoring

14.18.1 General Description

Some monitoring functions require the information that a cold start situation is present on a motor vehicle with an internal combustion engine. A cold start situation is for example detected by temperature sensors fitted to the vehicle, however the temperature values provided by the sensors are not fully reliable. This is because the impact of varying ambient air temperatures and different mounting locations with their different thermal conditions may have a negative influence on the accuracy of the temperature values. As an alternative to the evaluation of the temperature values provided by the temperature sensors, a cold start situation can generally also be detected on the basis of an engine-off time provided by the engine control module.

14.18.2 Engine-Off Time Rationality Check in the case of an engine restart during ECM Keep Alive Time

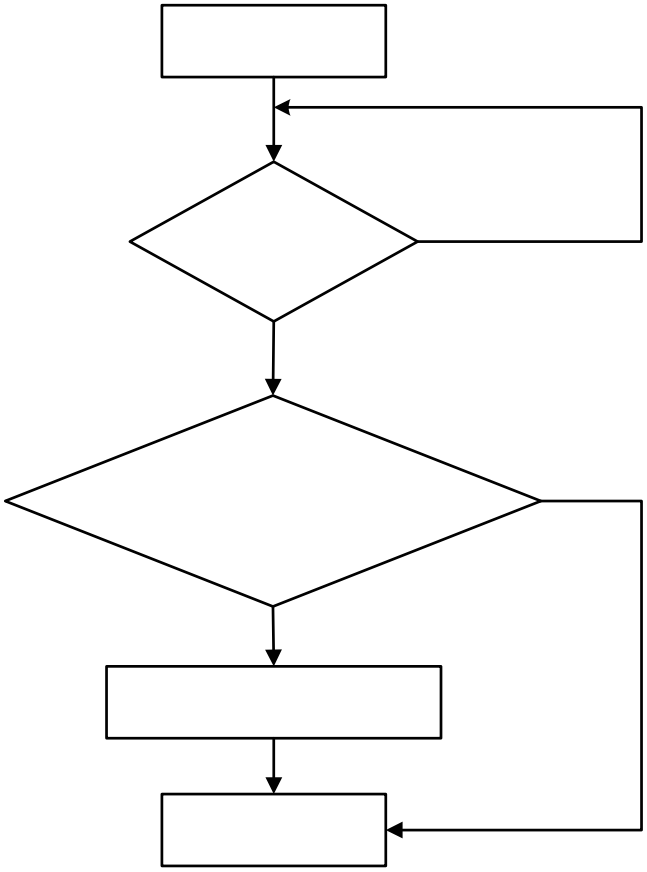
14.18.2.1 Engine-off time implausible – too long – P150A

Monitoring Strategy
The engine-off time provided by the instrument cluster is compared against the ECM keep alive time.

Enable Conditions
- Ignition on
- CAN communication active

Malfunction Criteria
If the difference between the engine-off time provided by the instrument cluster and the engine-off time obtained from the ECM keep alive time counter is greater than a positive upper threshold value, an implausibly long engine-off time is detected.

Flowchart



Start

Enable conditions fulfilled

Yes

Figure 150: Engine off-time implausible - too long – P150A

14.18.2.2 Engine-off time implausible – too short – P150A

Monitoring Strategy
The engine-off time provided by the instrument cluster is compared against the ECM keep alive time.

Enable Conditions
- Ignition on
- CAN communication active

Malfunction Criteria
If the difference between the engine-off time provided by the instrument cluster and the engine-off time obtained from the ECM keep alive time counter is less than a negative lower threshold value, an implausibly short engine-off time is detected.

Flowchart

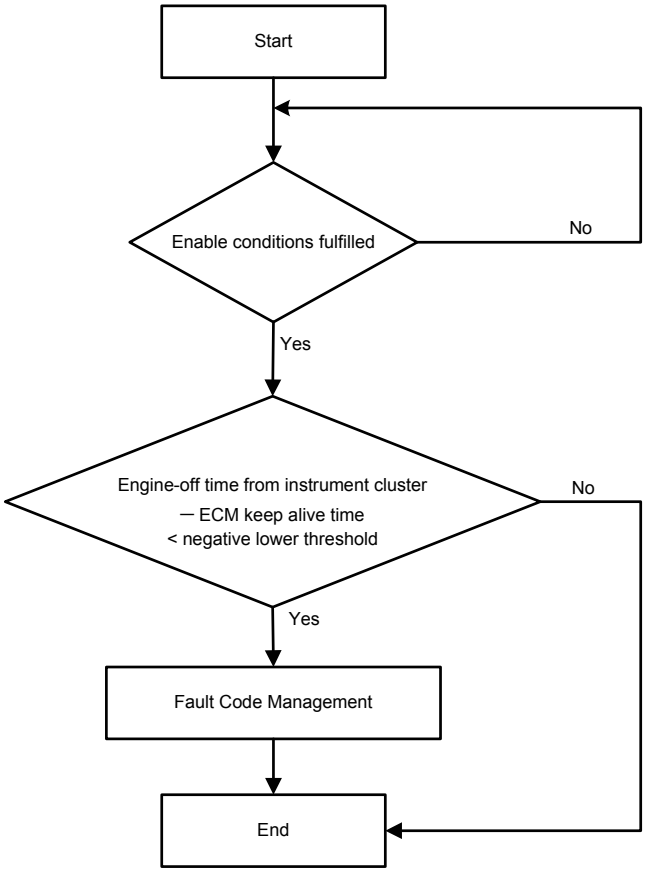


Figure 151: Engine-off time implausible - too short – P150A

14.18.3 Engine-Off Time Rationality Check in the case of an engine restart post to ECM Keep Alive Time

In this case, the engine-off time provided by the instrument cluster control module can only be assessed as “implausible – too short”, as the ECM keep alive time has a defined limit, after which the engine-off time cannot be assessed as “implausible – too long”, because after the ECM keep alive time, it will always be greater than the maximum keep alive time, and thus a comparison does not provide a result.

14.18.3.1 Engine-off time implausible - too short – P150A

Monitoring Strategy
The engine-off time provided by the instrument cluster is compared against the maximum ECM keep alive time.

Enable Conditions
- Ignition on
- CAN communication active

Malfunction Criteria
If the difference between the engine-off time provided by the instrument cluster and the maximum engine-off time obtained from the ECM keep alive time counter is less than a negative lower threshold value, an implausibly short engine-off time is detected.

Flowchart

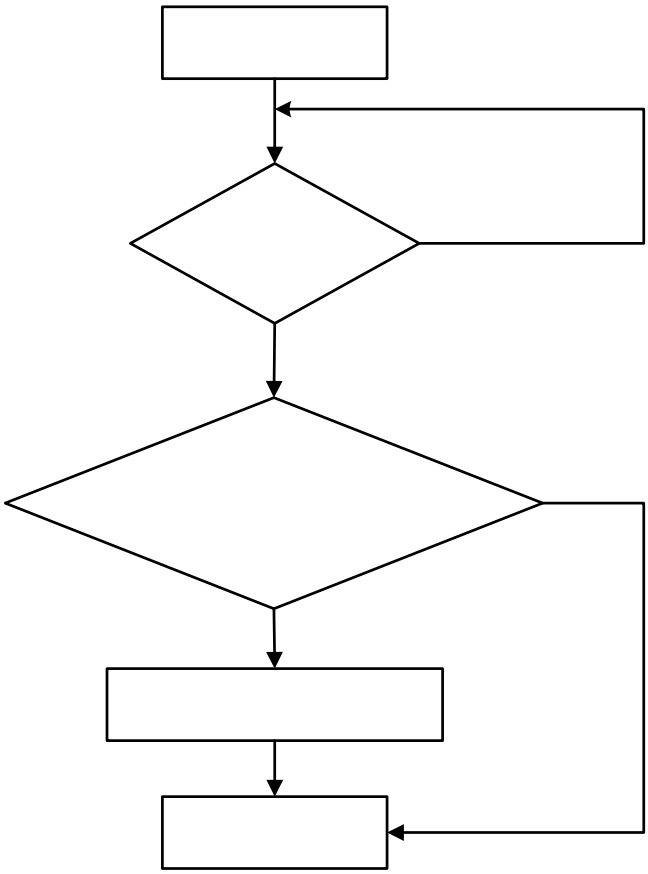


Figure 152: Engine-off time implausible - too short - post to ECM keep alive time – P150A

15 EXEMPTIONS TO MONITOR REQUIREMENTS

16 RESERVED

17 PARAMETERS AND CONDITIONS FOR CLOSED LOOP OPERATION

General

The highest conversion efficiency of the catalyst is given in a small window of air-fuel mixture close to the ratio of Lambda=1. Therefore a combination of two control loops are used to achieve the conditions for highest conversion capability of the catalyst. The first control loop uses the signal of the front Oxygen sensor (pre catalyst) to correct the air fuel ratio by adjusting the injection time. The second control loop uses the signals of the post catalyst Oxygen sensors. These control loops perform a fine tuning of the air / fuel ratio to optimize the catalytic conversion.
The first control loop has a quicker response time than the post control loops which are depending on the death time of the exhaust systems. Therefore the adjustment ranges for the post control loops are restricted and the response time is larger than the one of the first control loop.

Conditions for closed loop operation of the first control loop

The main condition for closed loop is a proper heated up Oxygen sensor and the dew point must be exceeded. To guaranty the Oxygen sensor readiness the heat-up strategy starts depending on engine temperature first on a low level of heater power. Upon the exhaust temperature reaches a level where no liquid water is expected to be in the exhaust system the heater power is controlled to achieve normal ceramic temperature of the Oxygen sensor. The ceramic temperature has to be >350 °C for binary and >685 °C linear sensors. Specific temperatures are mentioned in the individual summary tables of the concepts.
Additional heat-up of the Oxygen sensor is caused by the thermal energy of the exhaust gas. The engine management system evaluates permanently engine temperature and thermal energy introduced to calculate the exhaust temperature based on a model. The main value therefore is the integrated air mass after engine start. Upon the integrated air mass exceeds an applicable threshold, depending on engine start temperature, the due point is exceeded. In that case, the heater power will be increased until the sensor readiness is achieved and sensor is considered to be ready for closed loop control.

The criteria for sensor readiness of a binary sensor are:
- no fault from heater final stage check
- Sensor signal is out of a range 0,4V<sensor voltage<0,5V
- heater power > 50% within a certain time (typically 8-10 s)

The criteria for sensor readiness of the linear are:
- no fault from LSU-Heater, LSU-Signals and LSU-IC
- LSU is heated up to a ceramic-temperature of > 685°C or the internal sensor resistor Ri < 130Ω.

Parameters evaluated to begin closed loop (first control loop)
The target is to begin closed loop operation in a very early state after engine start. However closed loop is delayed if engine is operated according the catalyst heat-up strategy. In the table below the importance parameters are listed.

Parameter / System	Condition/Evaluation	Monitor
Oxygen Sensor	No fault detected in Oxygen sensor, wiring of the sensor or the sensor IC (linear sensors).	Oxygen sensor monitor for the front sensor(s)
Dew Point exceeded	Exhaust Temperature > threshold, calculated based on mass air flow integral.	Monitor of the mass air flow meter (out of range, rationality)
Oxygen Sensor Readiness	Sensor heated up, evaluated based on heater resistance.	Monitored by diagnostic of the heater control.
Mass Air Flow	Integrated air mass > threshold	Out of range / rationality
Oxygen Sensor Heater	OBD evaluation on sensor heater finished without fault	Oxygen sensor heater monitor.
Engine Load	Calculated value based on mass air flow and fuel injection.	Fuel system monitor, mass air flow meter monitor
Engine Temperature	Signal used to trigger the model calculation.	Monitor for engine coolant temperature sensor (out of range, rationality). Monitor of the cooling system (rationality).
Intake Air Temperature	Signal used to trigger the model calculation.	Monitor for the intake air temperature sensor (out of range)
Fuel injectors	OBD evaluation on injectors finished without fault	Monitor for the fuel injectors (out of range). Fuel system monitor
Ignition system	OBD evaluation on ignition system finished without fault. No misfire detected.	Monitor for the ignition system (out of range). Misfire monitor.

Figure 153: Parameters and conditions to begin closed loop operation

Continuity of closed loop operation (first control loop)
The closed loop operation is the most dominant operation mode for the fuel system. Despite that fact, there are operating conditions of the engine where closed loop control must be temporary disabled.

Parameter / System	Condition/Evaluation	Monitor
Target Lambda	Control range is within normal values of Lambda ($0.8<\lambda<1.5$)	Fuel system monitor, mass air flow meter monitor, oxygen sensor monitor
Engine load	Engine load is too low, to control the exhaust lambda value during SAI (typically relative engine load<15%)	Fuel system monitor, mass air flow meter monitor, oxygen sensor monitor
Fuel Injection	Injection time is not at minimum threshold. Injection is not disabled. Fuel cut is not commanded (e.g. coasting)	Monitor for the ignition/injection system (out of range). Misfire monitor. Fuel system monitor

Figure 154: Continuity of closed loop operation

Typical Values
Given a normal cold started FTP (around 20°C) most of the concepts reaches the closed loop condition for the first control loop within 20s to 60s. Additionally closed loop is forced depending on engine start temperature after a maximum time.

Engine Start Temperature	Time, when closed loop is forced
Temperature≥ 10 °C	120 s
Temperature ≥-6.7 °C and < 10°C	300 s

Figure 155: Engine start temperature and time to reach closed loop

18 PARAMETERS / CONDITIONS FOR 2ND CLOSED LOOP OPERATION

Conditions for closed loop operation of the second control loop
As already mentioned under “General” the 2nd control loop optimizes the adjustments of the first control loop over a longer time to achieve the maximum conversion of the catalyst in a very small window of air/fuel ratio close to Lambda=1. The second control loop uses a binary Oxygen sensor which is operated at a target value of sensor output voltage. Deviations from the target voltage are corrected by adjusting the air/fuel ratio until the target voltage is achieved again. The controller of the 2nd control loop is a combination of proportional and integral (PI-) controller. The proportional and the integral portion of the controller have individual enable criteria.

Parameters evaluated to begin closed loop (second control loop)

Enable criteria for P-portion of the controller
The proportional-portion of the controller corrects short term deviations and achieves the target sensor output voltage.

Parameter / System	Condition/Evaluation	Monitor
Closed loop condition for the first control loop. Minimum of integrated mass air flow passed.	No fault detected in wiring of the sensor or the sensor IC (linear sensors). Fuel control performs normal, no fault is detected and fuel control is not temporarily disabled.	Oxygen sensor monitor for the front sensor(s). Monitor of the mass air flow meter (out of range, rationality). Fuel system monitor
Oxygen Sensor for 2nd control loop readiness	Sensor heated up, a minimum power was delivered to the heater, sensor voltage has left the voltage range of a cold sensor	Monitored by diagnostic of the heater monitor and sensor wiring monitor.
Catalyst model temperature	Exhaust Temperature > threshold, calculated based on mass air flow integral, ignition timing, lambda value, vehicle speed.	Monitor of the mass air flow meter (out of range, rationality) Fuel system monitor, oxygen sensor monitor, vehicle speed sensor monitor
Variable Valve Timing System (if applicable)	No fault detected	VVT monitor
EVAP purge System	No fault detected	EVAP purge monitor
Mass Air Flow Meter	No fault detected	Mass Air Flow Meter monitor
Controller range for the first control loop is not at the threshold limit.	Controller for the first control loop not at minimum or maximum threshold	Oxygen sensor monitor

Figure 156: Enable criteria for P-portion of the controller

Enable criteria for adaptive I-portion of the controller (additionally)
The integral-portion of the controller corrects permanent deviations / shifts over a longer time by adjusting the adaptation.

Parameter / System	Condition/Evaluation	Monitor
Engine speed/load within a normal operating range	Engine Speed within 1500-4000 rpm Engine Load within 20-60% (Typical values; may differ on individual concepts)	Engine Speed Sensor monitor, Mass Air Flow Meter monitor, fuel system monitor.
Carbon Canister of the EVAP system	High load of carbon canister indicated during EVAP purge.	EVAP purge monitor.
Minimum of integrated mass air flow passed and P-portion of controller achieves target range for Oxygen sensor voltage already..	Oxygen sensor voltage of 2nd control loop, P-portion of controller for 2nd control loop	Oxygen sensor monitor for rear sensor. Fuel system monitor

Figure 157: Enable criteria for adaptive I-portion of the controller (additionally)

Typical Values (second control loop)
Given a normal cold started FTP (around 20°C) most of the concepts reaches the closed loop condition for the second control loop within 60s to 100s.

18.1 Fuel Trim Values

The description of ”Lambda-Control Strategies” within the ”Fuel System Monitoring” section of this document includes reference to fuel trim values.

19 REVISIONS

Page	Date	Content	Remark

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
Catalyst		oxygen storage capacity	average of the normalized, weighted and corrected reciprocal	>	1	[-]	engine coolant temperature	>	48	[°C]	80	[s]	once / DCY	2 DCY
Bank 1	P0421		relative oxygen storage capacity of 2 valid monitor cycles				heat energy integral	>	1200 .. 12000	[kJ]				
Bank 2	P0431						minimum calculated catalyst temperature during driving cycle	>	560	[°C]				
							calculated catalyst temperature	>	520	[°C]				
							calculated catalyst temperature	<	800	[°C]				
							temperature difference between dynamic and stationary catalyst temperature	>	-100	[°C]				
							temperature difference between dynamic and stationary catalyst temperature	<	100	[°C]				
							engine speed	>	896	[rpm]				
							engine speed	<	3520	[rpm]				
							mass air as f(engine speed)	>	120 .. 130	[mg/stk]				
							mass air as f(engine speed)	<	700	[mg/stk]				
							mass air flow	>	35	[kg/h]				
							mass air flow	<	200	[kg/h]				
							closed loop		active					
							downstream oxygen sensor		ready					
							absolute value of lambda controller as f(result of response check oxygen sensor)	<	15 .. 30	[%]				
							absolute value of lambda deviation as f(time since lambda change, result of response check oxygen sensor)	<	0.06 .. 0.2	[-]				
							absolute value of filtered 2nd loop lambda controller p share	<	0,015	[-]				
							cat purge		not active					
							canister purge		not active					
							or canister purge active and canister load	<	1,2	[-]				
							delta engine speed to floating mean value	<	200	[rpm]				
							delta air mass to floating mean value	<	70	[mg/stk]				
							delta lambda controller to floating mean value	<	6	[%]				
							internal resistance of downstream oxygen sensor	<=	3000	[Ohm]				
Misfire cylinder 1 to 6	P0301 P0304 P0303	crankshaft speed fluctuation single or multiple misfire	emission threshold misifre rate (MR) 1st intervall	>	2.04	[%]	engine speed engine speed load [%]	> < >	485 6600 5.2 .. 19.8	[rpm] [rpm] [%]	1000	[rev]	continuous	2 DCY
	P0306 P0302 P0305		emission threshold misifre rate (MR)	>	2.04	[%]	time after engine start [s] engine temperature [°C] rough road	> >	idle speed - 150rpm + 1 cam. Rev. -20 not detected	[°C]	1000	[rev]	continuous	2 DCY
	P0300		catalyst damage misifre rate (MR)	>	5..15	[%]					200	[rev]	continuous	immediately
Evap Purge Valve	P0444	open circuit	signal voltage	=	3	[V]	evap purge valve engine start		comanded off completed		2.0	[s]	continuous	2 DCY
	P0458	short to ground	signal voltage	<	1,89	[V]	evap purge valve engine start		comanded off completed					
	P0459	short to battery plus	signal current	>	5	[A]	evap purge valve engine start		comanded on completed					
Evap Purge System manifold purge line 1	P0441	functional check	cross-correlation manifoldpressure to modeled manifoldpressure	<	0,05		min engine speed max engine speed engine speed deviation ECT or ECT-model in case of ECT failure ambient air temperature altitude vehicle speed Maximum allowed battery voltage Minimum required battery voltage	> < < > > > > > < >	950 2000 200 39,75 60 3,8 730,01 15 16 10	[rpm] [rpm] [rpm] [°C] [°C] [°C] [hPa] [km/h] [V] [V]	5	[s]	once / DCY	2 DCY
							Minimum integrated air flow through engine since engine start	>	6,7	[kg]				

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							Minimum pressure difference between ambient and manifold	>	290..370	[hPa]				
							Minumum allowed interruptive relative air changing	>	0,05..0.08	[-]				
							Minimum integrated air mass flow through canister purge valve	>=	10	[g]				
							Maximum allowed engine speed change	<	200	[rpm]				
							Maximum allowed relative air charging	<	1,9	[-]				
							Maximum allowed lambda controller value	<	15	%				
							Minimum required lambda controller value	>	-15	%				
							Maximum allowed exhaust gas lambda	<	1,07	[-]				
							Minimum required exhaust gas lambda	>	0,93	[-]				
					interruptive conditions		Maximum allowed canister load	<	0,4...0,65	[-]				
					hysteresis:		Maximum interruptive engine speed	>	2100	[rpm]				
							Minimum interruptive engine speed	<	900	[rpm]				
							Minimum allowed interruptive relative air changing	<	0,07...0,085	[-]				
							Minimum allowed interruptive pressure difference between ambient and manifold	<	280 .. 360	[hPa]				
							Maximum allowed interruptive engine speed change	>	100	[rpm]				
							Maximum allowed interruptive manifold air pressure	>	13 .. 19	[hPa]				
							Maximum allowed interruptive boost pressure during transition of full load to part load	<=	-40	[hPa]				
					disable conditions:		No pending DTCs:		see Disabling List and Lookup Table					
Evap Purge System turbo charger purge line 2	P0441	functional check	cross-correlation pressure sensor in 2nd purge line to modeled pressure	<	0,05		min engine speed	>	950	[rpm]	3	[s]	once / DCY	2 DCY
							max engine speed	<	2000	[rpm]				
							engine speed deviation	<	200	[rpm]				
							ECT or	>	39,75	[°C]				
							ECT-model in case of ECT failure	>	60	[°C]				
							ambient air temperature	>	3,8	[°C]				
							altitude	>	730,01	[hPa]				
							vehicle speed	>	15	[km/h]				
							boost pressure	<	-250	[hPa]				
							Minimum integrated air mass flow through canister purge valve	>=	4	g				
							Maximum allowed battery voltage	<	16	[V]				
							Minimum required battery voltage	>	10	[V]				
							Maximum allowed canister load		0,4...0,65	[-]				
					interruptive conditions		Minimum integrated air flow through engine since engine start	>	6,7	[kg]				
					hysteresis:		Maximum allowed interruptive engine speed	>	2600	[rpm]				
							Maximum allowed interruptive pressure change upstream throttle	>	40	[hPa]				
							Maximum allowed interruptive throttle pedal position	>	15	[°TPS]				
					disable conditions:		No pending DTCs:		see Disabling List and Lookup Table					
Evap System Very Small Leak	P0456	pressure check	time for pressure drop	<	**3.8 .. 5.8**	**[s]**	evap purge valve		no purge		150	[s]	once / DCY	2 DCY
							altitude	>	730,01	[hPa]				
							ECT	>	4,5	[°C]				
							IAT	>	4,5	[°C]				
							delta ambient pressure (downhill)	>	2,073	[hPa]				
							or							
							delta ambient pressure (uphill)	<	-2,07	[hPa]				
							IAT drop after engine start	<	9,75	[°C]				
							time after engine start	>	10	[s]				
							time after engine start	<	740	[s]				
							ECT @ start	>	4,5	[°C]				
							ECT @ start	<	42	[°C]				
							vehicle speed once	>	0	[km/h]				
							vehicle speed	<	120	[km/h]				
							vehicle acceleration	<	2,5	[m/s²]				
					disable conditions:		No pending DTCs:		see Disabling List and Lookup Table					
Small Leak	P0442	pressure check	time for pressure drop	<	**1.3 .. 2.3**	**[s]**	evap purge valve		no purge		150	[s]	once / DCY	2 DCY
							altitude	>	730,01	[hPa]				

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							ECT	>	4,5	[°C]				
							IAT	>	4,5	[°C]				
							delta ambient pressure (downhill)	>	2,073	[hPa]				
							or							
							delta ambient pressure (uphill)	<	-2,07	[hPa]				
							IAT drop after engine start	<	9,75	[°C]				
							time after engine start	>	10	[s]				
							time after engine start	<	1240	[s]				
							ECT @ start	>	4,5	[°C]				
							ECT @ start	<	42	[°C]				
							vehicle speed once	>	0	[km/h]				
							vehicle speed	<	120	[km/h]				
					disable conditions:		No pending DTCs:	see Disabling List and Lookup Table						
Large Leak	P0455	pressure check	time for pressure drop	<	**0,85**	**[s]**	evap purge valve		no purge		150	[s]	once / DCY	2 DCY
							altitude	>	730,01	[hPa]				
							ECT	>	4,5	[°C]				
							IAT	>	4,5	[°C]				
							delta ambient pressure (downhill)	>	2,073	[hPa]				
							or							
							delta ambient pressure (uphill)	<	-2,07	[hPa]				
							IAT drop after engine start	<	9,75	[°C]				
							time after engine start	>	10	[s]				
							time after engine start	<	1240	[s]				
							ECT @ start	>	4,5	[°C]				
							ECT @ start	<	42	[°C]				
							vehicle speed once	>	0	[km/h]				
							vehicle speed	<	120	[km/h]				
					disable conditions:		No pending DTCs:	see Disabling List and Lookup Table						
LDP	P2400	open circuit	signal current	>	0,8	[mA]	LDP		comanded on		2	[s]	continuous	2 DC
	P2401	short to ground	signal voltage	>	1,87	[V]	LDP		comanded off					
	P2402	short to battery plus	signal current	>	2	[A]	LDP		comanded on					
Reed Sensor	P2403	rationalty check unable to close	switch point reed switch time	<	**0,5**	**[s]**	LDP same as for		comanded on P0442		10	[s]	once / DCY	2 DCY
	P2404	rationalty check unable to open	switch point reed switch time	<	**0,4**	**[s]**	LDP same as for		comanded on P0442					
Vacuum supply	P1476	functional check	switch point reed switch count and	>	**1**	**[-]**					60	[s]	once / DCY	2 DCY
			switch point reed switch count or	<	**0**	**[-]**								
			switch point reed switch time	>	**10**	**[s]**	LDP same as for		comanded on P0442					
Fuel System additive							lambda control		closed loop		60	[s]	continuous	2 DCY
Bank 1	P0172	system too rich	adaptive value below threshold	<	-3,5	mg/stk	engine coolant temperature	>	60	[°C]				
Bank 2	P0175	system too rich	adaptive value below threshold	<	-3,5	mg/stk	intake temperature	<	80,25	[°C]				
							mass fuel flow	<	18	[mg/stk]				
Bank 1	P0171	system too lean	adaptive value above threshold	>	3,5	mg/stk	engine speed	<	864	[rpm]				
Bank 2	P0174	system too lean	adaptive value above threshold	>	3,5	mg/stk								
					disable conditions:		No pending DTCs:		see Disabling List and Lookup Table					
multiplicative small valve lift							lambda control		closed loop		60	[s]	continuous	2 DCY
							valve lift		small					
Bank 1	P0172	system too rich	adaptive value below threshold	<	-30	[%]	engine coolant temperature	>	60	[°C]				
Bank 2	P0175	system too rich	adaptive value below threshold	<	-30	[%]	intake temperature	<	80,25	[°C]				
							fuel mass	between	7,5	[mg/stk]				
							fuel mass	and	0..32	[mg/stk]				
Bank 1	P0171	system too lean	adaptive value above threshold	>	30	[%]	engine speed	between	896	[rpm]				
Bank 2	P0174	system too lean	adaptive value above threshold	>	30	[%]	engine speed	and	2496	[rpm]				
					disable conditions:		No pending DTCs:		see Disabling List and Lookup Table					
multiplicative large valve lift							lambda control		closed loop		60	[s]	continuous	2 DCY
							valve lift		large					
Bank 1	P0172	system too rich	adaptive value below threshold	<	-30	[%]	engine coolant temperature	>	60	[°C]				

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
Bank 2	P0175	system too rich	adaptive value below threshold	<	-30	[%]	intake temperature	<	80,25	[°C]				
							fuel mass	between	12,99	[mg/stk]				
							fuel mass	and	22.51 ...89.99	[mg/stk]				
Bank 1	P0171	system too lean	adaptive value above threshold	>	30	[%]	engine speed	between	1056	[rpm]				
Bank 2	P0174	system too lean	adaptive value above threshold	>	30	[%]	engine speed	and	3008	[rpm]				
					disable conditions:		No pending DTCs:		see Disabling List and Lookup Table					
controller							lambda control		closed loop		30	[s]	continuous	2DCY
							engine coolant temperature	>	60	[°C]				
Bank 1	P0172	system too rich	controller value below threshold	<	-32	[%]								
Bank 2	P0175	system too rich	controller value below threshold	<	-32	[%]								
Bank 1	P0171	system too lean	controller value above threshold	>	32	[%]								
Bank 2	P0174	system too lean	controller value above threshold	>	32	[%]								
					disable conditions:		No pending DTCs:		see Disabling List and Lookup Table					
Fuel System														
cylinder individual														
Cylinder 1	P02CC	out of range low	adaptive value below threshold	<	-291 .. -96	[µs]	fuel pressure	<	205000	[hPa]	1000	[rev]	continuous	2DCY
	P02CD	out of range high	adaptive value above threshold	>	96 .. 291	[µs]	fuel pressure	>	55000	[hPa]				
	P02EE	plausibility check	injector closing time not valid	>	0,9	[-]	engine speed	<	8160	[rpm]				
							engine speed	>	0	[rpm]				
Cylinder 4	P02D2	out of range low	adaptive value below threshold	<	-291 .. -96	[µs]	engine coolant temperature	<	142,5	[°C]	1000	[rev]	continuous	2DCY
	P02D3	out of range high	adaptive value above threshold	>	96 .. 291	[µs]	engine coolant temperature	>	-48	[°C]				
	P02F1	plausibility check	injector closing time not valid	>	0,9	[-]	fuel temperature	<	142,5	[°C]				
							fuel temperature	>	-48	[°C]				
Cylinder 3	P02D0	out of range low	adaptive value below threshold	<	-291 .. -96	[µs]	fuel mass	<	1389	[mg/stk]	1000	[rev]	continuous	2DCY
	P02D1	out of range high	adaptive value above threshold	>	96 .. 291	[µs]	Fuel System Status		no cut off					
	P02F0	plausibility check	injector closing time not valid	>	0,9	[-]								
Cylinder 6	P02D6	out of range low	adaptive value below threshold	<	-291 .. -96	[µs]					1000	[rev]	continuous	2DCY
	P02D7	out of range high	adaptive value above threshold	>	96 .. 291	[µs]								
	P02F3	plausibility check	injector closing time not valid	>	0,9	[-]								
Cylinder 2	P02CE	out of range low	adaptive value below threshold	<	-291 .. -96	[µs]					1000	[rev]	continuous	2DCY
	P02CF	out of range high	adaptive value above threshold	>	96 .. 291	[µs]								
	P02EF	plausibility check	injector closing time not valid	>	0,9	[-]								
Cylinder 5	P02D4	out of range low	adaptive value below threshold	<	-291 .. -96	[µs]					1000	[rev]	continuous	2DCY
	P02D5	out of range high	adaptive value above threshold	>	96 .. 291	[µs]								
	P02F2	plausibility check	injector closing time not valid	>	0,9	[-]								
					disable conditions:		No pending DTCs:		see Disabling List and Lookup Table					
Fuel System		AF to rich	integral part + adaptation of trim control post cat	<	-0,04	[-]	lambda control		closed loop		120	[s]	continuous	2 DCY
second loop control			for a time of	>	10	[s]								
Bank 1	P2096						trim control post cat		closed loop					
Bank 2	P2098													
							timer	>	10	[s]				
Bank 1	P2097	AF to lean	integral part + adaptation of trim control post cat	>	0,04	[-]								
Bank 2	P2099		for a time of	>	10	[s]								
					disable conditions:				see Disabling List and Lookup Table					
Oxygen Sensor														
front														
Bank 1	P0132	short to battery plus	error information from integrated circuit (WRAF-IC)		set						2,5	[s]	continuous	2 DCY
Bank 2	P0152													
Bank 1	P0131	short to ground	error information from integrated circuit (WRAF-IC)		set									
Bank 2	P0151													

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
Bank 1 **Bank 2**	P2243 P2247	open circuit Reference voltage (UN)	signal voltage	<	0,2	[V]	functional check heater (P2A00 /P2A03) and signal check during fuel cut off (P2297/P2298)		failed finished		10	[s]	continuous	2 DCY
Bank 1 **Bank 2**	P2237 P2240	open circuit virtual ground (VM) or open circuit pump current (IP)	Total cumulated lambda deviation	<=	0,0049	[-]	sensor signal sensor signal engine speed mass air flow time of forced lambda stimulation period amplitude of forced lambda stimulation dynamic monitor value of last trip counter of forced lambda stimulation periods	> < > > > > < >=	1,958 2,012 992 10 0,5 0,00647 32 20	[V] [V] [rpm] [kg/h] [s] [-] [-] [-]	10	[s]	continuous	2 DCY
			or signal voltage	<	2.1	[V]	fuel cut off time modeled exhaust temperature heater	> 	4 200 commanded on	[s] [°C]				
Bank 1 **Bank 2**	P2626 P2629	open circuit trim current (IA)	signal voltage	>	5	[V]	fuel cut off time modeled exhaust gas temp. heater	> 	4 200 commanded on	[s] [°C]	10	[s]	continuous	2 DCY
Bank 1 **Bank 2**	P0053 P0059	sensor heater too weak	signal voltage and signal voltage permanent for a time of	> < =	1,90 2.1 4	[V] [V] [s]	functional check heater (P2A00 /P2A03) and signal check during fuel cut off (P2297/P2298)		failed failed		10	[s]	continuous	2 DCY
Bank 1 **Bank 2**	P2414 P2415	signal range check	signal voltage	>	3,101	[V]	Fuel System Status		no cut off		100	[s]	continuous	2 DCY
					disable conditions:									
Bank 1	P2195	characteristic line shift to lean	lambda value	>	0,92	[-]	fuel system second loop control check (P2096-P2099)		failed		60	[s]	continuous	2 DCY
Bank 2	P2197						and (lambda setpoint is shifted to after an integrated air mass in a time intervall for a time)	 = > < =	 0,8 100 10 50	 [-] [g] [s] [x 0.1 s]				
			or (from trim controller corrected lambda value after an integrated air mass signal voltage down controller)	> > >= maximum limit	1,16 1600,00 0,80 	[-] [g] [V] [-]	 O2S rear engine temperature mass air flow mass air flow engine speed modeled exhaust temperature modeled exhaust temperature cat purge	 > < >= > > <= 	 ready -48 250 35 1088 200 750 not active	 [°C] [kg/h] [kg/h] [rpm] [°C] [°C] 				
Bank 1	P2196	characteristic line shift to rich	lambda value	<	1,04	[-]	fuel system second loop control check (P2096-P2099))		failed		60	[s]	continuous	2 DCY
Bank 2	P2198						and (lambda setpoint is shifted to after an integrated air mass in a time intervall for a time)	 = > < =	 1,15 100 10 50	 [-] [g] [s] [x 0.1 s]				
			or (from trim controller corrected lambda value after an integrated air mass signal voltage down controller)	< > <= minimum limit	0,85 1600,00 0,151 	[-] [g] [V] [-]	 O2S rear engine temperature mass air flow mass air flow engine speed modeled exhaust temperature	 > < >= > >	 ready -48 250 35 1088 200	 [°C] [kg/h] [kg/h] [rpm] [°C]				

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							modeled exhaust temperature	<=	750	[°C]				
							cat purge		not active					
Bank 1	P0133	response / delay check	lambda amplitude vs. modeled nominal lambda	>	1,4	[-]	engine speed	>	960	[rpm]	30	[s]	once / DCY	2 DCY
Bank 2	P0153		amplitude (mean value of 7 stimulated lambda periods)				engine speed	<	3200	[rpm]				
							mass air flow	>	173	[mg/stk]				
							mass air flow	<	520	[mg/stk]				
							delta engine speed to floating mean value	<	240	[rpm]				
							delta air mass to floating mean value	<	2.5 .. 18.4	[kg/h]				
							evap canister load	<	1,2	[-]				
							delta driver torque request to floating mean value	<	0,2	[-]				
		delay check only	normalized primary lambda controller amplitude	>	1,4	[-]	engine speed	>	896	[rpm]				
							engine speed	<	3200	[rpm]				
							mass air flow	>	15	[kg/h]				
							mass air flow	<	235	[kg/h]				
							delta engine speed to floating mean value	<	352	[rpm]				
							delta air mass to floating mean value	<	120	[kg/h]				
							delta torque to floating mean value	<	130	[Nm]				
							vehicle speed	>	35	[km/h]				
Oxygen Sensor front Heater														
Bank1	P0030	open circuit	Heater current (error information from integrated	=	1	[-]	heater		commanded on		2,5	[s]	continuous	2 DCY
Bank2	P0050		circuit (Heater-IC))				PWM signal of O2S heater circuit control	>	1,172	[%]				
							PWM signal of O2S heater circuit control	<	98,828	[%]				
Bank1	P0031	short to ground	Heater voltage (error information from integrated	=	1	[-]	heater		commanded on					
Bank2	P0051		circuit (Heater-IC))				PWM signal of O2S heater circuit control	<	98,828	[%]				
Bank1	P0032	short to Battery plus	Heater current (error information from integrated	=	1	[-]	heater		commanded on					
Bank2	P0052		circuit (Heater-IC))				PWM signal of O2S heater circuit control	>	1,172	[%]				
Bank1	P0135	sensor temperature out of range	functional heater check (P2A00								20	[s]	continuous	2 DCY
Bank2	P0155		/P2A03)		failed									
			and open circuit check (P2243/P2247)		finished, no fault									
			and signal check during fuel cut off (P2297/P2298)		finished, no fault									
Bank1	P0606	internal hardware check	SPI-Communication		lost						5	[s]	continuous	2 DCY
Bank2	P0606													
					disable conditions:				see Disabling List and Lookup Table					
Oxygen Sensor front temperature														
Bank1	P2A00	sensor temperature out of range	sensor temperature	>	2047,9	[°C]	lambda control		closed loop		20	[s]	continuous	2 DCY
Bank2	P2A03		or sensor temperature	<	680	[°C]								
Bank1	P0606	internal hardware check	SPI-Communication		lost						5	[s]	continuous	2 DCY
Bank2	P0606													
Oxygen Sensor fuel cut off														
Bank1	P2297	low voltage during fuel cut off	signal voltage	<	3,101	[V]	fuel cut off time	>	4	[s]	7,1	[s]	continuous	2 DCY
Bank2	P2298		permanent for a time of	>	1,5	[s]	modeled exhaust temperature	>	199,975	[°C]				
							heater		commanded on					

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							fuel cut off		active					
					disable conditions:				see Disabling List and Lookup Table					
Oxygen Sensor front, swapped signals between bank 1/2	P0040	interchanged upstream oxygen sensors	lambda control bank1	>	24,98	[%]	lambda control		closed loop		20	[s]	once / DCY	2 DCY
			and lambda control bank2	<	-24,98	[%]	variable valve lift		small					
			or											
			lambda control bank1	<	-24,98	[%]								
			and lambda control bank2	>	24,98	[%]								
			after an integrated air mass	>	20	[g]								
			and											
			lambda control bank1	>	24,98	[%]	lambda control		closed loop					
			and lambda control bank2	<	-24,98	[%]	variable valve lift		large					
			or											
			lambda control bank1	<	-24,98	[%]								
			and lambda control bank2	>	24,98	[%]								
			after an integrated air mass	>	20	[g]								
					disable conditions:				see Disabling List and Lookup Table					
Oxygen Sensor rear														
Bank1	P0137	short to ground	signal voltage	<	0,02	[V]	O2S rear dewpoint		exceeded		25	[s]	continuous	2 DCY
Bank2	P0157		and internal resistance	<	10	[Ohm]	Heater O2S rear		commanded on					
Bank1 **Bank2**	P0138 P0158	short to battery plus	signal voltage	>	1,099	[V]					2,5	[s]	continuous	2 DCY
Bank1	P0140	open circuit	internal resistance	>	60000	[Ohm]	O2S rear dewpoint		exceeded		25	[s]	continuous	2 DCY
Bank2	P0160		signal voltage	>	0,376	[V]	Heater O2S rear		commanded on					
			signal voltage	<	0,47	[V]								
Bank1	P115C	signal range check	minimum signal voltage at state "measure lean"	>	0,1	[V]	conditions for catalyst monitoring		present		20	[s]	once / DCY	2 DCY
Bank2	P115D		and integrated O2 load at state "measure lean"	>	2,5	[g]	lambda set point		lean, after switch rich to lean (state "measure lean") s. descriptions					
Bank1	P115A	signal range check	maximum signal voltage at state "measure rich"	<	0,75	[V]	conditions for catalyst monitoring		present		20	[s]	once / DCY	2 DCY
Bank2	P115B		and integrated O2 load at state "measure rich"	>	2,5	[g]	lambda set point		rich, after switch lean to rich (state "measure rich") s. descriptions					
Bank1	P013A	signal voltage gradient	absolute value of signal voltage gradient (maximum value of 2 measurements)	<	1038	[mV/s]	(Catalyst Monitor		active		40	[s]	once / DCY	2 DCY
Bank2	P013C						and		lean, (state "measure lean")					
							lambda set point							
							)							
			or											
			absolute value of signal voltage gradient (maximum value of 2 measurements)	<	1400	[mV/s]	(fuel cut off		active					
							and							
							integrated O2 load before fuel cut off	>	0,005	[g]				
							)							
							and							
							(signal voltage at transition to check	>	0,65	[V]				
							mass air flow	>	10	[kg/h]				
							mass air flow	<=	250	[kg/h]				
							Rear O2 Sensor		ready					

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							vehicle speed	>	0	[km/h]				
							vehicle speed	<=	150	[km/h]				
							internal resistance	<	3000	[Ohm]				
							)							
Bank1	P013B	signal voltage gradient	absolute value of signal voltage gradient (maximum value of 2 measurements)	<	536	[mV/s]	(Catalyst Monitor		active		40	[s]	once / DCY	2 DCY
Bank2	P013D						and							
							lambda set point		rich (state "measure rich")					
							)							
			or											
			absolute value of signal voltage gradient (maximum value of 2 measurements)	<	520	[mV/s]	(after a valid fuel cut-off condition:							
							fuel cut-off		active					
							signal voltage at fuel cut-off)	<	0,1601	[V]				
							(within a signal window	>	0,249	[V]				
							and		0,75	[V]				
							for a time	<	4	[s]				
							))							
							and							
							(Rear O2 Sensor		ready					
							internal resistance	<	3000	[Ohm]				
							mass air flow	>	30	[kg/h]				
							mass air flow	<	300	[kg/h]				
							(Catalyst System Status		no catalyst purge					
							or							
							integrated air mass flow after fuel cut-off	<	250	[g]				
							)							
					disable conditions:									
Bank1	P013E	corrected sensor voltage delay time after lambda set point switch from rich to lean	delay time	>	1,1	[s]	conditions for catalyst monitoring		present		40	[s]	once / DCY	2 DCY
Bank2	P014A		(minimum value of 2 measurements)				lambda set point		rich (state "measure rich") s. descriptions					
Bank1	P013F	corrected sensor voltage delay time after lambda set point switch from lean to rich	delay time	>	2	[s]	conditions for catalyst monitoring		present		40	[s]	once / DCY	2 DCY
Bank2	P014B		(minimum value of 2 measurements)				lambda set point		lean (state "measure lean") s. descriptions					
Oxygen Sensor rear Heater														
Bank1	P0036	open circuit	Heater current (error information from integrated circuit (Heater-IC))	=	1	[-]	heater		commanded on		2,5	[s]	continuous	2 DCY
Bank2	P0056						duty cycle	>	0,391	[%]				
							duty cycle	<	99,609	[%]				
	P0037	short to ground	Heater voltage (error information from integrated circuit (Heater-IC))	=	1	[-]	heater		commanded on					
	P0057						duty cycle	<	99,609	[%]				
	P0038	short to battery plus	Heater current (error information from integrated circuit (Heater-IC))	=	1	[-]	heater		commanded on					
	P0058						duty cycle	>	0,391	[%]				
							modeled exhaust temperature rear cat	>	-273,15	[°C]				
Bank1	P0141	out of range	internal resistance O2S rear	>	3000	[Ohm]	O2S rear dewpoint		exceeded		40	[s]	once / DCY	2 DCY
Bank2	P0161		counter of valid measurements of internal resistance O2S rear	>	8	[-]	heater duty cycle	>	0,391	[%]				
							heater duty cycle	<	99,609	[%]				
							modeled exhaust temperature rear cat	<	799,975	[°C]				

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							engine off duration time (depending on coolant temperature by engine start)	>=	35 50 69 101 0 5 6 12	[°C] [min]				
					disable conditions:									
Oxygen Sensor **rear, swapped signals between bank 1/2**	P0041	rear active test Bank1 and Bank2 failed	löschen!!! (signal voltage Bank1 and signal voltage Bank2) or (signal voltage Bank1 and signal voltage Bank2)	><	0,4 [V]		Active Test fuel system second loop control check (P2096-P2099)) and (lambda setpoint Bank 1 is shifted to after an integrated air mass in a time intervall for a time) Active Test fuel system second loop control check (P2096-P2099) and (lambda setpoint Bank 2 is shifted to after an integrated air mass in a time intervall for a time) Active Test fuel system second loop control check (P2096-P2099) and (lambda setpoint Bank 1 is shifted to after an integrated air mass in a time intervall for a time) Active Test fuel system second loop control check (P2096-P2099) and (lambda setpoint Bank 2 is shifted to after an integrated air mass in a time intervall for a time)	=	commanded on failed 1,15 [-] 100 [g] 10 [s] 50 [x 0.1 s] commanded on failed 0,8 [-] 100 [g] 10 [s] 50 [x 0.1 s] commanded on failed 0,8 [-] 100 [g] 10 [s] 50 [x 0.1 s] commanded on failed 1,15 [-] 100 [g] 10 [s] 50 [x 0.1 s]	60	[s]	continuous	2 DCY
Oxygen Sensor **rear, active test**														
Bank1 **Bank2**	P2271 P2273	downstream oxygen sensor stuck rich	signal voltage	>	0,4 [V]		Active Test fuel system second loop control check (P2096-P2099) and (lambda setpoint is shifted to after an integrated air mass in a time intervall for a time)	=	commanded on failed 1,15 [-] 100 [g] 10 [s] 50 [x 0.1 s]		60	[s]	continuous	2 DCY
Bank1 **Bank2**	P2270 P2272	downstream oxygen sensor stuck lean	signal voltage	<	0,498 [V]		Active Test fuel system second loop control check (P2096-P2099) and (lambda setpoint is shifted to after an integrated air mass in a time intervall for a time)	=	commanded on failed 0,8 [-] 100 [g] 10 [s] 50 [x 0.1 s]					
					disable conditions:									
Oxygen Sensor **(WRAF sensor)**														
Bank1 **Bank2**	P1641 P1642	internal hardware check	SPI-initialisation		failed						2	[s]	once / DCY	2 DCY
Bank1 **Bank2**	P1641 P1642	internal hardware check	SPI-Communication		lost						2	[s]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
					disable conditions:									
ECT Sensor	P0118	short to battery plus open circuit	ECT Sensor voltage	>	4.95 (means: - 40°C)	[V]	intake air temperature or time after engine start	> >	-30 300	[°C] [s]	0,5	[s]	continuous	2 DCY
	P0117	short to ground	ECT Sensor voltage	<	0.0951 (means: 141°C)	[V]								
	P0119	intermittent	delta ECT	>	3 disable conditions:	[K]					0,5	[s]	continuous	2 DCY
	P0116	stuck check after hot start	delta ECT f(ECT at engine start)	<	0 .. 3	[°C]	decision made at time after engine start driving condition 1 vehicle speed engine speed mass air flow time required f(intake air temp. at engine start) driving condition 2 fuel cut off or vehicle speed time required f(intake air temp. at engine start)	> > > > <	300 40 1300 65 40 .. 75 active 5 30 .. 45	[s] [km/h] [rpm] [kg/h] [s] [km/h] [s]	300	[s]	once / DCY	2 DCY
Coolant System / Thermostat	P3081	comparison of ECT and modeled ECT	ECT modeled ECT	<= >	69,75 69,75	[°C] [°C]	ECT at engine start time after engine start without fuel cut off	< >	69,75 400...1200	[°C] [s]	600	[s]	once / DCY	2 DCY
	P0599	short circuit to battery	signal current	>	10	[A]	PWM output signal for the electronic controlled thermostat	>=	0	[%]	2.5	[s]	continuous	2 DCY
	P0598	short circuit to ground	signal voltage	<	1,87	[V]	PWM output signal for the electronic controlled thermostat	<=	99,609	[%]				
	P0597	open circuit	signal voltage	=	3	[V]	PWM output signal for the electronic controlled thermostat and PWM output signal for the electronic controlled thermostat	>= <=	0 99,609	[%] [%]				
Thermostat	P2181	monitoring of ECT during engine warm-up	ECT modeled ECT	< >	79,5 79,5	[°C] [°C]	ambient air temperature minimum coolant temperature maximum coolant temperature driving conditions at ECT (in case of failure healing) ratio of time while vehicle speed ratio of time while air-mass flow driving conditions at modeled ECT (in case of error detection) ratio of time in fuel cut off ratio of time while air-mass flow ratio of time while vehicle speed ratio of time while engine stopped difference of minimum IAT since engine start	>= >= <= exceeding <= <= <= <= exceeding <= <= <= <= > <= >	-9,75 -9,75 60 79,5 55 30 .. 60 35,16 20 .. 32,5 79,5 60,16 60,16 20 .. 32,5 60,16 100 80,07 -48	[°C] [°C] [°C] [°C] [%] [km/h] [%] [kg/h] [°C] [%] [%] [kg/h] [%] [km/h] [%] [°C]	600	[s]	once / DCY	2 DCY
	P0128	monitoring of ECT at warmed-up engine	low pass filtered ECT or detection of P2181	<	69,75	[°C]	coolant temperature at engine start ambient air temperature coolant temperature once in current DCY modeled coolant temperature low pass filtered relative load vehicle speed number of automatic engine stops no detection of P0128 in a previous driving cycle time required with conditions fullfilled	> > > > > >= <= >=	-9 -9,75 69,75 80 10 50 255 80	[°C] [°C] [°C] [°C] [%] [km/h] [-] [s]	30	[s]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
Engine OFF Timer	P1530	rationality check	difference between engine-off-time and ECM keep alive-time	>	5	[s]	**choice of:**				1	s	once / DCY	2 DCY
							power latch		active					
							engine off timer reset		not activated					
							engine off timer state		no error and running					
							time delay	>=	0.5	[s]				
							or							
							delay timer for acquisition of engine off (hardware values)	>	0.06	[s]				
							or							
							result of low power check initialization	> ; <	0.0; 9.0	[-]				
Engine OFF Timer	P1530	internal hardware check	**case 1:** engine off timer signal state **case 2:** engine off timer signal state **case 3:** engine off timer signal state **and** engine off timer hw reset performed				engine off timer reset		not active		2,60	[s]	once / DCY	2 DCY
Engine OFF Timer	P1530	rationality check	difference between engine-off-time and ECM keep alive-time	>=	10	[s]	time after engine stop		172800	[s]	0.01			
								<				[s]	once / DCY	2 DCY
							engine off time		not stopped		once / DCY			
							engine off timer state		valid					
							time after reset	<	5	[s]				
							SPI communication failure after reset		not detected					
Engine OFF Timer	P1530	rationality check	difference between time from "engine off timer hw-device" and running ECM time	>=	5	[%]	engine run time		172800	[s]	300.00			
								<				s	once / DCY	2 DCY
							engine off timer reset		not active		continuous			
			compensated offset		1	[s]								
							engine off timer signal state		valid					
							engine running		active					
Camshaft Position Sensor 1 Sensor 2	P0342 P0347	plausibility check	engine revolutions without synchronization	>	12	[rev]	engine in synchronized mode		active		2	[sec]	continuous	2 DCY
	P0344 P0349	rationalty check	Counter CAM Edge not in designed window	>	4		engine in synchronized mode		active		2	[sec]	continuous	2 DCY
Camshaft Sensor	P0343 P0348	rationalty check	length of signal period		0.92	[s]	engine in synchronized mode		active		2	[sec]	continuous	2 DCY
	P0341 P0346	plausibility check	engine revolutions without changing camshaft edge counter	>	4	[rev]	engine in synchronized mode		active		2	[sec]	continuous	2 DCY
Camshaft Position	P1340 P1324	rationalty check	CAM angle drift between two adaptations	>	8	[°CA]	engine speed	>	420	[rpm]	2	[sec]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
Camshaft Sensor Inlet	P0016 P0018	rationalty check	CAM angle difference between actual and theoretical postion	> <	12 18	[°CRK] [°CRK]	engine speed	>	420	[rpm]	2	[sec]	continuous	2 DCY
Camshaft Position Sensor 1 Sensor 2	P0367 P0392	plausibility check	engine revolutions without synchronization	>	12	[rev]	engine in synchronized mode		active		2	[sec]	continuous	2 DCY
	P0369 P0394	rationalty check	Counter CAM Edge not in designed window	>	4		engine in synchronized mode		active		2	[sec]	continuous	2 DCY
Camshaft Sensor	P0368 P0393	rationalty check	length of signal period		0.92	[s]	engine in synchronized mode		active		2	[sec]	continuous	2 DCY
	P0366 P0391	plausibility check	engine revolutions without changing camshaft edge counter	>	4	[rev]	engine in synchronized mode		active		2	[sec]	continuous	2 DCY
Camshaft Position	P1342 P1343	rationalty check	CAM angle drift between two adaptations	>	8	[°CA]	engine speed	>	420	[rpm]	2	[sec]	continuous	2 DCY
Camshaft Sensor Outlet	P0017 P0019	rationalty check	CAM angle difference between actual and theoretical postion	> <	18 18	[°CRK] [°CRK]	engine speed	>	420	[rpm]	2	[sec]	continuous	2 DCY
Crankshaft Sensor	P0371	rationalty check	additional or missing teeth per crk. rev.	>	1	[teeth]	engine in synchronized mode		active		2	[sec]	continuous	2 DCY
	P0373	rationalty check	spike or bounce after engine running detected	>	63,0	[s*10^-6]	engine in synchronized mode		active		2	[sec]	continuous	2 DCY
VVT Actuator Inlet	P0010 P0020	open circuit	signal voltage	=	3	[V]	camshaft valve		commanded on		2	[sec]	continuous	2 DCY
Bank 1 Bank 2	P2088 P2092	short to ground	signal voltage	<	1,89	[V]	camshaft valve		commanded off					
	P2089 P2093	short to battery plus	signal current	>	5	[A]	camshaft valve		commanded on					
VVT Actuator Outlet	P0013 P0023	open circuit	signal voltage	=	3	[V]	camshaft valve		commanded on		2	[sec]	continuous	2 DCY
Bank 1 Bank 2	P2090 P2094	short to ground	signal voltage	<	1,89	[V]	camshaft valve		commanded off					

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
	P2091 P2095	short to battery plus	signal current	>	5	[A]	camshaft valve		commanded on					
VVT actuator inlet	P052A P052C	target error during catalyst heating	adjustment angle difference fault integral	> >	7 30	[°CRK] [°CRK*s]	engine speed engine speed oil temperature oil temperature battery voltage camshaft position controller catalyst heating disable conditions:	> < > < > No active DTCs:	544 6016 .. 7008 -10 120 9,953 closed loop active see Disabling List and Lookup Table	[rpm] [rpm] [°C] [°C] [V]	17	[s]	once / DCY	2 DCY
	P0011 P0021	target error	adjustment angle difference fault integral	> >	10 50	[°CRK] [°CRK*s]	engine speed engine speed oil temperature oil temperature battery voltage camshaft position controller change of setpoint in time disable conditions:	> < > < > < = No active DTCs:	544 6016 .. 7008 -10 120 9,953 closed loop 2 0,61	[rpm] [rpm] [°C] [°C] [V] [°CRK] [s]	60	[s]	continuous	2 DCY
	P000A P000C	slow response	change of actual value in required time	< =	5 0.95 .. 4.18	[°CRK] [s]	engine speed engine speed oil temperature oil temperature battery voltage camshaft position controller change of setpoint in time disable conditions:	> < > < > > = No active DTCs:	544 6016 .. 7008 -10 120 9,953 closed loop 10 0.95 .. 4.18 see Disabling List and Lookup Table	[rpm] [rpm] [°C] [°C] [V] [°CRK] [s]	60	[s]	continuous	2 DCY
VVT actuator outlet	P054A P054C	target error during catalyst heating	adjustment angle difference fault integral	> >	7 30	[°CRK] [°CRK*s]	engine speed engine speed oil temperature oil temperature battery voltage camshaft position controller catalyst heating disable conditions:	> < > < > No active DTCs:	544 6016 .. 7008 -10 120 9,953 closed loop active see Disabling List and Lookup Table	[rpm] [rpm] [°C] [°C] [V]	17	[s]	once / DCY	2 DCY
	P0014 P0024	target error	adjustment angle difference and fault integral	> >	10 50	[°CRK] [°CRK*s]	engine speed engine speed oil temperature oil temperature battery voltage camshaft position controller change of setpoint in time disable conditions:	> < > < > < = No active DTCs:	544 6016 .. 7008 -10 120 9,953 closed loop 2 0,61 see Disabling List and Lookup Table	[rpm] [rpm] [°C] [°C] [V] [°CRK] [s]	60	[s]	continuous	2 DCY
	P000B P000D	slow response	change of actual value	< =	5 0.95 .. 4.18	[°CRK] [s]	engine speed engine speed oil temperature oil temperature battery voltage camshaft position controller	> < > < > 	544 6016 .. 7008 -10 120 9,953 closed loop	[rpm] [rpm] [°C] [°C] [V]	60	[s]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							change of setpoint	>	10	[°CRK]				
							in time	=	0.95 .. 4.18	[s]				
					disable conditions:		No active DTCs:		see Disabling List and Lookup Table					
variable valve lift control Bank1	P0076	open circuit	signal voltage	=	3	[V]	valve lift		large		2	[sec]	continuous	2 DCY
		short to ground	signal voltage	<	1,89	[V]								
Bank2	P0082	short to battery plus	signal current	>	5	[A]								
variable valve lift control bank 1	P1372	comparison of closed loop regulator differences between cylinder banks during small and large lift	difference between small and large lift	>	20	[%]	oil temperature	<	120	[°C]	5	[s]	continuous	2 DCY
							valve lift		small					
							inlet camshaft position	<	115,125	[°CRK]				
bank 2	P1373		difference between small and large lift	<	-20	[%]	inlet camshaft position	>	75	[°CRK]				
							exhaust camshaft position	<	-75	[°CRK]				
							exhaust camshaft position	>	-130,125	[°CRK]				
							engine speed	<	3000	[rpm]				
							engine speed	>	1000	[rpm]				
							air-mass flow	<	279.98 .. 2778	[mg/stk]				
							air-mass flow, f(engine speed)	>	135 .. 250	[mg/stk]				
							valve lift		large		5	[s]		
							inlet camshaft position	<	124,875	[°CRK]				
							inlet camshaft position	>	75	[°CRK]				
							exhaust camshaft position	<	-75	[°CRK]				
							exhaust camshaft position	>	-130,125	[°CRK]				
							canister load	<	0,5	[-]				
							evaporation emission control valve pwm	<	35,15625	[%]				
							engine speed	<	4000	[rpm]				
							engine speed	>	1000	[rpm]				
							air-mass flow, f(engine speed)	>	150 .. 400	[mg/stk]				
					disable conditions:				see Disabling List and Lookup Table					
variable valve lift control		comparison of closed loop regulator differences before and after valve lift switching event for each cylinder bank	difference between small and large lift (abs.)	>	27	[%]	oil temperature	<	120	[°C]	5	[s]	continuous	2 DCY
bank 1	P1346						oil temperature	>	0	[°C]				
							valve lift		small lift before switching event					
bank 2	P1347						inlet camshaft position	<	113	[°CRK]				
							inlet camshaft position	>	75	[°CRK]				
							exhaust camshaft position	<	-82	[°CRK]				
							exhaust camshaft position	>	-131	[°CRK]				
							canister load	<	0,3	[-]				
							or							
							evaporation emission control valve pwm	<	50	[%]				
							engine speed	<	3500	[rpm]				
							engine speed	>	1000	[rpm]				
							air-mass flow, f(engine speed)	>	120 .. 220	[mg/stk]				
							valve lift		large lift before switching event		5	[s]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							inlet camshaft position	<	125	[°CRK]				
							inlet camshaft position	>	75	[°CRK]				
							exhaust camshaft position	<	-90	[°CRK]				
							exhaust camshaft position	>	-131	[°CRK]				
							canister load	<	0,2	[-]				
							or							
							evaporation emission control valve pwm	<	39,85	[%]				
							engine speed	<	3500	[rpm]				
							engine speed	>	1000	[rpm]				
							air-mass flow, f(engine speed)	>	112.5 .. 550	[mg/stk]				
									small lift after switching					
							valve lift		event		5	[s]		
							inlet camshaft position	<	125	[°CRK]				
							inlet camshaft position	>	75	[°CRK]				
							exhaust camshaft position	<	-82	[°CRK]				
							exhaust camshaft position	>	-131	[°CRK]				
							canister load	<	0,25	[-]				
							or							
							evaporation emission control valve pwm	<	50	[%]				
							engine speed	<	3500	[rpm]				
							engine speed	>	1000	[rpm]				
							air-mass flow, f(engine speed)	>	120 .. 220	[mg/stk]				
									large lift ater switching					
							valve lift		event		5	[s]		
							inlet camshaft position	<	125	[°CRK]				
							inlet camshaft position	>	75	[°CRK]				
							exhaust camshaft position	<	-90	[°CRK]				
							exhaust camshaft position	>	-131	[°CRK]				
							canister load	<	0,2	[-]				
							or							
							evaporation emission control valve pwm	<	39,85	[%]				
							engine speed	<	3500	[rpm]				
							engine speed	>	1000	[rpm]				
							air-mass flow, f(engine speed)	>	175 .. 550	[mg/stk]				
									see Disabling List and					
					disable conditions:				Lookup Table					
	P0077 P0083	short to ground	signal voltage	<	1,89	[V]	engine speed	>	420	[rpm]	2	[sec]	continuous	2 DCY
variable valve lift control **cylinder 1-6** **single valve stuck in large lift**	P1359 P1360 P1361 P1362 P1363 P1364	deviation of engine speed fluctuation	engine speed fluctuation	>	1900...5750	[µs]					30	[s]	continuous	2 DCY
							engine speed	<	1200	[rpm]				
							engine speed	>	580	[rpm]				
							air-mass flow	<	298..600	[mg/stk]				
							air-mass flow	>	90...300	[mg/stk]				
							accumulated time at:	>	60	[s]				
							engine speed	<	3000	[rpm]				
							engine speed	>	1250	[rpm]				
							air-mass flow	<	500	[mg/stk]				
							air-mass flow	>	100	[mg/stk]				
									see Disabling List and					
					disable conditions:				Lookup Table					
Engine Speed Sensor	P0335	Missing Signal	no engine speed signal [rpm]				camshaft revolutions detected	>	16		1	[s]	continuous	2 DCY
	P0336	plausibility check	count teeth and compare to reference gap position				camshaft revolutions detected crankshaft teeth detected (wrong number)	>	16		1	[s]	continuous	2 DCY
		check reference mark	reference mark not found											
IAT Sensor	P119A	check sum verification	check sum data wrong								0.5	[s]	continuous	2 DCY
	P119B	communication	synchronisation error or mismatched number of frames											
	P119C	signal validation	sensor functionality and processing error											
	P119D	signal validation	initalisation error											

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
	P119E	internal under voltage detection	voltage lo low											
	P11A0	internal temp. sensor element errors	bond defect								2	[s]		
	P0111	plausibility check	delta between max. and min. measured value	<	1,5	[°C]	minimum required drive distance time after start engine shut off time at engine start air mass flow integral above	> > > >	5000 600 480 7000	[m] [s] min g	1	[s]	once / DCY	2 DCY
	P0114	intermittent check	delta between intake air temperature and a low-pass-filtered (PT1) intake air temperature signal	>	2,5	[°C]					2	[s]	continuous	2 DCY
Ambient Air Temperature Sensor (over CAN)	P0073	open circuit / short to battery plus	voltage of ambient temperature sensor	>	4,88 (means: - 48°C)	V					2	[s]	continuous	2 DCY
	P0072	short to ground	voltage of ambient temperature sensor	<	0,22 (means: 77°C)	V								
	P0074	intermittent check	delta between ambient air temperature and a low-pass-filtered (PT1) ambient air temperature signal	>	2,5	[°C]					2	[s]	continuous	2 DCY
	P0071	rationality check	delta between ambient air temperature and modelled ambient air temperature	>	22	[°C]	vehicle speed vehicle speed mass air flow mass air flow engine speed coolant temperature coolant temperature elapsed time after conditions for learning ambient air temperature model are fulfilled	> < > < > > >	40 200 135 750 900 45 115 70	[km/h] [km/h] [mg/stk] [mg/stk] [rpm] [°C] [°C] [s]	2 x 70	[s]	continuous	2 DCY
	P1528	signal check	CAN signal not useful								6	[s]	continuous	2 DCY
	U0146	check CAN news from the Gateway Unit	CAN Signal not active (CAN message Timeout of the for ambient temperature relevant CAN Message)				ignition on/battery voltage	> <	9,000 16,500	[V] [V]	1	[s]	continuous	2 DCY
	U0447	check CAN news from the Gateway Unit	CAN Signal not plausible - content failure (CAN message not plausible of the for ambient temperature relevant CAN Message)				ignition on/battery voltage	> <	9,000 16,500	[V] [V]	1	[s]	continuous	2 DCY
	U0431	check CAN news from the air conditioning unit	CAN Signal not active (CAN message Timeout of the for ambient temperature relevant CAN Message)				ignition on/battery voltage	> <	9,000 16,500	[V] [V]	1	[s]	continuous	2 DCY
	U0431	signal check	signal error ambient temperature from CAN				ignition on/battery voltage	> <	9,000 16,500	[V] [V]	1	[s]	continuous	2 DCY
Oil Temperature Sensor	P0197	open circuit/ short to battery plus	oil temperature	<	-39	[°C]	coolant temperature or time after engine start	> >	-15 300	[°C] [s]	5	[s]	continuous	2 DCY
	P0198	short to ground	oil temperature	>	148	[°C]	coolant temperature	<	114,75	[°C]				
	P0199	intermittent	delta TOIL	>	6	[K]					1.2	[s]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
					disable conditions:				see Disabling List and Lookup Table					
	P0298	plausibility check	oil temperature	>=	120	[°C]	calculated oil temperature	<=	70	[°C]	10	[s]	continuous	2 DCY
	P0195	plausibility check	oil temperature	<=	40	[°C]	calculated oil temperature	>=	90	[°C]	10	[s]	continuous	2 DCY
						[°C]	for time	>	30	[s]				
AAT Sensor	P1111	AAT compared with IAT, ECT, TOIL	delta betwenn AAT and IAT	>	18,5 .. 36,5	[°C]	engine off time	>	360	[min]	30	[s]	once / DCY	2 DCY
			delta betwenn AAT and ECT	>	17 .. 35	[°C]								
			delta betwenn AAT and TOIL	>	17 .. 35	[°C]								
IAT Sensor	P1114	IAT compared with AAT, ECT, TOIL	delta betwenn IAT and AAT	>	18,5 .. 36,5	[°C]	# temperature decrement check #							2 DCY
			delta betwenn IAT and ECT	>	15,5 .. 33,5	[°C]	time after engine start	<	600	[s]				
			delta betwenn IAT and TOIL	>	15,5 .. 33,5	[°C]	accumulated time	>=	30	[s]				
ECT Sensor	P3082	ECT compared with AAT, IAT, TOIL	delta betwenn ECT and AAT	>	17 .. 35	[°C]	while vehicle speed	>=	25	[km/h]				2 DCY
			delta betwenn ECT and IAT	>	15,5 .. 33,5	[°C]	difference of IAT at engine start and minimum IAT at end of decrement check	<	8	[°C]				
			delta betwenn ECT and TOIL	>	14 .. 32	[°C]	difference of AAT at engine start and minimum AAT at end of decrement check	<	8	[°C]				
Oil Temperature Sensor	P0298	TOIL compared with AAT, IAT, ECT	delta betwenn TOIL and AAT	>	17 .. 35	[°C]								2 DCY
			delta betwenn TOIL and IAT	>	15,5 .. 33,5	[°C]								
			delta betwenn TOIL and ECT	>	14 .. 32	[°C]								
Vehicle Speed	P0502	plausibility check	sensor signal vehicle speed to low at fuel cut off	<	3	[km/h]	engine speed	>	1024	[rpm]	3	[sec]	once / DCY	2 DCY
							engine speed	<	3008	[rpm]				
							engine temperature	>	30	[°C]				
							Fuel System Status	=	cut off					
							time after engine start	>	0,5	[s]				
							No Vehicle Signal CAN Error							
	P0503	range check high	sensor signal vehicle speed	>	325	[km/h]	time after engine start	>	0,5	[s]	0,5	[sec]	continuous	2 DCY
Vehicle Speed	U0129		CAN signal time out; Timeout of the for vehicle speed relevant CAN Message								4	[sec]	continuous	2 DCY
	U0318		signal error vehicle speed from CAN (CAN signal not useful)								4	[sec]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
MAF rationality check			adaptive deviation airflow MAP-Sensor to modeled airflow (in correlation to throttle open surface)											
	P0068	rationality check		>	0,2	[cm²]	engine speed	>	416	[rpm]	5	[s]	continuous	2 DCY
							engine speed	<	992	[rpm]				
			controller deviation airflow MAP-Sensor to modeled airflow (part load)											
				>	45	[%]	engine speed	>	992	[rpm]				
							engine speed	<	6496	[rpm]				
							pressure quotient	>	0.15	[-]				
							pressure quotient	<	0.69	[-]				
							engine speed	<	6496	[rpm]				
			controller deviation airflow MAP-Sensor to modeled airflow (full load)											
				>	30	[%]	pressure quotient	>	0.71	[-]				
				<	-30	[%]	pressure quotient	<	1	[-]				
							CPS-Check not active							
							no fuel cut off							
					disable conditions:									
MAF rationality check	P0068	pcv check	controller deviation airflow MAP-Sensor to modeled airflow	>	23	[%]			idle speed		10	[s]	continuous	2 DCY
					disable conditions:				see Disabling List and Lookup Table					
MAP Sensor	P119A	check sum verification	check sum data wrong								0.5	[s]	continuous	2 DCY
	P119B	communication	synchronisation error or mismatched number of frames											
	P119C	signal validation	sensor functionality and processing error											
	P119D	signal validation	initalisation error											
	P119E	internal under voltage detection	voltage lo low											
	P119F	internal pressure signal verification	pressure signal to high											
	P1183	out of range low	manifold air pressure below	<	119,98	hPa					4	[s]	continuous	2 DCY
	P1184	out of range high	manifold air pressure above	>	2900,04	hPa								
	P0106	rationality check	sensor signal during power latch or engine stop phase in comparison to ambient pressure and pressure upstream throttle above	>	60,03	hPa	ignition on engine stop vehicle speed	<	1	[km/h]	2	[s]	once / DCY	2 DCY
							or				2	[s]	once / DCY	2 DCY
							ECU in power latch ignition off							
							vehicle speed	<	1	[km/h]				
	P0106	rationality check	difference between manifold air pressure and pressure up throttle in full load is above	>	110	hPa	engine speed	<	6000	[rpm]	2	[s]	continuous	2 DCY
							engine speed	>	1000	[rpm]				
			and the ambient pressure and pressure upstream throttle in fuel cut off is within (abs. value)	<	110	hPa	delay time of pressure sensor diagnosis activation in idle	>	3	[s]				

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							engine speed throttle position	< <	2500 7	[rpm] °TPS				
canister 2nd purge line pressure-Sensor	P1053	open circuit/ short to ground	signal voltage	<	0,2	V					0.2	[s]	continuous	2 DCY
	P1054	short to battery plus	signal voltage	>	4,4501	V								
	P1055	out of range low	canister 2nd purge line pressure below	<	50	[hPa]					0.5	[s]	continuous	2 DCY
	P1056	out of range high	canister 2nd purge line pressure above	>	1130	[hPa]	No pending DTCs:		see Disabling List and Lookup Table					
	P1057	rationality check	sensor signal at engine startphase in comparison to ambient pressure is above	>	135	[hPa]	ignition on and pipe system ventilation (by opening cps) in previous power latch phase and engine speed	 >= =	 0,8 0	 [s] [rpm]	1	[s]	once / DCY	2 DCY
							No pending DTCs:		see Disabling List and Lookup Table					
PUT Sensor	P11A1	check sum verification	check sum data wrong								0.5	[s]	continuous	2 DCY
	P11A2	communication	synchronisation error or mismatched number of frames											
	P11A3	signal validation	sensor functionality and processing error											
	P11A4	signal validation	initalisation error											
	P11A5	internal under voltage detection	voltage lo low											
	P11A6	internal pressure signal verification	pressure signal to high											
	P1189	out of range low	pressure upstream throttle below	<	480,01	hPa					4	[s]	continuous	2 DCY
	P1190	out of range high	pressure upstream throttle above	>	2900,04	hPa								
	P0236	rationality check	sensor signal during power latch or engine stop phase in comparison to ambient pressure and manifold pressure above	>	60,03	hPa	ignition on engine stop vehicle speed	 <	 1	 [km/h]	2	[s]	once / DCY	2 DCY
							or ECU in power latch ignition off vehicle speed	 <	 1	 [km/h]	2	[s]	once / DCY	2 DCY
	P0236	rationality check	difference between manifold air pressure and pressure up throttle in full load is above (absolut Value) and difference between ambient air pressure and pressure up throttle in idle is above (absolut Value)	> >	110 110	hPa hPa	engine speed engine speed delay time of pressure sensor diagnosis activation in idle engine speed throttle position	< > > < <	6000 1000 3 2500 7	[rpm] [rpm] [s] [rpm] °TPS	2	[s]	continuous	2 DCY
									see Disabling List and Lookup Table					
Altitude Sensor	P2228	open circuit/ short to ground	signal voltage	<	0,498	[V]					1	[s]	continuous	2 DCY
	P2229	short to battery plus	signal voltage	>	4,7	[V]								

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
	P1187	out of range low	ambient air pressure below	<	480,01	hPa					4	[s]	continuous	2 DCY
	P1188	out of range high	ambient air pressure above	>	1099,98	hPa								
	P2227	rationality check	sensor signal during power latch or engine stop phase in comparison to manifold pressure and pressure upstream throttle above (absolut Value)	>	60,03	hPa	ignition on engine stop vehicle speed	 <	 1	 [km/h]	2	[s]	once / DCY	2 DCY
							or ECU in power latch ignition off vehicle speed	 <	 1	 [km/h]	2	[s]	once / DCY	2 DCY
	P2227	rationality check	difference between ambient pressure and pressure upstream throttle in idle is above (absolut Value) and the manifold air pressure and pressure up throttle in full load is within (abs. value)	> <	110 110	hPa hPa	delay time of pressure sensor diagnosis activation in idle engine speed throttle position engine speed engine speed	> < < < >	3 2500 7 6000 1000	[s] [rpm] °TPS [rpm] [rpm]	2	[s]	continuous	2 DCY
	P1186		delta between ambient pressure and a low-pass-filtered (PT1) ambient pressure exceeds a calibratible threshold	>	34,99	[hPa]					10	[s]	continuous	2 DCY
					disable conditions:				see Disabling List and Lookup Table					
turbocharger	P0299	out of range low	charge air pressure and difference between charge air pressure setpoint and actual value	< >	300 .. 2400 200	[hPa] [hPa]	coolant temperature ambient pressure engine speed pressure quotient mass air flow	> > > > >	60 750 1760 .. 2752 1,6 110..170	[°C] [hPa] [rpm] [-] [kg/h]	3	[s]	continuous	2 DCY
					disable conditions:				see Disabling List and Lookup Table					
	P0234	out of range high	charge air pressure and difference between charge air pressure setpoint and actual value	> <	1500 .. 2900 -200	[hPa] [hPa]	difference between charge air pressure setpoint and actual value	>	500	[hPa]	3	[s]	continuous	2 DCY
					disable conditions:				see Disabling List and Lookup Table					
Throttle Actuator	P1517	adaptation conditions exceeded in case of adaptation request	pedal value battery voltage engine speed vehicle speed intake air temperature intake air temperature coolant water temperature coolant water temperature	> < > > < > < >	5 9 288 2 5,25 39,75 5,25 99,75	[%] [V] [rpm] [km/h] [°C] [°C] [°C] [°C]	adaptation		first ignition on at EOL or ECU/throttle replacement or ECU reprogramming		0,6	[s]	continuous	1 DCY
	P1540	limp-home adaptation outside range	signal voltage throttle position sensor 1 or 2 differs from the stored limp home position	>	0,0195	[V]	adaptation requested by actual signal voltage throttle position sensor 1 inside calibrated range for the limp home position	 >	see conditions P1517 0,34	 [V]	0,6	[s]	continuous	1 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
							actual signal voltage throttle position sensor 2 inside calibrated range for the limp home position	<	4,66	[V]				
	P1541	the adaptation of the real amplification of the measuring amplifier used for throttle position sensor 1 is monitored	the adaptation of the real amplification of the measuring amplifier used for throttle position sensor 1 is not possible durign the requested time								0,6	[s]	continuous	1 DCY
	P1506	lower mechanical stop adaptation outside range	signal voltage throttle position sensor 1 or 2 differs from the stored lower mechanical stop position	>	0,0195	[V]	adaptation requested by actual signal voltage throttle position sensor 1 inside calibrated range for the lower mechanical stop position actual signal voltage throttle position sensor 2 inside calibrated range for the lower mechanical stop position	 < >	see conditions P1517 0,17 4,83	 [V] [V]	0,6	[s]	continuous	1 DCY
Throttle Actuator	P1507	adaptation of the real amplification of the measuring amplifier used for throttle position sensor 1 not possible	amplification of throttle position sensor 1 too high	>	8	[]	adaptation requested by		see conditions P1517		0,6	[s]	continuous	1 DCY
	P1507	adaptation of the real amplification of the measuring amplifier used for throttle position sensor 1	amplification of throttle position sensor 1 too low	<	0	[]	adaptation requested by		see conditions P1517		0,6	[s]	continuous	1 DCY
Throttle Actuator	P1502	funtional check lower return spring; lower position of the throttle blade can not be reached	throttle position, TPS	>	2,5	[°]	adaptation requested by		see conditions P1517		0,6	[s]	continuous	1 DCY
	P1502	functional check upper return spring; limp home position of the throttle blade can not be reached in a requested time by spring power	signal voltage throttle position sensor 1 or 2 differs from the adaptated limp home position after open movement	>	0,181	[V]	adaptation requested by		see conditions P1517		0,1	[s]	continuous	1 DCY
	P1502	functional check; upper position not reached	throttle position, TPS, differs from a requested position	>	0,5	[°]	adaptation requested by		see conditions P1517		0,6	[s]	continuous	1 DCY
	P1502	functional check upper return spring; limp home position of the throttle blade can not be reached in a requested time by spring power	signal voltage throttle position sensor 1 or 2 differs from the adaptated limp home position after close movement	>	0,181	[V]	adaptation requested by		see conditions P1517		0,1	[s]	continuous	1 DCY
Throttle Jam Detection	P1544	check of jammed throttle actuator in closing direction	TPS jammed in closing direction; no more moving than threshold possible	<	5	[°]	intake air temperature	<	0 .. 5.25	[°C]	0,1	[s]	continuous	1 DCY
	P1544	check of jammed throttle actuator in opening direction	TPS jammed in opening direction; no more moving than threshold possible	<	5	[°]	throttle actuator power-PWM	>	80	[%]	0,1	[s]	continuous	1 DCY
	P1544	the actual throttle position exceeds a defined threshold during limitation in lower direction after detection jammed throttle	throttle position, TPS, smaller than threshold after detection jammed throttle	<	5	[°]	debounce counter actuator diagnosis ignition vehicle speed engine speed	> < >	25 on 3 2200	[] [km/h] [rpm]	0,1	[s]	continuous	1 DCY
Throttle Actuator	P1542	functional check upper return spring during start; limp home position of the throttle blade can not be reached in a requested time	signal voltage throttle position sensor 1 or 2 differs from the adaptated limp home position during start check	>	0,181	[V]	complete throttle actuator adaptation		not requested		0,1	[s]	continuous	1 DCY
	P1543	functional check during start; upper position not reached	throttle position, TPS, differs from a requested position (15°) during start check	>	0,5	[°]	ignition key		on		0,6	[s]	continuous	1 DCY

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Throttle control device	P2101	difference between set and actual position of throttle plate	absolute value of difference between desired and actual throttle blade position	>	4 .. 60	[°]	adaptation switch off request ETC power stage		not active not active		0,5	[s]	continuous	1 DCY
Throttle control device power stage	P2100	detection of over-temperature, short circuits and under voltage of the H-Bridge (power stage)	ETC power stage error: output status flag of throttle blade-power stage		state of internal power stage status flag: undervoltage / overcurrent / overtemperature / hardware disabled manually		battery voltage switch off request ETC power stage	> >	9 not active	[V]	0,5	[s]	continuous	1 DCY
Throttle control device	P2103	reversible PWM range check	range check high [% PWM]	>	90	[%]	switch off request ETC power stage	>	9 not active	[V]	1	[s]	continuous	1 DCY
	P2103	irreversible PWM range check	range check high [% PWM]	>	90	[%]	switch off request ETC power stage	>	9 not active	[V]	2	[s]	continuous	1 DCY
Pedal Sensor	P1575	Multiple electrical Pedal Sensor Fault (at least two of the mailfunction criteria)	signal voltage pedal value sensor 1 and 2				ignition		on		0,3	[s]	continuous	2 DCY
Pedal Sensor 1	P0123	Short circuit to battery	signal voltage	>	4,639	[V]	ignition		on		0.3	[s]	continuous	2 DCY
Pedal Sensor 2	P0223	Short circuit to battery	signal voltage	>	2,622	[V]	ignition		on		0.3	[s]	continuous	2 DCY
Pedal Sensor 1	P0122	Short circuit to ground or open load	signal voltage	<	0,269	[V]	ignition		on		0.3	[s]	continuous	2 DCY
Pedal Sensor 2	P0222	Short circuit to ground or open load	signal voltage	<	0,132	[V]	ignition		on		0.3	[s]	continuous	2 DCY
Pedal Sensors	P0121	Rationality check	(signal_voltage_PV 1 - signal_voltage_PV 2)	>	0.317 .. 1.05	[V]	[V]		on		0.3	[s]	continuous	2 DCY
Idle Controller	P0506	out of range low	absolute engine speed deviation (lower rpm)	>	100	[rpm]	Accelerator pedal vehicle speed	 =	released 0	 [km/h]	10	[s]	continuous	2 DCY
	P0507	out of range high	absolute engine speed deviation (higher rpm)	>	150	[rpm]	evap purge flow time after start ECT	< > >	1 6 60	[kg/h] [s] [°C]				
Idle Controller	P050D	Cold start out of range low	absolute engine speed deviation (lower rpm)	>	200	[rpm]	Accelerator pedal		released		10	[s]	continuous	2 DCY
	P050A	Cold start out of range high	absolute engine speed deviation (higher rpm)	>	400	[rpm]	vehicle speed ECT time after start Catalyst heating	= > > 	0 -9,75 6 active	[km/h] [°C] [s]				
Ignition angle efficiency	P050B	Spark retard during catalyst heating too low in idle speed	integrated ignition anlge efficiency	>	0,18		Commanded ignition angle efficiency accumulated time in idlespeed time after start Accelerator pedal vehicle speed Catalyst heating	< > > = 	0,8 10 4 released 0 active	[-] [s] [s] [km/h]	60	[s]	once / DCY	2 DCY
Throttle Position Sensor 1	P2123	Short circuit to battery or open load	signal voltage	>	4,85	[V]	reference voltages from the Hardware I/O System	< >	5,26 4,77	[V] [V]	0.25	[s]	continuous	2 DCY
	P2122	Short circuit to ground	signal voltage	<	0,15	[V]	reference voltages from the Hardware I/O System	< >	5,26 4,77	[V] [V]	0.25	[s]	continuous	2 DCY
Throttle Position Sensor 2	P2128	Short circuit to battery or open load	signal voltage	>	4,85	[V]	reference voltages from the Hardware I/O System	< 	5,26 4,77	[V] [V]	0.25	[s]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
	P2127	Short circuit to ground	signal voltage	< >	0,15	[V]	reference voltages from the Hardware I/O System	< >	5,26 4,77	[V] [V]	0.25	[s]	continuous	2 DCY
Throttle Position Sensors	P2138	Rationality check	(signal_voltage_TPS 1 - signal_voltage_TPS 2)	>	6,5	[°]	Ignition Throttle Actuator		on not during adaptation		0.38	[s]	continuous	2 DCY
Throttle Position Sensor 1	P2121	Rationality check	integrated relative mass air TPS_1-MAF in case of TPS Ratio Error relative mass air TPS_1-MAF Error in case of TPS_2 Error	> >	20 1	[] []	engine TPS ratio check (P2138)		running failed		2	[s]	continuous	2 DCY
Throttle Position Sensor 2	P2126	Rationality check	integrated relative mass air TPS_1-MAF in case of TPS Ratio Error relative mass air TPS_2-MAF Error in case of TPS_1 Error	> >	20 1	[] []	engine TPS ratio check (P2138)		running failed		2	[s]	continuous	2 DCY
Injection Valves Low side/HighSide	P0201 P0202 P0203 P0204 P0205 P0206	Driver stage check	open circuit injector driver low side voltage	<	2	[V]	Driver stage				3	[sec]	continuous	2 DCY
Injection Valves High side	P0201 P0202 P0203 P0204 P0205 P0206	Driver stage check	short to battery plus injector driver voltage	<	2	[V]	Driver stage							
	P0261 P0264 P0267 P0270 P0273 P0276	Driver stage check	short to ground injector driver voltage	>	2	[V]	Driver stage							
Injection Valves **Low side**	P0262 P0265 P0268 P0271 P0274 P0277	Driver stage check	short circuit over load (Shortcut between high and low side at injector load injector driver current rise time during peak phase	<	64	[µs]	Driver stage							
ECM	P1556	internal hardware check	SPI Communication		incorrect		ignition key		on		0,01	[s]	once / DCY	2 DCY
	P1556	internal hardware check	ATIC disabled		incorrect		ignition key		on					
	P1556	internal hardware check	synchronization signal from Controller is missing		failed		ignition key		on					
	P1556	internal hardware check	initalisation error		failed		ignition key		on					
Ignition Coils (UNT)	P0351 P0352 P0353 P0354 P0355 P0356	Driver stage check	open circuit signal current	 <	 0,05	 [mA]	engine speed battery voltage engine temperature	> < >	64 10 -30	[rpm] [V] [°C]	2	[sec]	continuous	2 DCY
Ignition Coils (KSM)	P2300 P2303 P2306 P2309 P2312 P2315	Driver stage check	short to ground signal current	 >	 0,125	 [A]	engine speed battery voltage engine temperature	> < >	64 10 -30	[rpm] [V] [°C]	2	[sec]	continuous	2 DCY
Ignition Coils (KSU)	P2301 P2304 P2307 P2310 P2313	Driver stage check	short to battery plus signal voltage	 >	 6	 [V]	engine speed battery voltage engine temperature	> < >	64 10 -30	[rpm] [V] [°C]	2	[sec]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
	P2316													
Ignition Coils (Softshutdown)	P2302	Feedback via current value	long dwell times	>	15	[ms]	engine speed	>	64	[rpm]	2	[sec]	continuous	2 DCY
	P2305						battery voltage	<	10	[V]				
	P2308						engine temperature	>	-30	[°C]				
	P2311													
	P2314													
	P2317													
Ignition Coils (Loss of Power supply)	P0350	Feedback via current value	fuse of ignition coils power supply is missing								2	[sec]	continuous	2 DCY
Fuel Rail Pressure Control Valve	P0090	open circuit	signal voltage	=	3	[V]	ECU Status	=	Engine stop		0,5	[sec]	continuous	2 DCY
	P2294						or ECU Status	=	Power latch					
	P0091	short to ground	signal voltage	<	1,89	[V]								
	P2295													
	P0092	short to battery plus	signal current	>	11	[A]								
	P2296													
Fuel Rail Pressure Sensor	P0190	open circuit short to battery plus	signal voltage	>	4,8	[V]	engine speed	<	7000	[rpm]	0.5	[sec]	continuous	2 DCY
	P0192	short to ground	signal voltage	<	0,2	[V]								
Fuel pressure (High)	P12A2	rationalty check inappropriately high	deviation fuel rail pressure control and deviation lambda control	< >	-25 26	[mg] [%]	fuel cut off engine speed time after engine start high pressure pump setpoint lambda control evap canister load	 between > between <	not active 450 ..3000 5 50 .. 200 closed loop 0.6	 [rpm] [s] [bar]	10	[s]	continuous	2 DCY
	P12A1	rationalty check inappropriately low	deviation fuel rail pressure control and deviation lambda control	> <	25 -26	[mg] [%]	modeled fuel temperature	between	-10 .. 120	[°C]				
	P1026	plausibility check	filtered fuel pressure	<	20001	[hPa]	time after engine start	>	10	[s]	10	[s]		
	P1026			>	240000	[hPa]								
	P1036	rationalty check	Deviation Fuel pressure (setpoint - actual) permanent for a time of	> >	20001 5	[hPa] [s]	fuel cut off fuel pressure controler		not active active		10	[s]		
	P1037	rationalty check	Deviation Fuel pressure (setpoint - actual) permanent for a time of	< >	-20001 5	[hPa] [s]	engine speed high pressure pump setpoint	> between	448 60..200	[rpm] [bar]				
	P1030	stuck signal check	deviation of old rail pressure and actual rail pressure	<	10,6	[hPa]					1	[s]		
Fuel pressure (High)	P1021	plausibility check	deviation fuel rail pressure control	<	-25	mg	engine speed	between	450 .. 3000	[rpm]	10	[s]		
	P1021			>	25	mg	fuel mass flow	between	8 .. 55	[mg/stk]				
adaptation quantity control valve	P1025	plausibility check	Pump delivery of system too low	<	-20	mg	engine speed	between	450 .. 3000	[rpm]	1	[s]		
	P1025		Pump delivery of system too high	>	20	mg	modeled fuel temperature engine coolant temerature	between between	-10..120 -10 .. 120	[°C] [°C]				
	P053F	rationalty check	Deviation Fuel pressure (setpoint - actual)	>	20001	[hPa]	Time after start	>	4	[s]	5			
	P053F	Coldstart		<	-20001	[hPa]	catalyst heating		active					
Injection Valves/ECU	P0611	internal hardware check	boost voltage		< 30 or > 75	[V]					4,5	[s]	continuous	2 DCY
5 V Sensor Reference	P0643 P0653	short to battery plus	signal voltage	>	5,3	[V]					0.2	[s]	continuous	2 DCY
	P0642 P0652	short to ground	signal voltage	<	4,7	[V]								
battery voltage main relay	P0658	out of range low	battery mean voltage	<	10	[V]	engine start		completed		0,5	[s]	continuous	2 DCY
	P0659	out of range high	battery mean voltage	>	16	[V]								
battery voltage ignition	P2531	out of range low	battery mean voltage	<	10	[V]	engine start		completed		0,5	[s]	continuous	2 DCY
	P2532	out of range high	battery mean voltage	>	16	[V]								
Power Supply	P0687	main relay monitoring "Switch ON"	delay time "switch ON"	> <	100 6	[ms] [V]	ignition key battery voltage before main relay [V]	 >	on 8,03	 [V]	0,1	[s]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
Power Supply	P0686	main relay monitoring "Switch OFF"	delay time "switch OFF"	>	250	[ms]	ignition key		off		1	[s]	continuous	2 DCY
				>	4	[V]	power latch phase		completed					
ECM	P0604	RAM check	write and read abilty check		failed		ignition key		on		0,01	[s]	once / DCY	1 DCY
ECM	P0601	internal check sum verification	internal check sum program		incorrect		ignition key		on		0,01	[s]	once / DCY	1 DCY
	P0601	internal check sum verification	internal check sum data		incorrect		ignition key		on		0,01	[s]	once / DCY	1 DCY
	P0603	internal hardware check	write and read ability check EEPROM		failed		ignition key		on		0,01	[s]	once / DCY	1 DCY
ECM	P1557	internal hardware check	SPI Communication		lost		ignition key		on		0,5	[s]	once / DCY	1 DCY
ECM	P1558	internal hardware check	SPI Communication		lost		ignition key		on		0,5	[s]	once / DCY	1 DCY
ECM	P1552	error in a monitoring function of the drive by wire function	actual values of a monitoring function are out of range	>	characteristic maps						0,5	[s]	continuous	1 DCY
ECM	P1512	Error in a monitoring function of the Start-Stop Management	actual values of a monitoring function are out of range	>	characteristic maps						0,5	[s]	continuous	
ECM	P1508	monitoring torque	torque out of range	>	characteristic maps		engine speed	>	1000	[rpm]	0,5	[s]	continuous	1 DCY
ECM	P1550	function monitoring engine speed	engine speed exceeds a certain speed level in ETC limp home mode (safety fuel cut-off is requested)	>	1728	[rpm]	Ignition state		on		0,5	[s]	continuous	1 DCY
							engine speed limitation		on					
CAN	U0073	internal hardware check Bus Off Detection	Error in CAN Bus Communication				ignition on/battery voltage	>	9,000	[V]	0,2	[s]	continuous	2 DCY
								<	16,500	[V]				
CAN	U0155	Malfunction of Instrument Cluster	Timeout of Instrument Cluster CAN Message				ignition on/battery voltage	>	9,000	[V]	0,2	[s]	continuous	2 DCY
								<	16,500	[V]				
	U0423	Malfunction of Instrument Cluster	Content failure of Instrument Cluster CAN Message				ignition on/battery voltage	>	9,000	[V]	0,2	[s]	continuous	2 DCY
								<	16,500	[V]				
Transmission control system (MIL request)	P0700	Malfunction of Transmission Control Unit	CAN-Signal indication Malfunction of TCU		incorrect						0,01	[s]	continuous	1 DCY
CAN Message Transmission Control System	U0402	Malfunction of Transmission Control Unit	Content failure of Transmission Control System CAN Message		incorrect		ignition on/battery voltage	>	9	[V]	0,2	[s]	continuous	2 DCY
								<	16,5	[V]				
	U0101	Malfunction of Transmission Control Unit	Timeout of Transmission Control System CAN Message		lost						0,5	[s]	continuous	2 DCY
secondary air flow bank 1	P0491	with calculated sec.air flow from closed loop regulator deviation	deviation exceeds the ratio threshold	>	0,7	[-]	minimum engine speed	>	416	[rpm]	45	[s]	continuous	2 DCY
							maximum engine speed	<	2944	[rpm]				
secondary air flow bank 2	P0492			>	0,7	[-]	minimum engine coolant temperature	>	4,500	[°C]				
							maximum engine coolant temperature	<	75	[°C]				
secondary air flow bank 1 and bank 2	P0411						time after start	>	10 .. 6553.5	[s]				
							fuel system status		closed loop					
							mass air flow integral	>	5	[g]				
							secondary air pump		power on	[-]				
secondary air pump relais	P0418	open circuit	signal current	<	1,6	[mA]	secondary air pump		comanded off		1	[s]	continuous	2 DCY
	P2257	short to ground	signal voltage	<	1,87	[V]	secondary air pump		comanded off					
	P2258	short to battery plus	signal current	>	4	[A]	secondary air pump		comanded on					
boost pressure adjustment device (waste gate)	P0244	open circuit	signal voltage	=	2,5 .. 3,0	[V]					2,5	[s]	continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Operator	Threshold Value		Secondary Parameters	Operator	Enable Conditions		Time required		Frequency of Checks	MIL Illum.
	P0245	short to ground	signal voltage	<	1,85	[V]								
	P0246	short to battery plus	signal current	>	6	[A]								
Knock Sensor	P1380	internal hardware check	SPI Communication		lost		ignition key		on		0,25	[sec]	continuos	2 DCY
	P0327	out of range low	signal noise	<	characteristic map		engine speed	>	2016	[rpm]	0,2	[sec]	continuos	2 DCY
	P0332	out of range low	signal noise	<	characteristic map		mass air flow	>	206	[mg/stk]				
	P0326	too less dispersion on knock signal	signal noise dispersion	<	characteristic map		engine coolant temperature	>	50	[°C]				
	P0331	too less dispersion on knock signal	signal noise dispersion	<	characteristic map									
Electric fuel pump driver	P025D	short to battery plus	signal current	>	5	[A]	duty cycle range	>	5,1	[%]	2,5	[sec]	continuos	2 DCY
	P025C	short to ground	signal voltage	<	1,89	[V]		<	94,9	[%]				
	P025A	open circuit	signal voltage	=	3	[V]								
Fuel pressure (low) sensor	P2539	short to battery plus or open load	signal voltage	>	4,9	[V]	engine speed	<	7000	[rpm]	3	[sec]	continuos	2 DCY
	P2541	short to ground	signal voltage	<	0,1	[V]								

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Catalyst System	P0420	measurement of oxygen storage capacity (OSC) in comparison to OSC of borderline catalyst	**ratio of measured corrected OSC / OSC of borderline catalyst**			**Monitor Entry Conditions:**				
	P0430		arithmetic average value of OSC ratio	< 1.00	[-]	integrated air mass	n.a.		150.0 [s] once / DCY	2 DCY
			or			O2S front	ready			
			EWMA filtered value of OSC ratio	< n.a.	[-]	O2S rear	ready			
						integrated air mass after O2S ready	>= 0.06	[kg]		
						O2S front out of range-monitor	finished			
						modeled exhaust gas temperature at O2S rear	> 450	[°C]		
						difference between actual O2S ceramic temp. and O2S ceramic temp. setpoint	< 65.0	[K]		
						integrated EVAP purge mass since last purge stop	> 0.0	[g]		
						ratio fuel mass from evap purge system to fuel mass through injectors	<= 1.20	[-]		
						time after fuel cut off	> 20.0	[s]		
						lambda setpoint	1.00	[-]		
						for				
						integrated air mass	>= 0.06	[kg]		
						engine speed	1160...3000	[rpm]		
						vehicle speed	> 5	[km/h]		
						case 1 (lower range window)				
						exhaust gas mass flow, lower range	25.00...100.00	[kg/h]		
						modeled exhaust gas temp. in catalyst system, lower range	550...925	[°C]		
						or				
						case 2 (upper range window)				

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
					exhaust gas mass flow, upper range	n.a. [kg/h]		
					modeled exhaust gas temp. in catalyst system, upper range	n.a. [°C]		
					lower/upper range window (conditions fulfilled):			
					integrated air mass	>= 0.06 [kg]		
					change of exhaust gas mass flow	-10.00...10.00 [kg/h]		
					with delay time	1.0 [s]		
					change of modeled catalyst temperature	< 25.0 [K]		
					difference between actual lambda value and lambda setpoint	< 3.98 [%]		
					lambda control	not at min or max limit		
					lambda setpoint request	realized		
					Conditions to switch from rich to lean phase:			
					deviation between requested lambda and measured lambda	< | 2.49 | [-]		
					for time	> 0.1 [s]		
					integrated exhaust gas mass	>= 0.01 [kg]		
					case 1:			
					O2S rear voltage	>= 0.82 [V]		
					or			
					Case 2:			
					O2S rear voltage	>= 0.75 [V]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						O2S rear voltage gradient	-0.10...0.10	[V/s]		
						MAF O2 integral	>= 0.4	[g]		
						Conditions to switch from lean to rich phase:				
						deviation between requested lambda and measured lambda	< | 2.49 |	[-]		
						for time	> 0.1	[s]		
						integrated exhaust gas mass	>= 0.01	[kg]		
						Case 1:				
						O2S rear voltage	<= 0.15	[V]		
						or				
						Case 2:				
						O2S rear voltage	<= 0.20	[V]		
						O2S rear voltage gradient	-0.10...0.10	[V/s]		
						MAF O2 integral	<= 0.2	[g]		
						for arithmetic average value calculation:				
						number of checks required for valid result	>= 3.00	[-]		
						for EWMA-filter:				
						minimum of one test per DCY required				
						Step change detection will initiate multiple tests per DCY				
						Conditions for step change detection:				
						relative deviation between new measured value and old EWMA filtered value	> n.a.	[-]		
						number of checks	n.a.	[-]		
						or				
						relative deviation between new measured value and old EWMA filtered value	<= n.a.	[-]		
						number of checks	n.a.	[-]		
Misfire	P0300	crankshaft speed fluctuation (single or multiple)	emission threshold misfire rate (MR)	> 1.33	[%]	**case 1:**			1000 [rev] continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
	P0301		catalyst damage misfire rate (MR)	> 3.95...28.07 [%]	ECT @ start	>= -20 [°C]	200 [rev] continuous	immediately
	P0304 P0303 P0306 P0302 P0305				**case 2:** ECT @ start then activation if ECT **general:** active after engine start time after engine start engine torque fuel cut off rough road	< -20 [°C] > -20 [°C] idle - 200 [rpm] + 1 camshaft [rev] n.a. >= 0 [Nm] not active not detected		
EVAP Leak Detection Pump	P043E	out of range high	**during engine off:** evap pump current during reference measurement	> 40.0 [mA]	**During ENGINE OFF:** ECT @ start	>= 4 [°C]	10.0 [s] once / DCY	2 DCY
			during engine running: evap pump current during reference measurement	> 40.0 [mA]	**case 1:** difference between ECT @ start and AAT vehicle off time **case 2:** difference between ECT @ start and AAT **case 3:** vehicle off time **case 4:** difference between ECT @ start and AAT **or** vehicle off time **further conditions** AAT barometric pressure time since ready to drive change in battery voltage during monitoring	n.a. > n.a. [s] n.a. > 18000.0 [s] n.a. > n.a. [s] < 35; > 4 [°C] > 73 [kPa] >= 600.0 [s] < 1.00 [V]	3.0 [s] once / DCY	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						vehicle off time	>= 3.0…100.0	[s]		
						vehicle speed	= 0	[km/h]		
						evap purge adaptation	< 8.00	[-]		
						no sudden change in evap pump current (filling event)	< 0.5; > -0.3	[mA]		
						deviation of filtered evap pump current durring reference measurement within range	<= 1.0	[mA]		
						change in relative evap pump current during monitoring	< n.a.	[-]		
						within time	n.a.	[s]		
						(during ECM keep alive-time after ignition off, max. time)	< 900.0	[s]		
						airbag	not activated			
						during engine running:				
						ECT	> -48	[°C]		
						ECT @ start	< 60	[°C]		
						AAT	< 35; > 4	[°C]		
						barometric pressure	> 73	[kPa]		
						time since ready to drive	>= 600.0	[s]		
						integrated EVAP purge mass since last purge stop	> 2.0	[g]		
						integrated EVAP purge mass since last monitoring run	> 0.5	[g]		
						intake manifold vacuum	> 4.00	[kPa]		
						modeled vacuum in high pressure purge line	<= n.a.	[kPa]		
						vehicle speed	< 125; >= 20	[km/h]		
						delta vehicle speed	<= 30	[km/h]		
						engine load	> 4.99; <= 100.01	[%]		
						fuel volume flow	<= 5.00	[ml/s]		
						at least one leak detection monitor during engine off	preceding			
						increase of evap pump current from idle state	n.a.			
						within time	< 5.0	[s]		
						no fuel cut off				
						no gear shift				
						no engine stop				
						O2S front	ready			
	P043F	out of range low	**during engine off:** evap pump current during reference measurement	< 15.0	[mA]	**During ENGINE OFF:** ECT @ start	>= 4	[°C]	10.0 [s] once / DCY	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
			during engine running: evap pump current during reference measurement	< 15.0 [mA]	**case 1:** difference between ECT @ start and AAT vehicle off time **case 2:** difference between ECT @ start and AAT **case 3:** vehicle off time **case 4:** difference between ECT @ start and AAT **or** vehicle off time **further conditions** AAT barometric pressure time since ready to drive change in battery voltage during monitoring vehicle off time vehicle speed evap purge adaptation no sudden change in evap pump current (filling event) deviation of filtered evap pump current durring reference measurement within range change in relative evap pump current during monitoring within time (during ECM keep alive-time after ignition off, max. time) airbag **during engine running:** ECT ECT @ start AAT barometric pressure time since ready to drive	n.a. > n.a. [s] n.a. > 18000.0 [s] n.a. > n.a. [s] < 35; > 4 [°C] > 73 [kPa] >= 600.0 [s] < 1.00 [V] >= 3.0…100.0 [s] = 0 [km/h] < 8.00 [-] < 0.5; > -0.3 [mA] <= 1.0 [mA] < n.a. [-] n.a. [s] < 900.0 [s] not activated > -48 [°C] < 60 [°C] < 35; > 4 [°C] > 73 [kPa] >= 600.0 [s]	3.0 [s] once / DCY	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
					integrated EVAP purge mass since last purge stop	> 2.0 [g]		
					integrated EVAP purge mass since last monitoring run	> 0.5 [g]		
					intake manifold vacuum	> 4.00 [kPa]		
					modeled vacuum in high pressure purge line	<= n.a. [kPa]		
					vehicle speed	< 125; >= 20 [km/h]		
					delta vehicle speed	<= 30 [km/h]		
					engine load	> 4.99; <= 100.01 [%]		
					fuel volume flow	<= 5.00 [ml/s]		
					at least one leak detection monitor during engine off	preceding		
					increase of evap pump current from idle state	n.a.		
					within time	< 5.0 [s]		
					no fuel cut off			
					no gear shift			
					no engine stop			
					O2S front	ready		
	P2407	signal check	**during engine off:**		**During ENGINE OFF:**			
			fluctuation of evap pump current during reference measurement	> 1.0 [mA]	ECT @ start	>= 4 [°C]	800.0 [s] once / DCY	2 DCY
			or		**case 1:**			
			drop of evap pump current during pump phase	> 6.0 [mA]	difference between ECT @ start and AAT	n.a.		
			for time	>= 3.0 [s]	vehicle off time	> n.a. [s]		
			during engine running:		**case 2:**			
			fluctuation of evap pump current during reference measurement	> 1.0 [mA]	difference between ECT @ start and AAT	n.a.	9.5 [s] once / DCY	2 DCY
			or		**case 3:**			
			drop of evap pump current during pump phase	> 6.0 [mA]	vehicle off time	> 18000.0 [s]		
			for time	>= 3.0 [s]	**case 4:**			
					difference between ECT @ start and AAT	n.a.		
					or			
					vehicle off time	> n.a. [s]		
					further conditions			
					AAT	< 35; > 4 [°C]		
					barometric pressure	> 73 [kPa]		
					time since ready to drive	>= 600.0 [s]		
					change in battery voltage during monitoring	< 1.00 [V]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						vehicle off time	>= 3.0…100.0	[s]		
						vehicle speed	= 0	[km/h]		
						evap purge adaptation	< 8.00	[-]		
						no sudden change in evap pump current (filling event)	< 0.5; > -0.3	[mA]		
						deviation of filtered evap pump current durring reference measurement within range	<= 1.0	[mA]		
						change in relative evap pump current during monitoring	< n.a.	[-]		
						within time	n.a.	[s]		
						(during ECM keep alive-time after ignition off, max. time)	< 900.0	[s]		
						airbag	not activated			
						during engine running:				
						ECT	> -48	[°C]		
						ECT @ start	< 60	[°C]		
						AAT	< 35; > 4	[°C]		
						barometric pressure	> 73	[kPa]		
						time since ready to drive	>= 600.0	[s]		
						integrated EVAP purge mass since last purge stop	> 2.0	[g]		
						integrated EVAP purge mass since last monitoring run	> 0.5	[g]		
						intake manifold vacuum	> 4.00	[kPa]		
						modeled vacuum in high pressure purge line	<= n.a.	[kPa]		
						vehicle speed	< 125; >= 20	[km/h]		
						delta vehicle speed	<= 30	[km/h]		
						engine load	> 4.99; <= 100.01	[%]		
						fuel volume flow	<= 5.00	[ml/s]		
						at least one leak detection monitor during engine off	preceding			
						increase of evap pump current from idle state	n.a.			
						within time	< 5.0	[s]		
						no fuel cut off				
						no gear shift				
						no engine stop				
						O2S front	ready			
	P2450	signal check	**during engine off:**			**during engine off:**				

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
			evap pump current difference between reference measurement to idle	<= 3.9 [mA]	ECT @ start	>= 4 [°C]	13.5 [s] once / DCY	2 DCY
			during engine running: evap pump current difference between reference measurement to idle	<= 3.9 [mA]	**case 1:** difference between ECT @ start and AAT vehicle off time **case 2:** difference between ECT @ start and AAT **case 3:** vehicle off time **case 4:** difference between ECT @ start and AAT **or** vehicle off time AAT barometric pressure time since ready to drive change in battery voltage during monitoring vehicle off time vehicle speed evap purge adaptation no sudden change in evap pump current (filling event) deviation of filtered evap pump current durring reference measurement within range change in relative evap pump current during monitoring within time (during ECM keep alive-time after ignition off, max. time) airbag **during engine running:** ECT ECT @ start AAT barometric pressure	n.a. > n.a. [s] n.a. > 18000.0 [s] n.a. > n.a. [s] < 35; > 4 [°C] > 73 [kPa] >= 600.0 [s] < 1.00 [V] >= 3.0…100.0 [s] = 0 [km/h] < 8.00 [-] < 0.5; > -0.3 [mA] <= 1.0 [mA] < n.a. [-] n.a. [s] < 900.0 [s] not activated > -48 [°C] < 60 [°C] < 35; > 4 [°C] > 73 [kPa]	4.5 [s] once / DCY	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						time since ready to drive	>= 600.0	[s]		
						integrated EVAP purge mass since last purge stop	> 2.0	[g]		
						integrated EVAP purge mass since last monitoring run	> 0.5	[g]		
						intake manifold vacuum	> 4.00	[kPa]		
						modeled vacuum in high pressure purge line	<= n.a.	[kPa]		
						vehicle speed	< 125; >= 20	[km/h]		
						delta vehicle speed	<= 30	[km/h]		
						engine load	> 4.99; <= 100.01	[%]		
						fuel volume flow	<= 5.00	[ml/s]		
						at least one leak detection monitor during engine off	preceding			
						increase of evap pump current from idle state	n.a.			
						within time	< 5.0	[s]		
						no fuel cut off				
						no gear shift				
						no engine stop				
						O2S front	ready			
EVAP Leak Detection Pump Motor	P2402	short to battery plus	signal voltage at evap pump current measuring resistor	> 4.00...1.80	[V]	evap pump electric drive	commanded on		0.5 [s] continuous	2 DCY
	P2401	short to ground	signal voltage	< 2.74...3.26	[V]	evap pump electric drive	commanded off		0.5 [s] continuous	2 DCY
	P2400	open circuit	signal voltage	> 4.7...5.4	[V]	evap pump electric drive	commanded off		0.5 [s] continuous	2 DCY
EVAP Leak Detection Pump Heater	P240C	short to battery plus	signal current	> 2.2...4.0	[A]	evap pump heater	commanded on		0.5 [s] continuous	2 DCY
	P240B	short to ground	signal voltage	< 2.74...3.26	[V]	evap pump heater	commanded off		0.5 [s] continuous	2 DCY
	P240A	open circuit	signal voltage	> 4.7...5.4	[V]	evap pump heater	commanded off		0.5 [s] continuous	2 DCY
EVAP Leak Detection Pump Valve	P0448	short to battery plus	signal current	> 2.2...4.0	[A]	evap pump solenoid valve	commanded on		0.5 [s] continuous	2 DCY
	P0448	short to ground	signal voltage	< 2.74...3.26	[V]	evap pump solenoid valve	commanded off		0.5 [s] continuous	2 DCY
	P0447	open circuit	signal voltage	> 4.7...5.4	[V]	evap pump solenoid valve	commanded off		0.5 [s] continuous	2 DCY
EVAP Purge Valve	P0496	functional check: stuck open	actual evap pump current difference between reference measurement to idle divided by pump current difference from the	> 1.50	[-]	ECT	> -48	[°C]	4.5 [s] once / DCY	2 DCY
						ECT @ start	< 60	[°C]		
						AAT	< 35; > 4	[°C]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			last leak detection phase during engine off			barometric pressure	> 73	[kPa]		
						time since ready to drive	>= 600.0	[s]		
						integrated EVAP purge mass since last purge stop	> 2.0	[g]		
						integrated EVAP purge mass since last monitoring run	> 0.5	[g]		
						intake manifold vacuum	> 4.00	[kPa]		
						vehicle speed	< 125; >= 20	[km/h]		
						delta vehicle speed	<= 30	[km/h]		
						engine load	> 4.99; <= 100.01	[%]		
						fuel volume flow	<= 5.00	[ml/s]		
						at least one leak detection	preceding			
						monitor during engine off				
						no fuel cut off				
						no gear shift				
						no engine stop				
						O2S front	ready			
						evap purge valve	commanded off			
	P0441	functional check: stuck close	drop of evap pump current	< 1.0	[mA]	ECT	> -48	[°C]	14.5 [s] once / DCY	2 DCY
			within time	5.0	[s]	ECT @ start	< 60	[°C]		
						AAT	< 35; > 4	[°C]		
						barometric pressure	> 73	[kPa]		
						time since ready to drive	>= 600.0	[s]		
						integrated EVAP purge mass since last purge stop	> 2.0	[g]		
						integrated EVAP purge mass since last monitoring run	> 0.5	[g]		
						intake manifold vacuum	> 4.00	[kPa]		
						modeled vacuum in high pressure purge line	<= n.a.	[kPa]		
						vehicle speed	< 125; >= 20	[km/h]		
						delta vehicle speed	<= 30	[km/h]		
						engine load	> 4.99; <= 100.01	[%]		
						fuel volume flow	<= 5.00	[ml/s]		
						at least one leak detection	preceding			
						monitor during engine off				
						increase of evap pump current from idle state	n.a.			
						within time	< 5.0	[s]		
						engine speed	> 25	[rpm]		
						no fuel cut off				
						no gear shift				
						no engine stop				
						O2S front	ready			
						evap purge valve	commanded on			

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
EVAP Purge Valve	P0444	open circuit	signal voltage	4.70...5.40	[V]	evap purge valve	commanded off		0.5 [s] continuous	2 DCY
						engine speed	> 0	[rpm]		
	P0458	short to ground	signal voltage	0.0...3.26	[V]	evap purge valve	commanded off		0.5 [s] continuous	2 DCY
						engine speed	> 0	[rpm]		
	P0459	short to battery plus	signal current	> 2.20	[A]	evap purge valve	commanded on		0.5 [s] continuous	2 DCY
						engine speed	> 0	[rpm]		
EVAP System Very Small Leak	P04EF	rationality check	EVAP-system leakage area calculateted from pump current curve	> 0.14	[mm²]	ECT @ start	>= 4	[°C]	500.0 [s] once / DCY	2 DCY
						evaporative system vapor pressure	< -2.0; > 15.0	[kPa]		
						@ time since ready to drive	= 5	[s]		
						case 1:				
						difference between ECT @ start and AAT	n.a.			
						vehicle off time	> n.a.	[s]		
						case 2:				
						difference between ECT @ start and AAT	n.a.			
						case 3:				
						vehicle off time	> 18000.0	[s]		
						case 4:				
						difference between ECT @ start and AAT	n.a.			
						or				
						vehicle off time	> n.a.	[s]		
						further conditions				
						AAT	< 35; > 4	[°C]		
						barometric pressure	> 73	[kPa]		
						time since ready to drive	>= 600.0	[s]		
						change in battery voltage during monitoring	< 1.00	[V]		
						vehicle off time	>= 3.0...100.0	[s]		
						vehicle speed	= 0	[km/h]		
						evap purge adaptation	< 8.00	[-]		
						no sudden change in evap pump current (filling event)	< 0.5; > -0.3	[mA]		
						deviation of filtered evap pump current durring reference measurement within range	<= 1.0	[mA]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						change in relative evap pump current during monitoring	< n.a.	[-]		
						within time	n.a.	[s]		
						(during ECM keep alive-time after ignition off, max. time)	< 900.0	[s]		
						fuel tank isolation valve	closed			
						airbag	not activated			
EVAP System Very Small Leak	P0456	rationality check	EVAP-system leakage area calculateted from pump current curve	> 0.14	[mm²]	ECT @ start	>= 4	[°C]	800.0 [s] once / DCY	2 DCY
						case 1:				
						difference between ECT @ start and AAT	n.a.			
						vehicle off time	> n.a.	[s]		
						case 2:				
						difference between ECT @ start and AAT	n.a.			
						case 3:				
						vehicle off time	> 18000.0	[s]		
						case 4:				
						difference between ECT @ start and AAT	n.a.			
						or				
						vehicle off time	> n.a.	[s]		
						further conditions				
						AAT	< 35; > 4	[°C]		
						barometric pressure	> 73	[kPa]		
						time since ready to drive	>= 600.0	[s]		
						change in battery voltage during monitoring	< 1.00	[V]		
						vehicle off time	>= 3.0...100.0	[s]		
						vehicle speed	= 0	[km/h]		
						evap purge adaptation	< 8.00	[-]		
						no sudden change in evap pump current (filling event)	< 0.5; > -0.3	[mA]		
						deviation of filtered evap pump current durring reference measurement within range	<= 1.0	[mA]		
						change in relative evap pump current during monitoring	< n.a.	[-]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						within time	n.a.	[s]		
						(during ECM keep alive-time after ignition off, max. time)	< 900.0	[s]		
						airbag	not activated			
EVAP System Small Leak	P04ED	pressure check	modeled pressure from pump current	< 1.10	[kPa]	ECT @ start	>= 4	[°C]	249 [s] once / DCY	2 DCY
						case 1:				
						difference between ECT @ start and AAT	n.a.			
						vehicle off time	> n.a.	[s]		
						case 2:				
						difference between ECT @ start and AAT	n.a.			
						case 3:				
						vehicle off time	> 18000.0	[s]		
						case 4:				
						difference between ECT @ start and AAT	n.a.			
						or				
						vehicle off time	> n.a.	[s]		
						further conditions				
						AAT	< 35; > 4	[°C]		
						barometric pressure	> 73	[kPa]		
						time since ready to drive	>= 600.0	[s]		
						change in battery voltage during monitoring	< 1.00	[V]		
						vehicle off time	>= 3.0...100.0.0	[s]		
						vehicle speed	= 0	[km/h]		
						evap purge adaptation	< 8.00	[-]		
						no sudden change in evap pump current (filling event)	< 0.5; > -0.3	[mA]		
						deviation of filtered evap pump current durring reference measurement within range	<= 1.0	[mA]		
						change in relative evap pump current during monitoring	< n.a.	[-]		
						within time	n.a.	[s]		
						(during ECM keep alive-time after ignition off, max. time)	< 900.0	[s]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						fuel tank isolation valve fuel tank isolation valve airbag	closed closed not activated			
EVAP System Small Leak	P0442	pressure check	modeled pressure from pump current	< 0.70	[kPa]	ECT @ start **case 1:** difference between ECT @ start and AAT vehicle off time **case 2:** difference between ECT @ start and AAT **case 3:** vehicle off time **case 4:** difference between ECT @ start and AAT **or** vehicle off time **further conditions** AAT barometric pressure time since ready to drive change in battery voltage during monitoring vehicle off time vehicle speed evap purge adaptation no sudden change in evap pump current (filling event) deviation of filtered evap pump current durring reference measurement within range change in relative evap pump current during monitoring within time (during ECM keep alive-time after ignition off, max. time) airbag	>= 4 n.a. > n.a. n.a. > 18000.0 n.a. > n.a. < 35; > 4 > 73 >= 600.0 < 1.00 >= 3.0...100.0.0 = 0 < 8.00 < 0.5; > -0.3 <= 1.0 < n.a. n.a. < 900.0 not activated	[°C] [s] [s] [s] [°C] [kPa] [s] [V] [s] [km/h] [-] [mA] [mA] [-] [s] [s] 	249.0 [s] once / DCY	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
EVAP System Vapor Pressure Sensor	P0451	stuck in range	difference between max. and min. evaporative system vapor pressure	< 0.02 [kPa]	vehicle speed	5...120 [km/h]	200.0 [s] multiple	2 DCY
			within time	200.0 [s]	time after engine start	> 4.0 [s]		
					barometric pressure	> 73 [kPa]		
					AAT	> 4 [°C]		
EVAP System Vapor Pressure Sensor	P0450	**offset monitoring**	**(passive monitoring)**		AAT	4...35 [°C]		
		out of range	evaporative system vapor pressure after tank ventilation (differential pressure sensor)	> | 4.00 | [kPa]	barometric pressure	> 73 [kPa]	200.1 [s] once / DCY	2 DCY
			(active monitoring)		difference between low-pass filtered and actual barometric pressure	<= | 0.30 | [kPa]		
			evaporative system vapor pressure after tank ventilation (differential pressure sensor)	> | 4.00 | [kPa]	vehicle speed (upper range)	<= 120 [km/h]	215.6 [s] once / DCY	2 DCY
					no refueling event			
					vehicle off time	>= 18000.0 [s]		
					conditions optional			
					differential evaporative system vapor pressure @ start	< -2.00 [kPa]		
					time after engine start	< 25.0 [s]		
					fuel tank isolation valve commanded on for cumulative	8.0 [s]		
					within time	200.0 [s]		
					difference between low-pass filtered and actual differential evaporative system vapor pressure	<= | 0.10 | [kPa]		
					or			
					conditions optional			
					fuel tank isolation valve continuously commanded on for	30.0 [s]		
					within time	200.0 [s]		
					case 1: (passive monitoring)			
					change in differential evaporative system vapor pressure since start of pressure reduction	>= | 0.30 | [kPa]		
					fuel tank isolation valve	commanded open		
					case 2: (active monitoring)			
					change in differential evaporative system vapor pressure since start of pressure reduction	< | 0.30 | [kPa]		
					time since ready to drive	> 600.0 [s]		
					at least one leak detection monitor during engine off	preceding		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						ratio of actual evap pump current difference between reference measurement and idle to last evap pump current difference at leak detection during engine off	< 1.20	[-]		
						evap leak detection pump	commanded on			
						differential evaporative system vapor pressure	< 0	[kPa]		
						or				
						integrated EVAP purge mass	> 2.0	[g]		
						evap purge adaptation	< 7.00	[-]		
						change in differential evaporative system vapor pressure when fuel tank isolation valve closed	< 0.30	[kPa/s]		
						within time	>= 4.0	[s]		
						integrated EVAP purge mass after monitoring break	> 8.0	[g]		
						time after monitoring break	>= 300.0	[s]		
Secondary Air System	P2440	stuck open	relative AIR pressure (measured with AIR pressure sensor vs. modeled) vs. relative AIR pressure (measured with AIR pressure sensor vs. modeled while both AIR valves closed)	> 1.22	[-]	ECT	5...110	[°C]	0 [s] once / DCY	2 DCY
			and			IAT @ downstream throttle	5...80	[°C]		
			<u>case 1:</u>			modeled catalyst temp.	< 900	[°C]		
			relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed) vs. relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed)	> 1.33	[-]	mass air flow	7.00...140.00	[kg/h]		
			<u>case 2:</u>			difference engine load	-10.0...10.0	[%/rev]		
			relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed) vs. relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed)	<= 1.33	[-]	barometric pressure	> 71.99	[kPa]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			and relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed) vs. relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed)	<= 1.33	[-]	AIR system **additional conditions:**	commanded on			
			and average pressure difference between absolute value and filtered value while both valves commanded closed	n.a.		blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed average pressure difference between absolute value and filtered while valve bank 2 commanded closed	>= 0.30 >= 0.40 >= 0.52 >= 0.68 >= 0.18...0.30	[-] [-] [-] [-] [kPa]		
	P2442	stuck open	relative AIR pressure (measured with AIR pressure sensor vs. modeled) vs. relative AIR pressure (measured with AIR pressure sensor vs. modeled while both AIR valves closed)	> 1.22	[-]	ECT	5...110	[°C]	0 [s] once / DCY	2 DCY
			and **case 1:** relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed) vs. relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed)	> 1.33	[-]	IAT @ downstream throttle modeled catalyst temp. mass air flow	5...80 < 900 7.00...140.00	[°C] [°C] [kg/h]		
			case 2:			difference engine load	-10.0...10.0	[%/rev]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed) vs. relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed)	<= 1.33	[-]	barometric pressure	> 71.99	[kPa]		
			and			AIR system	commanded on			
			relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed) vs. relative AIR pressure (measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed)	<= 1.33	[-]	**additional conditions:**				
			and			blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled	>= 0.30	[-]		
			average pressure difference between absolute value and filtered value while both valves commanded closed	n.a.		leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled	>= 0.40	[-]		
						blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed	>= 0.52	[-]		
						leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed	>= 0.68	[-]		
						average pressure difference between absolute value and filtered while valve bank 1 commanded closed	>= 0.18...0.30	[kPa]		
Secondary Air System	P0491	flow check during catalyst heating	**case 1:**			ECT	5...110	[°C]		
			blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled	< 0.10	[-]	IAT @ downstream throttle	5...80	[°C]	0 [s] once / DCY	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled	< 0.10	[-]	modeled catalyst temp.	< 900	[°C]		
			case 2:			mass air flow	7.00...140.00	[kg/h]		
			blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled	< 0.30	[-]	difference engine load	-10.0...10.0	[%/rev]		
			leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled	< 0.40	[-]	barometric pressure	> 72	[kPa]		
			case 3:			AIR system	commanded on			
			blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed	< 0.52	[-]					
			leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled while valve bank 2 commanded closed	< 0.68	[-]					
			case 4:							
			average pressure difference between absolute value and filtered while valve bank 2 commanded closed	< 0.18...0.30	[kPa]					
	P0492	flow check during catalyst heating	**case 1:**			ECT	5...110	[°C]		
			blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled	< 0.10	[-]	IAT @ downstream throttle	5...80	[°C]	0 [s] once / DCY	2 DCY
			leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled	< 0.10	[-]	modeled catalyst temp.	< 900	[°C]		
			case 2:			mass air flow	7.00...140.00	[kg/h]		
			blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled	< 0.30	[-]	difference engine load	-10.0...10.0	[%/rev]		
			leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled	< 0.40	[-]	barometric pressure	> 72	[kPa]		
			case 3:			AIR system	commanded on			

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			blockage: relative AIR pressure measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed	< 0.52	[-]					
			leakage: relative AIR pressure measured with AIR pressure sensor vs. modeled while valve bank 1 commanded closed	< 0.68	[-]					
			case 4: average pressure difference between absolute value and filtered while valve bank 1 commanded closed	< 0.18...0.30	[kPa]					
Secondary Air System	P0410	rationality check directly after catalyst heating	diff. of measured AIR pressure before AIR injection vs. AIR pressure after AIR injection	> 2.00	[kPa]	ECT	5...110	[°C]	0.5 [s] once / DCY	2 DCY
	P0410					IAT @ downstream throttle	5...80	[°C]		
						modeled catalyst temp.	< 900	[°C]		
						mass air flow	7.00...140.00	[kg/h]		
						difference engine load	-10.0...10.0	[%/rev]		
						barometric pressure	> 72	[kPa]		
						AIR system	commanded off			
Secondary Air Valve	P0416	open circuit	signal voltage	4.70...5.40	[V]	air valve	commanded off		0.5 [s] continuous	2 DCY
	P0413					engine speed	> 0	[rpm]		
	P0417	short to ground	signal voltage	0.0...3.25	[V]	air valve	commanded off		0.5 [s] continuous	2 DCY
	P041F					engine speed	> 0	[rpm]		
	P0415	short to battery plus	signal current	> 2.20	[A]	air valve	commanded on		0.5 [s] continuous	2 DCY
	P044F					engine speed	> 0	[rpm]		
Secondary Air Injection Pump Relay	P0418	open circuit	signal voltage	4.70...5.40	[V]	pump relay	commanded off		0.5 [s] continuous	2 DCY
						engine speed	> 0	[rpm]		
	P2257	short to ground	signal voltage	0.0...3.26	[V]	pump relay	commanded off		0.5 [s] continuous	2 DCY
						engine speed	> 0	[rpm]		
	P2258	short to battery plus	signal current	0.60...2.40	[A]	pump relay	commanded on		0.5 [s] continuous	2 DCY
						engine speed	> 0	[rpm]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Secondary Air System Pressure Sensor	P2432	signal range check	signal voltage	< 0.50	[V]				0.5 [s] continuous	2 DCY
	P2433	signal range check	signal voltage	> 4.50	[V]				0.5 [s] continuous	2 DCY
	P2431	rationality check	difference between AIR pressure and barometric pressure	< -6.00; > 6.00	[kPa]	AIR system barometric pressure	commanded off ready, no fault		0.01 [s] once / DCY	2 DCY
Fuel System	P0174 P0171	system too lean	low pass filtered lambda controller output for time	> 24.90 > 10.0	[%] [s]	**general:** number of injections after engine start ECT lambda control **and** **case 1:** evap purge **case 2:** integrated EVAP purge mass **case 3:** evap purge controller limitation evap purge flow	 1000 >= 45 closed loop not active > 3.0 >= 1.00 <= 5.00	 [°C] [g] [-] [kg/h]	30.0 [s] continuous	2 DCY
	P0175 P0172	system too rich	low pass filtered lambda controller output for time	< -29.90 > 10.0	[%] [s]	**general:** number of injections after engine start ECT lambda control high PCV purge load due to oil dilution **and** **case 1:** evap purge **case 2:** integrated EVAP purge mass **case 3:** evap purge controller limitation evap purge flow	 1000 >= 45 closed loop n.a. not active > 3.0 >= 1.00 <= 5.00	 [°C] [g] [-] [kg/h]	30.0 [s] continuous	2 DCY
Fuel System	P2098 P2096	out of range low	I-part of 2nd lambda control loop	< -0.035	[-]	**general:** modeled exhaust gas temp. for time lambda control lambda control 2nd lambda control	 550...980 > 5.0 closed loop not at min or max limit closed loop	 [°C] [s]	5.0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						O2S front	ready			
						O2S rear	ready			
						O2S heater front	active			
						O2S heater rear	active			
						exhaust gas mass flow	28.00...100.00	[kg/h]		
						or				
						exhaust gas mass flow	25.00...28.00	[kg/h]		
						within time	5.0	[s]		
						fuel cut off	not active			
						deviation engine load	< | 6.0 |	[%/rev]		
						ECT	> 45	[°C]		
						catalyst heating	not active			
						AIR	not active			
						lambda setpoint	1	[-]		
						engine speed	> 1000	[rpm]		
						case 1:				
						1st lambda control loop	not at min or max limit			
						2nd lambda control loop	active			
						case 2:				
						1st lambda control loop	at min limit			
						O2S front	< 1.0	[-]		
						O2S rear voltage	< 0.4	[V]		
						case 3:				
						1st lambda control loop	at max limit			
						O2S front	> 1.0	[-]		
						O2S rear voltage	> 0.6	[V]		
						integrated exhaust gas mass after below conditions fullfilled	> 50.0	[g]		
						fuel cut off	not active			
						deviation engine load	< | 6.0 |	[%/rev]		
						ECT	> 45	[°C]		
						catalyst heating	not active			
						AIR	not active			
						lambda setpoint	1	[-]		
						engine speed	> 1000	[rpm]		
	P2099	out of range high	I-part of 2nd lambda control loop	> 0.035	[-]	**general:**			5.0 [s] continuous	2 DCY
	P2097					modeled exhaust gas temp.	550...980	[°C]		
						for time	> 5.0	[s]		
						lambda control	closed loop			

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						lambda control	not at min or max limit			
						2nd lambda control	closed loop			
						O2S front	ready			
						O2S rear	ready			
						O2S heater front	active			
						O2S heater rear	active			
						exhaust gas mass flow	28.00...100.00	[kg/h]		
						or				
						exhaust gas mass flow	25.00...28.00	[kg/h]		
						within time	5.0	[s]		
						fuel cut off	not active			
						deviation engine load	< | 6.0 |	[%/rev]		
						ECT	> 45	[°C]		
						catalyst heating	not active			
						AIR	not active			
						lambda setpoint	1	[-]		
						engine speed	> 1000	[rpm]		
						case 1:				
						1st lambda control loop	not at min or max limit			
						2nd lambda control loop	active			
						case 2:				
						1st lambda control loop	at min limit			
						O2S front	< 1.0	[-]		
						O2S rear voltage	< 0.4	[V]		
						case 3:				
						1st lambda control loop	at max limit			
						O2S front	> 1.0	[-]		
						O2S rear voltage	> 0.6	[V]		
						integrated exhaust gas mass after below conditions fullfilled	> 50.0	[g]		
						fuel cut off	not active			
						deviation engine load	< | 6.0 |	[%/rev]		
						ECT	> 45	[°C]		
						catalyst heating	not active			
						AIR	not active			
						lambda setpoint	1	[-]		
						engine speed	> 1000	[rpm]		
Fuel System	P2179	system too lean @ part load	adaptive value	> 30.00	[%]	number of injections after engine start	> 500	[-]	10.0 [s] continuous	2 DCY
	P2177					engine speed	> 1080	[rpm]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						engine load	> 37	[%]		
						ECT	> 45	[°C]		
						IAT @ downstream intercooler	< 80	[°C]		
						ratio manifold pressure to barometric pressure	> 0.30	[-]		
						or				
						valve overlap	< 20.00	[°CRK]		
						lambda control	closed loop			
						evap purge valve	closed			
						high PCV purge load due to oil dilution	n.a.			
	P2180	system too rich @ part load	adaptive value	< -30.00	[%]	number of injections after engine start	> 500	[-]	10.0 [s] continuous	2 DCY
	P2178					engine speed	> 1080	[rpm]		
						engine load	> 37	[%]		
						ECT	> 45	[°C]		
						IAT @ downstream intercooler	< 80	[°C]		
						ratio manifold pressure to barometric pressure	> 0.30	[-]		
						or				
						valve overlap	< 20.00	[°CRK]		
						lambda control	closed loop			
						evap purge valve	closed			
						high PCV purge load due to oil dilution	n.a.			
Fuel System	P219B	adaptation value monitoring	corrections of fuel mass on single cylinders	< 0.85	[-]	**accum. time of following conditions:**			80 [s] once / DCY	2 DCY
	P219A					time	> 0.50	[s]		
						engine speed	1320...2280	[rpm]		
						delta engine speed	<= | 120 |	[rpm]		
						relative engine load	39.80…75.00	[%]		
						delta relative engine load	< | 3.00 |	[%]		
						further conditions:				
						ECT	> 45	[°C]		
						or				
						modeled ECT	> 70	[°C]		
						lambda control	closed loop			
						lambda control	not at min or max limit			
						integrated air mass	n.a.	[kg]		
						lambda setpoint	1	[-]		
						delay adaption of front O2S	completed			
						camshaft adjustment	released			
						Evaporative System Status	no purge			
						secondary air pump	commanded off			

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						change of modeled exhaust gas temperature	< 60.0	[K]		
						upstream O2S dynamic monitor	completed			
						barometric pressure	> 73	[kPa]		
	P219B P219A	adaptation value monitoring	corrections of fuel mass on single cylinders	> 1.18	[-]	**accum. time of following conditions:** time engine speed delta engine speed relative engine load delta relative engine load **further conditions:** ECT **or** modeled ECT lambda control lambda control integrated air mass lambda setpoint delay adaption of front O2S camshaft adjustment Evaporative System Status secondary air pump change of modeled exhaust gas temperature upstream O2S dynamic monitor barometric pressure	 > 0.50 1320...2280 <= | 120 | 39.80...75.00 < | 3.00 | > 45 > 70 closed loop not at min or max limit n.a. 1 completed released no purge commanded off < 60.0 completed > 73	 [s] [rpm] [rpm] [%] [%] [°C] [°C] [kg] [-]	80 [s] once / DCY	2 DCY
Fuel Pump	P025A	open circuit	signal voltage	4.8...5.3	[V]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
	P025D	short to battery plus	signal current	> 0.6	[mA]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
	P025C	short to ground	signal voltage	< 2.7...3.25	[V]	engine speed	> 80	[rpm]	3.5 [s] continuous	2 DCY
Injection Valves	P2146 P2149 P2152 P2146 P2149 P2152	short to ground (high side)	signal current	> 14.90	[A]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
	P2146 P2149	short to battery plus (high side)	signal current	< 2.60	[A]	engine speed low side signal current	> 80 > 2.70	[rpm] [A]	0.5 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	P2152 P2146 P2149 P2152									
	P2146 P2149 P2152 P2146 P2149 P2152	core connection (high side - low side)	signal current	< 2.60	[A]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
	P0201 P0204 P0203 P0206 P0202 P0205	open circuit	signal current	< 2.10	[A]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
	P0261 P0270 P0267 P0276 P0264 P0273	short to ground (low side)	signal current	< 2.10	[A]	engine speed high side signal current	> 80 > 4.20	[rpm] [A]	0.5 [s] continuous	2 DCY
	P0262 P0271 P0268 P0277 P0265 P0274	short to battery plus (low side)	signal current	> 14.70	[A]	engine speed injection valve	> 80 switched on	[rpm]	0.5 [s] continuous	2 DCY
	P0201	monitoring booster-time	internal logic	failure		engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	P0204 P0203 P0206 P0202 P0205					injection valve	switched on			
ECM: Injection Valves	P062B P062B P062B P062B P062B P062B P062B	communication check	SPI communications check Identifier	failure		engine speed	> 80	[rpm]	2.2 [s] continuous	2 DCY
Fuel Rail, high pressure side	P0191	out of range high	actual pressure	> 28.00	[MPa]	engine speed	760...7000	[rpm]	1.0 [s] continuous	2 DCY
	P0191	out of range low	actual pressure	< 0.005	[MPa]	engine speed fuel pump	760...7000 commanded on	[rpm]	1.0 [s] continuous	2 DCY
Fuel Volume Regulator Control	P2294	open circuit	signal voltage	1.40...3.20	[V]	fuel control valve fuel pump	commanded off commanded on		0.5 [s] continuous	2 DCY
	P2295	short to ground	signal voltage	< 1.40	[V]	fuel control valve	commanded off		0.5 [s] continuous	2 DCY
	P2296	short to battery plus	signal voltage	> 3.20	[V]	fuel control valve	commanded on		0.5 [s] continuous	2 DCY
Fuel Tank Pressure Sensor	P0453	out of range high	signal voltage	> 4.751	[V]	engine speed	760...7000	[rpm]	0.5 [s] continuous	2 DCY
	P0452	out of range low	signal voltage	< 0.3516	[V]	engine speed	760...7000	[rpm]	0.5 [s] continuous	2 DCY
Fuel Tank Isolation Valve	P0499	short to battery plus	signal current	220...980	[µA]				0.5 [s] continuous	2 DCY
	P0498	short to ground	signal voltage	2.8...3.2	[V]				0.5 [s] continuous	2 DCY
	P0449	open circuit	signal voltage	4.8...5.3	[V]				0.5 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
Fuel Tank Isolation Valve	P2422	stuck close	**fuel tank isolation valve - commanded on**		AAT	4...35 [°C]		
			change of evap pump current	> 1.0 [mA]	barometric pressure	> 73 [kPa]	215.6 [s] once / DCY	2 DCY
			within time	>= 7.5 [s]	difference between low-pass filtered and actual barometric pressure	<= | 0.30 | [kPa]		
					vehicle speed (upper range)	<= 120 [km/h]		
			fuel tank isolation valve - commanded off					
			change of evap pump current	> 2.0 [mA]	no refueling event		215.6 [s] once / DCY	2 DCY
			and		vehicle off time	>= 18000.0 [s]		
			change of evap pump current	<= 1.5 [mA]	**conditions optional**			
			or		differential evaporative system vapor pressure @ start	< -2.00 [kPa]		
			ratio of actual evap pump current gradient to evap pump current gradient with fuel tank isolation valve commanded open	<= 2.00 [-]	time after engine start	< 25.0 [s]		
			within time	>= 7.5 [s]	fuel tank isolation valve commanded on for cumulative within time	8.0 [s] 200.0 [s]		
					difference between low-pass filtered and actual differential evaporative system vapor pressure	<= | 0.10 | [kPa]		
					or			
					conditions optional			
					fuel tank isolation valve continuously commanded on for	30.0 [s]		
					within time	200.0 [s]		
					additional general conditions			
					change in differential evaporative system vapor pressure since start of pressure reduction	< | 0.30 | [kPa]		
					time since ready to drive	> 600.0 [s]		
					at least one leak detection monitor during engine off	preceding		
					ratio of actual evap pump current difference between reference measurement and idle to last evap pump current difference at leak detection during engine off	< 1.20 [-]		
					evap leak detection pump	commanded on		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						differential evaporative system vapor pressure	< 0	[kPa]		
						or				
						integrated EVAP purge mass	> 2.0	[g]		
						evap purge adaptation	< 7.00	[-]		
						change in differential evaporative system vapor pressure when fuel tank isolation valve closed	< 0.30	[kPa/s]		
						within time	>= 4.0	[s]		
						integrated EVAP purge mass after monitoring break	> 8.0	[g]		
						time after monitoring break	>= 300.0	[s]		
						fuel tank isolation valve	commanded open			
	P2421	stuck open	change of evap pump current	<= 2.0	[mA]	AAT	4...35	[°C]	215.6 [s] once / DCY	2 DCY
			and			barometric pressure	> 73	[kPa]		
			ratio of actual evap pump current gradient to evap pump current gradient with fuel tank isolation valve commanded open	<= 2.00	[-]	difference between low-pass filtered and actual barometric pressure	<= | 0.30 |	[kPa]		
			or			vehicle speed (upper range)	<= 120	[km/h]		
			change of evap pump current	<= 1.5	[mA]	no refueling event				
			within time	>= 7.5	[s]	vehicle off time	>= 18000.0	[s]		
						conditions optional				
						differential evaporative system vapor pressure @ start	< -2.00	[kPa]		
						time after engine start	< 25.0	[s]		
						fuel tank isolation valve commanded on for cumulative within time	8.0	[s]		
							200.0	[s]		
						difference between low-pass filtered and actual differential evaporative system vapor pressure	<= | 0.10 |	[kPa]		
						or				
						conditions optional				
						fuel tank isolation valve continuously commanded on for	30.0	[s]		
						within time	200.0	[s]		
						additional general conditions				
						change in differential evaporative system vapor pressure since start of pressure reduction	< | 0.30 |	[kPa]		
						time since ready to drive	> 600.0	[s]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						at least one leak detection monitor during engine off	preceding			
						ratio of actual evap pump current	< 1.20	[-]		
						difference between reference measurement and idle to last evap pump current difference at leak detection during engine off				
						differential evaporative system vapor pressure	< 0	[kPa]		
						or				
						integrated EVAP purge mass	> 2.0	[g]		
						evap purge adaptation	< 7.00	[-]		
						change in differential evaporative system vapor pressure when fuel tank isolation valve closed	< 0.30	[kPa/s]		
						within time	>= 4.0	[s]		
						integrated EVAP purge mass after monitoring break	> 8.0	[g]		
						time after monitoring break	>= 300.0	[s]		
						fuel tank isolation valve	commanded closed			
Fuel System Pressure Sensor, low pressure side	P008B	out of range high	actual pressure	> 780.00	[kPa]				2.0 [s] continuous	2 DCY
	P008A	out of range low	actual pressure	< 40.00	[kPa]				2.0 [s] continuous	2 DCY
Fuel System Pressure Sensor, low pressure side	P2539	short to battery / open circuit	sensor voltage	> 4.80	[V]				0.5 [s] continuous	2 DCY
	P2541	short to ground	sensor voltage	< 0.20	[V]				0.5 [s] continuous	2 DCY
Fuel System Control, low pressure side	P0089	functional check	difference between actual pressure vs. target pressure	> 200.00	[kPa]	time after engine start	> 10.0	[s]	15.0 [s] continuous	2 DCY
						fuel cut off	not active			
						time after fuel cut off	> 20.0	[s]		
	P0089	functional check	difference between target pressure vs. actual pressure	> 150.00	[kPa]	time after engine start	> 10.0	[s]	6.0 [s] continuous	2 DCY
	P0089	functional check	pressure control activity	> 250.00	[kPa]	time after engine start	> 10.0	[s]	15.0 [s] continuous	2 DCY
	P0089	functional check	pressure control activity	< -300.00	[kPa]	time after engine start	> 10.0	[s]	15.0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Fuel System Pressure Sensor, high pressure side	P0190	signal range check	signal voltage	> 4.80	[V]				0.5 [s] continuous	2 DCY
	P0192	signal range check	signal voltage	< 0.20	[V]				0.5 [s] continuous	2 DCY
Fuel System Pressure Sensor, high pressure side	P12A1	rationality check inappropriately low (negative offset)	**general:** rail pressure bank 1 @ engine start **and** **choice of:** fuel system too rich @ part load **or** fuel system too rich @ idle **or** fault fuel system too rich @ part load **or** fault fuel system too rich @ idle **or** misfire fault	 < 0.10 n.a. n.a. detected detected detected	 [MPa]	ECT @ engine shut-off ECT @ start diff. between ECT @ start and IAT engine off time engine speed	> 45 <= 45 > -143.3; <= 143.3 >= 18000.0 = 0	[°C] [°C] [K] [s] [rpm]	0 [s] once / DCY	2 DCY
	P12A2	rationality check inappropriately high (positive offset)	**general:** rail pressure bank 1 @ engine start **and** **choice of:** fuel system too lean @ part load **or** fuel system too lean @ idle **or** fault fuel system too lean @ part load **or** fault fuel system too lean @ idle **or** misfire fault	 > 2.50 n.a. n.a. detected detected detected	 [MPa]	ECT @ engine shut-off ECT @ start diff. between ECT @ start and IAT engine off time engine speed	> 45 <= 45 > -143.3; <= 143.3 >= 18000.0 = 0	[°C] [°C] [K] [s] [rpm]	0 [s] once / DCY	2 DCY
Fuel Volume Regulator Control, high pressure side	P2293	functional check	difference between target pressure vs. actual pressure	< -1.50	[MPa]	time after engine start time after fuel cut off fuel cut off catalyst heating	> 10.0 > 4.5 not active not active	[s] [s]	3.0 [s] multiple	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						fuel volume regulator control relative fuel mass	active 5.02...249.98	 [%]		
	P2293	functional check	difference between target pressure vs. actual pressure	> 1.50	[MPa]	time after engine start time after fuel cut off fuel cut off catalyst heating fuel volume regulator control relative fuel mass	> 10.0 > 4.5 not active not active active 5.02...249.98	[s] [s] [%]	15.0 [s] multiple	2 DCY
Cold Start Monitoring **Fuel Volume Regulator Control, high pressure side**	P053F	functional check	difference between target pressure vs. actual pressure	< -1.50	[MPa]	time after engine start fuel cut off time after fuel cut off catalyst heating fuel volume regulator control relative fuel mass	> 5.0 not active > 4.5 active active 5.02...249.98	[s] [s] [%]	3.0 [s] multiple	2 DCY
	P053F	functional check	difference between target pressure vs. actual pressure	> 1.50	[MPa]	time after engine start fuel cut off time after fuel cut off catalyst heating fuel volume regulator control relative fuel mass	> 5.0 not active > 4.5 active active 5.02...249.98	[s] [s] [%]	3.0 [s] multiple	2 DCY
Oxygen Sensors front	P2415 P2414	signal range check (check for sensor at ambient air)	**threshold 1:** signal voltage **threshold 2:** signal voltage Depending on gain factor, that actual is used for sensor characteristic, the threshold is	 3.70...4.81 2.51...3.00	 [V] [V]	lambda set value O2S ceramic temp. fuel cut off heater control if low fuel signal then wait **only AIR system** AIR	< 1.6 > 715 not active closed loop > 120.0 not active	[-] [°C] [s] 	10.0 [s] multiple	2 DCY
Oxygen Sensors front	P2197 P2195	out of range high	delta lambda of 2nd lambda control loop	> 0.059	[-]	**general:** modeled exhaust gas temp. for time lambda control lambda control 2nd lambda control O2S front O2S rear	 550...980 > 5.0 closed loop not at min or max limit closed loop ready ready	 [°C] [s]	5.0 [s] multiple	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						O2S heater front	active			
						O2S heater rear	active			
						exhaust gas mass flow	28.00...100.00	[kg/h]		
						or				
						exhaust gas mass flow	25.00...28.00	[kg/h]		
						within time	5.0	[s]		
						fuel cut off	not active			
						deviation engine load	< | 6.0 |	[%/rev]		
						ECT	> 45	[°C]		
						catalyst heating	not active			
						AIR	not active			
						lambda setpoint	1	[-]		
						engine speed	> 1000	[rpm]		
						case 1:				
						1st lambda control loop	not at min or max limit			
						2nd lambda control loop	active			
						case 2:				
						1st lambda control loop	at min limit			
						O2S front	< 1.0	[-]		
						O2S rear voltage	< 0.4	[V]		
						case 3:				
						1st lambda control loop	at max limit			
						O2S front	> 1.0	[-]		
						O2S rear voltage	> 0.6	[V]		
						integrated exhaust gas mass after below conditions fullfilled	> 50.0	[g]		
						fuel cut off	not active			
						deviation engine load	< | 6.0 |	[%/rev]		
						ECT	> 45	[°C]		
						catalyst heating	not active			
						AIR	not active			
						lambda setpoint	1	[-]		
						engine speed	> 1000	[rpm]		
	P2198 P2196	out of range low	delta lambda of 2nd lambda control loop	< -0.059	[-]	**general:**			5.0 [s] multiple	2 DCY
						modeled exhaust gas temp.	550...980	[°C]		
						for time	> 5.0	[s]		
						lambda control	closed loop			
						lambda control	not at min or max limit			

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						2nd lambda control	closed loop			
						O2S front	ready			
						O2S rear	ready			
						O2S heater front	active			
						O2S heater rear	active			
						exhaust gas mass flow	28.00...100.00	[kg/h]		
						or				
						exhaust gas mass flow	25.00...28.00	[kg/h]		
						within time	5.0	[s]		
						fuel cut off	not active			
						deviation engine load	< | 6.0 |	[%/rev]		
						ECT	> 45	[°C]		
						catalyst heating	not active			
						AIR	not active			
						lambda setpoint	1	[-]		
						engine speed	> 1000	[rpm]		
						case 1:				
						1st lambda control loop	not at min or max limit			
						2nd lambda control loop	active			
						case 2:				
						1st lambda control loop	at min limit			
						O2S front	< 1.0	[-]		
						O2S rear voltage	< 0.4	[V]		
						case 3:				
						1st lambda control loop	at max limit			
						O2S front	> 1.0	[-]		
						O2S rear voltage	> 0.6	[V]		
						integrated exhaust gas mass after below conditions fullfilled	> 50.0	[g]		
						fuel cut off	not active			
						deviation engine load	< | 6.0 |	[%/rev]		
						ECT	> 45	[°C]		
						catalyst heating	not active			
						AIR	not active			
						lambda setpoint	1	[-]		
						engine speed	> 1000	[rpm]		
Oxygen Sensors front	P0040	signal range check (detection of exchange lambda sensors upstream catalyst)	lambda controllers exceed thresholds in opposite directions			lambda control	closed loop		5.0 [s] multiple	2 DCY
			case 1:			VVT diagnosis	finished			
			lambda control value bank 1	< 0.80	[-]					
			and							

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			lambda control value bank 2	> 1.20	[-]					
			case 2:							
			lambda control value bank 1	> 1.20	[-]					
			and							
			lambda control value bank 2	< 0.80	[-]					
Oxygen Sensors front	P0133	O2S signal dynamic check	**Delayed Response with arithmetic average value**			integrated air mass	n.a.			
	P0153		delay time at lean to rich transition	> 0.4	[s]	O2S front	ready		20 [s] once / DCY	2 DCY
			or			O2S rear	ready			
			delay time at rich to lean transition	> 0.4	[s]	integrated air mass after O2S ready	>= 0.06	[kg]		
			with EWMA filter value			O2S front out of range-monitor	finished			
			delay time at lean to rich transition	> n.a.	[s]	modeled exhaust gas temperature at O2S rear	> 450	[°C]		
			or			difference between actual O2S ceramic temp. and O2S ceramic temp. setpoint	< 65.0	[K]		
			delay time at rich to lean transition	> n.a.	[s]	integrated EVAP purge mass since last purge stop	> 0.0	[g]		
			Slow Transition with arithmetic average value			ratio fuel mass from evap purge system to fuel mass through injectors	<= 1.20	[-]		
			time at lean to rich transition	> 0.35	[s]	time after fuel cut off	> 20.0	[s]		
			or			lambda setpoint	1.00	[-]		
			time at rich to lean transition	> 0.35	[s]	for				
			with EWMA filter value			integrated air mass	>= 0.06	[kg]		
			time at lean to rich transition	> n.a.	[s]	engine speed	1160...3000	[rpm]		
			or			vehicle speed	> 5	[km/h]		
			time at rich to lean transition	n.a.		**case 1 (lower range window)**				

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
					exhaust gas mass flow, lower range	25.00...100.00	[kg/h]		
					modeled exhaust gas temp. in catalyst system, lower range	550...925	[°C]		
					or				
					case 2 (upper range window)				
					exhaust gas mass flow, upper range	n.a.	[kg/h]		
					modeled exhaust gas temp. in catalyst system, upper range	n.a.	[°C]		
					lower/upper range window (conditions fulfilled):				
					integrated air mass	>= 0.06	[kg]		
					change of exhaust gas mass flow	-10.00...10.00	[kg/h]		
					with delay time	1.0	[s]		
					change of modeled catalyst temperature	< 25.0	[K]		
					diff. between lambda set value and actual lambda value	< 0.01	[-]		
					lambda control	not at min or max limit			
					lambda setpoint request	realized			
					Conditions to switch from rich to lean phase:				
					deviation between requested lambda and measured lambda	< | 2.49 |	[-]		
					for time	> 0.1	[s]		
					integrated exhaust gas mass	>= 0.01	[kg]		
					case 1:				
					O2S rear voltage	>= 0.82	[V]		
					or				
					Case 2:				
					O2S rear voltage	>= 0.75	[V]		
					O2S rear voltage gradient	-0.10...0.10	[V/s]		
					MAF O2 integral	>= 0.4	[g]		

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						Conditions to switch from lean to rich phase:				
						deviation between requested lambda and measured lambda	< | 2.49 |	[-]		
						for time	> 0.1	[s]		
						integrated exhaust gas mass	>= 0.01	[kg]		
						case 1:				
						O2S rear voltage	<= 0.15	[V]		
						or				
						case 2:				
						O2S rear voltage	<= 0.20	[V]		
						O2S rear voltage gradient	-0.10...0.10	[V/s]		
						MAF O2 integral	<= 0.2	[g]		
						for arithmetic average value calculation:				
						number of checks required for valid result	>= 3.00	[-]		
						for EWMA-filter:				
						minimum of one test per DCY required				
						Step change detection will initiate multiple tests per DCY				
						Conditions for step change detection:				
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.			
						or				
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.	[-]		
Oxygen Sensors front (linear sensor)	P2254	open circuit virtual mass (VM)	O2S voltage signal front	1.47...1.52	[V]	modeled exhaust gas temp.	< 800	[°C]	35.0 [s] continuous	2 DCY
	P2251		**and**			no fuel cut off	> 2.0	[s]		
			internal resistance	> 950.00	[Ohm]	heater control	active			
	P2247	open circuit nernst voltage (UN)	O2S voltage signal front	< 0.25; > 4.80	[V]	heater control	active		20.0 [s] continuous	2 DCY
	P2243		**and**							
			internal resistance	> 950.00	[Ohm]					

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
	P2629	open circuit adjustment voltage (IA)	O2S voltage signal front	> 4.81 [V]	modeled exhaust gas temp.	< 800 [°C]	1.0 [s] continuous	2 DCY
	P2626				O2S ceramic temp.	> 715 [°C]		
					fuel cut off	active		
					heater control	closed loop		
					if low fuel signal then wait	> 120.0 [s]		
	P2240	open circuit pump current (IP)	O2S voltage signal front	1.49...1.51 [V]	O2S ceramic temp.	> 715 [°C]	4.5 [s] continuous	2 DCY
	P2237		**and**		lambda modulation	> 0.02 [-]		
			difference between maximum and minimum value of O2S voltage signal front	n.a.	lambda control	closed loop		
			and		heater control	closed loop		
			delta lambda controller	> | 0.07 | [-]	**<u>if stepwise change lambda-setpoint</u>**			
			or		commanded delta lambda step	0.10 [-]		
			lambda control at min or max limit					
			O2S voltage signal front	1.49...1.51 [V]			3.0 [s] continuous	2 DCY
			and					
			difference between maximum and minimum value of O2S voltage signal front	n.a.				
			and					
			no reaction on commanded stepwise change of lambda-setpoint <> 1					
	P0152	signal range check	**<u>short to battery</u>**					
	P0132		virtual mass (VM)	> 3.25 [V]			8.0 [s] continuous	2 DCY
			or					
			nernst voltage (UN)	> 4.40 [V]				
			or					
			adjustment voltage (IA)	> 7.00 [V]				
			or					
			adjustment voltage (IP)	> 7.00 [V]				
	P0151	signal range check	**<u>short to ground</u>**					
	P0131		virtual mass (VM)	< 1.75 [V]			8.0 [s] continuous	2 DCY
			or					
			nernst voltage (UN)	< 1.50 [V]				

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
			or adjustment voltage (IA) **or** adjustment voltage (IP)	< 0.30 [V] < 0.30 [V]				
Oxygen Sensors Heater front	P0050 P0030	open circuit	heater voltage	4.70...5.40 [V]	time after engine start heater	> 5 [s] commanded off	0.5 [s] continuous	2 DCY
	P0051 P0031	short to ground	heater voltage	0.0...3.26 [V]	time after engine start heater	> 5 [s] commanded off	0.5 [s] continuous	2 DCY
	P0052 P0032	short to battery plus	signal current	> 5.50 [A]	time after engine start heater	> 5 [s] commanded on	0.5 [s] continuous	2 DCY
Oxygen Sensors Heater front	P0155 P0135	out of range low	O2S ceramic temp. **and** heater duty cycle	< 720 [°C] >= 90.00 [%]	modeled exhaust gas temperature O2 sensor heater time delay fuel cut off **or** time delay after fuel cut off for time	>= 350 [°C] commanded on > 50.0 [s] not active > 50.0 [s] active > 3.0 [s]	60.0 [s] multiple	2 DCY
	P0155 P0135	out of range low	O2S ceramic temp. **and** time after O2S heater on	< 720 [°C] >= 40.0 [s]	ECT @ start O2 sensor heater fuel cut off for time	>= -10 [°C] commanded on not active > 10.0 [s]	40.0 [s] once / DCY	2 DCY
	P0155 P0135	out of range low	O2S ceramic temp.	< 640 [°C]	modeled exhaust gas temperature O2 sensor heater time delay fuel cut off **or** time delay after fuel cut off for time	>= 250 [°C] commanded on > 50.0 [s] not active > 50.0 [s] active > 3.0 [s]	10.0 [s] multiple	2 DCY
Oxygen Sensors rear (binary sensor)	P2271 P2273	O2S signal check - stuck high	O2S sensor voltage **and**	> 0.20 [V]	**<u>Monitor Entry Conditions:</u>** integrated air mass	 n.a.	20.0 [s] once / DCY	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
			cumulated O2 mass flow into catalyst	>= 1000 [mg]	O2S front	ready		
			while		O2S rear	ready		
			lambda setpoint	1.06 [-]	integrated air mass after O2S ready	>= 0.06 [kg]		
					O2S front out of range-monitor	finished		
					modeled exhaust gas temperature at O2S rear	> 450 [°C]		
					difference between actual O2S ceramic temp. and O2S ceramic temp. setpoint	< 65.0 [K]		
					integrated EVAP purge mass since last purge stop	> 0.0 [g]		
					ratio fuel mass from evap purge system to fuel mass through injectors	<= 1.20 [-]		
					time after fuel cut off	> 20.0 [s]		
					lambda setpoint	1.00 [-]		
					for			
					integrated air mass	>= 0.06 [kg]		
					engine speed	1160...3000 [rpm]		
					vehicle speed	> 5 [km/h]		
					case 1 (lower range window)			
					exhaust gas mass flow, lower range	25.00...100.00 [kg/h]		
					modeled exhaust gas temp. in catalyst system, lower range	550...925 [°C]		
					or			
					case 2 (upper range window)			
					exhaust gas mass flow, upper range	n.a. [kg/h]		
					modeled exhaust gas temp. in catalyst system, upper range	n.a. [°C]		
					lower/upper range window (conditions fulfilled):			
					integrated air mass	>= 0.06 [kg]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
					change of exhaust gas mass flow	-10.00...10.00 [kg/h]		
					with delay time	1.0 [s]		
					change of modeled catalyst temperature	< 25.0 [K]		
					difference between actual lambda value and lambda setpoint	< 3.98 [%]		
					lambda control	not at min or max limit		
					lambda setpoint request	realized		
					Conditions to leave rich phase:			
					O2S rear voltage	>= 0.75 [V]		
					before integral of rich gas reaches	1000 [mg]		
					deviation between lambda set point and actual lambda value	< | 2.49 | [%]		
					End of measurement window:			
					number of checks	1 [-]		
Oxygen Sensors rear (binary sensor)	P2270	O2S signal check - stuck low	O2S sensor voltage	< 0.75 [V]	**Monitor Entry Conditions:**		20.0 [s] once / DCY	2 DCY
	P2272		**and** cumulated rich gas mass flow into catalyst	>= 1000 [mg]	integrated air mass	n.a.		
					O2S front	ready		
			while		O2S rear	ready		
			lambda setpoint	0.90 [-]	integrated air mass after O2S ready	>= 0.06 [kg]		
					O2S front out of range-monitor	finished		
					modeled exhaust gas temperature at O2S rear	> 450 [°C]		
					difference between actual O2S ceramic temp. and O2S ceramic temp. setpoint	< 65.0 [K]		
					integrated EVAP purge mass since last purge stop	> 0.0 [g]		
					ratio fuel mass from evap purge system to fuel mass through injectors	<= 1.20 [-]		
					time after fuel cut off	> 20.0 [s]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						lambda setpoint	1.00	[-]		
						for integrated air mass	>= 0.06	[kg]		
						engine speed	1160...3000	[rpm]		
						vehicle speed	> 5	[km/h]		
						case 1 (lower range window)				
						exhaust gas mass flow, lower range	25.00...100.00	[kg/h]		
						modeled exhaust gas temp. in catalyst system, lower range	550...925	[°C]		
						or				
						case 2 (upper range window)				
						exhaust gas mass flow, upper range	n.a.	[kg/h]		
						modeled exhaust gas temp. in catalyst system, upper range	n.a.	[°C]		
						lower/upper range window (conditions fulfilled):				
						integrated air mass	>= 0.06	[kg]		
						change of exhaust gas mass flow	-10.00...10.00	[kg/h]		
						with delay time	1.0	[s]		
						change of modeled catalyst temperature	< 25.0	[K]		
						difference between actual lambda value and lambda setpoint	< 3.98	[%]		
						lambda control	not at min or max limit			
						lambda setpoint request	realized			
						Conditions to leave lean phase:				
						O2S rear voltage	<= 0.2	[V]		
						before integral of rich gas reaches	1000	[mg]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						deviation between lambda set point and actual lambda value	< | 2.49 |	[%]		
						End of measurement window:				
						number of checks	1			
Oxygen Sensors rear (binary sensor)	P013A P013C	check of transient time at rich to lean transition	**arithmetic average value** time at lean to rich transition	> 1.00	[s]	integrated air mass O2S front	n.a. ready		30 [s] once / DCY	2 DCY
			or **EWMA filter value transient** time at lean to rich transition	n.a.		O2S rear integrated air mass after O2S ready O2S front out of range-monitor modeled exhaust gas temperature at O2S rear difference between actual O2S ceramic temp. and O2S ceramic temp. setpoint integrated EVAP purge mass since last purge stop ratio fuel mass from evap purge system to fuel mass through injectors time after fuel cut off lambda setpoint for integrated air mass engine speed vehicle speed **case 1 (lower range window)** exhaust gas mass flow, lower range modeled exhaust gas temp. in catalyst system, lower range	ready >= 0.06 finished > 450 < 65.0 > 0.0 <= 1.20 > 20.0 1.00 >= 0.06 1160...3000 > 5 25.00...100.00 550...925	[kg] [°C] [K] [g] [-] [s] [-] [kg] [rpm] [km/h] [kg/h] [°C]		

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
					or				
					case 2 (upper range window)				
					exhaust gas mass flow, upper range	n.a.	[kg/h]		
					modeled exhaust gas temp. in catalyst system, upper range	n.a.	[°C]		
					lower/upper range window (conditions fulfilled):				
					integrated air mass	>= 0.06	[kg]		
					change of exhaust gas mass flow	-10.00...10.00	[kg/h]		
					with delay time	1.0	[s]		
					change of modeled catalyst temperature	< 25.0	[K]		
					diff. between lambda set value and actual lambda value	< 0.01	[-]		
					lambda control	not at min or max limit			
					lambda setpoint request	realized			
					Conditions to switch from rich to lean phase:				
					deviation between requested lambda and measured lambda	< | 2.49 |	[-]		
					for time	> 0.1	[s]		
					integrated exhaust gas mass	>= 0.01	[kg]		
					case 1:				
					O2S rear voltage	>= 0.82	[V]		
					or				
					Case 2:				
					O2S rear voltage	>= 0.75	[V]		
					O2S rear voltage gradient	-0.10...0.10	[V/s]		
					MAF O2 integral	>= 0.4	[g]		
					Conditions to switch from lean to rich phase:				
					deviation between requested lambda and measured lambda	< | 2.49 |	[-]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						for time	> 0.1	[s]		
						integrated exhaust gas mass	>= 0.01	[kg]		
						case 1:				
						O2S rear voltage	<= 0.15	[V]		
						or				
						case 2:				
						O2S rear voltage	<= 0.20	[V]		
						O2S rear voltage gradient	-0.10...0.10	[V/s]		
						MAF O2 integral	<= 0.2	[g]		
						for arithmetic average value calculation:				
						number of checks required for valid result	>= 3.00	[-]		
						for EWMA-filter:				
						minimum of one test per DCY required				
						Step change detection will initiate multiple tests per DCY				
						Conditions for step change detection:				
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.			
						or				
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.	[-]		
Oxygen Sensors rear (binary sensor)	P013E	delayed response monitoring, delay measurement	**arithmetic average value**			integrated air mass	n.a.			
	P014A		delay time at rich to lean transition	> 0.80	[s]	O2S front	ready		20.0 [s] once / DCY	2 DCY
			or			O2S rear	ready			
			EWMA filter value transient			integrated air mass after O2S ready	>= 0.06	[kg]		
			delay time at rich to lean transition	n.a.		O2S front out of range-monitor	finished			
						modeled exhaust gas temperature at O2S rear	> 450	[°C]		

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
					difference between actual O2S ceramic temp. and O2S ceramic temp. setpoint	< 65.0	[K]		
					integrated EVAP purge mass since last purge stop	> 0.0	[g]		
					ratio fuel mass from evap purge system to fuel mass through injectors	<= 1.20	[-]		
					time after fuel cut off	> 20.0	[s]		
					lambda setpoint	1.00	[-]		
					for				
					integrated air mass	>= 0.06	[kg]		
					engine speed	1160...3000	[rpm]		
					vehicle speed	> 5	[km/h]		
					case 1 (lower range window)				
					exhaust gas mass flow, lower range	25.00...100.00	[kg/h]		
					modeled exhaust gas temp. in catalyst system, lower range	550...925	[°C]		
					or				
					case 2 (upper range window)				
					exhaust gas mass flow, upper range	n.a.	[kg/h]		
					modeled exhaust gas temp. in catalyst system, upper range	n.a.	[°C]		
					lower/upper range window (conditions fulfilled):				
					integrated air mass	>= 0.06	[kg]		
					change of exhaust gas mass flow	-10.00...10.00	[kg/h]		
					with delay time	1.0	[s]		
					change of modeled catalyst temperature	< 25.0	[K]		
					diff. between lambda set value and actual lambda value	< 0.01	[-]		
					lambda control	not at min or max limit			
					lambda setpoint request	realized			
					Conditions to switch from rich to lean phase:				

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
					deviation between requested lambda and measured lambda	< | 2.49 | [-]		
					for time	> 0.1 [s]		
					integrated exhaust gas mass	>= 0.01 [kg]		
					case 1:			
					O2S rear voltage	>= 0.82 [V]		
					or			
					Case 2:			
					O2S rear voltage	>= 0.75 [V]		
					O2S rear voltage gradient	-0.10...0.10 [V/s]		
					MAF O2 integral	>= 0.4 [g]		
					Conditions to switch from lean to rich phase:			
					deviation between requested lambda and measured lambda	< | 2.49 | [-]		
					for time	> 0.1 [s]		
					integrated exhaust gas mass	>= 0.01 [kg]		
					case 1:			
					O2S rear voltage	<= 0.15 [V]		
					or			
					case 2:			
					O2S rear voltage	<= 0.20 [V]		
					O2S rear voltage gradient	-0.10...0.10 [V/s]		
					MAF O2 integral	<= 0.2 [g]		
					for arithmetic average value calculation:			
					number of checks required for valid result	>= 3.00 [-]		
					for EWMA-filter: minimum of one test per DCY required			
					Step change detection will initiate multiple tests per DCY			
					Conditions for step change detection:			

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.			
						or				
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.	[-]		
Oxygen Sensors rear (binary sensor)	P013B P013D	check of transient time at lean to rich transition	**arithmetic average value** time at rich to lean transition	> 1.00	[s]	integrated air mass O2S front	n.a. ready		30.0 [s] once / DCY	2 DCY
			or			O2S rear	ready			
			EWMA filter value			integrated air mass after O2S ready	>= 0.06	[kg]		
			time at rich to lean transition	n.a.		O2S front out of range-monitor	finished			
						modeled exhaust gas temperature at O2S rear	> 450	[°C]		
						difference between actual O2S ceramic temp. and O2S ceramic temp. setpoint	< 65.0	[K]		
						integrated EVAP purge mass since last purge stop	> 0.0	[g]		
						ratio fuel mass from evap purge system to fuel mass through injectors	<= 1.20	[-]		
						time after fuel cut off	> 20.0	[s]		
						lambda setpoint	1.00	[-]		
						for				
						integrated air mass	>= 0.06	[kg]		
						engine speed	1160...3000	[rpm]		
						vehicle speed	> 5	[km/h]		
						case 1 (lower range window)				
						exhaust gas mass flow, lower range	25.00...100.00	[kg/h]		
						modeled exhaust gas temp. in catalyst system, lower range	550...925	[°C]		
						or				
						case 2 (upper range window)				

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
					exhaust gas mass flow, upper range	n.a.	[kg/h]		
					modeled exhaust gas temp. in catalyst system, upper range	n.a.	[°C]		
					lower/upper range window (conditions fulfilled):				
					integrated air mass	>= 0.06	[kg]		
					change of exhaust gas mass flow	-10.00...10.00	[kg/h]		
					with delay time	1.0	[s]		
					change of modeled catalyst temperature	< 25.0	[K]		
					diff. between lambda set value and actual lambda value	< 0.01	[-]		
					lambda control	not at min or max limit			
					lambda setpoint request	realized			
					Conditions to switch from rich to lean phase:				
					deviation between requested lambda and measured lambda	< | 2.49 |	[-]		
					for time	> 0.1	[s]		
					integrated exhaust gas mass	>= 0.01	[kg]		
					case 1:				
					O2S rear voltage	>= 0.82	[V]		
					or				
					Case 2:				
					O2S rear voltage	>= 0.75	[V]		
					O2S rear voltage gradient	-0.10...0.10	[V/s]		
					MAF O2 integral	>= 0.4	[g]		
					Conditions to switch from lean to rich phase:				
					deviation between requested lambda and measured lambda	< | 2.49 |	[-]		
					for time	> 0.1	[s]		
					integrated exhaust gas mass	>= 0.01	[kg]		
					case 1:				

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						O2S rear voltage	<= 0.15	[V]		
						or				
						case 2:				
						O2S rear voltage	<= 0.20	[V]		
						O2S rear voltage gradient	-0.10...0.10	[V/s]		
						MAF O2 integral	<= 0.2	[g]		
						for arithmetic average value calculation:				
						number of checks required for valid result	>= 3.00	[-]		
						for EWMA-filter:				
						minimum of one test per DCY required				
						Step change detection will initiate multiple tests per DCY				
						Conditions for step change detection:				
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.			
						or				
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.	[-]		
Oxygen Sensors rear (binary sensor)	P013F	delayed response monitoring, delay measurement	**arithmetic average value**			integrated air mass	n.a.			
	P014B		delay time at lean to rich transition	> 0.80	[s]	O2S front	ready		20.0 [s] once / DCY	2 DCY
			or			O2S rear	ready			
			EWMA filter value transient			integrated air mass after O2S ready	>= 0.06	[kg]		
			delay time at lean to rich transition	n.a.		O2S front out of range-monitor	finished			
						modeled exhaust gas temperature at O2S rear	> 450	[°C]		
						difference between actual O2S ceramic temp. and O2S ceramic temp. setpoint	< 65.0	[K]		
						integrated EVAP purge mass since last purge stop	> 0.0	[g]		

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
					ratio fuel mass from evap purge system to fuel mass through injectors	<= 1.20 [-]		
					time after fuel cut off	> 20.0 [s]		
					lambda setpoint	1.00 [-]		
					for			
					integrated air mass	>= 0.06 [kg]		
					engine speed	1160...3000 [rpm]		
					vehicle speed	> 5 [km/h]		
					case 1 (lower range window)			
					exhaust gas mass flow, lower range	25.00...100.00 [kg/h]		
					modeled exhaust gas temp. in catalyst system, lower range	550...925 [°C]		
					or			
					case 2 (upper range window)			
					exhaust gas mass flow, upper range	n.a. [kg/h]		
					modeled exhaust gas temp. in catalyst system, upper range	n.a. [°C]		
					lower/upper range window (conditions fulfilled):			
					integrated air mass	>= 0.06 [kg]		
					change of exhaust gas mass flow	-10.00...10.00 [kg/h]		
					with delay time	1.0 [s]		
					change of modeled catalyst temperature	< 25.0 [K]		
					diff. between lambda set value and actual lambda value	< 0.01 [-]		
					lambda control	not at min or max limit		
					lambda setpoint request	realized		
					Conditions to switch from rich to lean phase:			
					deviation between requested lambda and measured lambda	< | 2.49 | [-]		
					for time	> 0.1 [s]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						integrated exhaust gas mass	>= 0.01	[kg]		
						case 1:				
						O2S rear voltage	>= 0.82	[V]		
						or				
						Case 2:				
						O2S rear voltage	>= 0.75	[V]		
						O2S rear voltage gradient	-0.10...0.10	[V/s]		
						MAF O2 integral	>= 0.4	[g]		
						Conditions to switch from lean to rich phase:				
						deviation between requested lambda and measured lambda	< | 2.49 |	[-]		
						for time	> 0.1	[s]		
						integrated exhaust gas mass	>= 0.01	[kg]		
						case 1:				
						O2S rear voltage	<= 0.15	[V]		
						or				
						case 2:				
						O2S rear voltage	<= 0.20	[V]		
						O2S rear voltage gradient	-0.10...0.10	[V/s]		
						MAF O2 integral	<= 0.2	[g]		
						for arithmetic average value calculation:				
						number of checks required for valid result	>= 3.00	[-]		
						for EWMA-filter:				
						minimum of one test per DCY required				
						Step change detection will initiate multiple tests per DCY				
						Conditions for step change detection:				
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.			
						or				

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						deviation between new measured value and old EWMA filtered value	n.a.			
						number of checks	n.a.	[-]		
Oxygen Sensors rear (binary sensor)	P0137 P0157	O2S signal check - circuit continuity (short to ground, core connection signal wires)	signal voltage for time **and** difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3 measurements)	< 0.04 > 3.0 < 0.01	[V] [s] [V]	fuel cut off catalyst purge	not active not active		8.0 [s] continuous	2 DCY
	P0138 P0158	O2S signal check - out of range high (short to battery plus)	signal voltage for time	> 1.08 > 2.0	[V] [s]	**<u>case 1: sensor ready for operation</u>** sensor voltage **or** sensor voltage **or** sensor voltage **or** internal resistance time after protection heating mode finished **or** heater power **<u>case 2: sensor ready for operation expected</u>** time after protection heating mode finished additional delay time signal error during previous DC **or**	 <= 0.32 0.55...1.08 <= n.a. <= 2000.00 > 15.0 >= n.a. > 15.0 30.0 not detected 	 [V] [V] [V] [Ohm] [s] [%] [s] [s] 	5.0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						number of internal resistance measurements	> 10	[-]		
						general:				
						engine running				
						dew point exceeded				
						lambda set value	> 0.995	[-]		
	P0140 P0160	O2S signal check - circuit continuity (sensor signal line open circuit)	signal voltage for time **and** difference of sensor voltage with load pulse and voltage without load pulse (mean value of 3 measurements)	0.32...0.55 > 3.0 >= 2.80	[V] [s] [V]	**case 1: sensor ready for operation** sensor voltage **or** sensor voltage **or** sensor voltage **and** internal resistance **or** time after protection heating mode finished **or** heater power **case 2: sensor ready for operation expected** time after protection heating mode finished additional delay time signal error during previous DC **or** number of internal resistance measurements **general:** engine running dew point exceeded lambda set value	 <= 0.32 0.55...1.08 <= n.a. <= 2000.00 > 15.0 >= n.a. > 15.0 30.0 not detected > 10 > 0.995	 [V] [V] [V] [Ohm] [s] [%] [s] [s] [-] [-]	8.0 [s] continuous	2 DCY
Oxygen Sensors Heater rear	P0036 P0056	open circuit	heater voltage	4.50...5.50	[V]	engine speed heater	> 0 commanded off	[rpm]	0.50 [s] continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
	P0037	short to ground	heater voltage	< 3.00 [V]	engine speed	> 0 [rpm]	0.50 [s] continuous	2 DCY
	P0057				heater	commanded off		
	P0038	short to battery plus	heater current	2.70...5.50 [A]	engine speed	> 0 [rpm]	0.50 [s] continuous	2 DCY
	P0058				time since dew point exceeded heater	10.0 [s] commanded on		
Oxygen Sensors Heater rear	P0141	out of range (during normal heater operation after Dew Point is exceeded)	internal resistance	> 728.00...16632.00 [Ohm]	time after dew point exceeded	> 45 [s]	8.0 [s] multiple	2 DCY
					heater	commanded on		
	P0161				modeled exhaust gas temp.	300...820 [°C]		
					IAT @ downstream throttle	n.a.		
					engine shut-off-time	> 180.0 [s]		
					number of internal resistance measurements	> 10.00 [-]		
					fuel cut off	not active		
					engine running or time delay after engine restart after engine not running for time	30 [s]		
						> 300 [s]		
Engine Cooling System	P2181	cooling system performance not in the expected range	diff. ECT vs. Radiator Outlet Temperature	> 20.3 [K]	**Monitor entry conditions**		120.0 [s] once / DCY	2 DCY
			for time	>= 60...120 [s]	ECT @ start	-10...61 [°C]		
			and		engine speed	> 1000 [rpm]		
			ratio of (counter > threshold) and (counter < threshold + max. counter)	>= 0.50 [-]	time since last engine start	> 10.0 [s]		
					Start of measurement window			
					integrated air mass	2.50...8.00 [kg]		
					integrated air mass since coolant pump active	> 2.30 [kg]		
					Conditions at fault decision			
					modeled ECT	< 80 [°C]		
					average vehicle speed	15...140 [km/h]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						accumulated time with engine load accumulated time with vehicle speed	<= 20.0 > 450.00 < 360.0 < 8	[s] [kg/h] [s] [km/h]		
Main Coolant Pump Valve	P2600	open circuit	signal voltage	4.8...5.3	[V]	ignition	on		0.5 [s] continuous	2 DCY
	P0634	over-temperature power stage	power stage temperature	> 170	[°C]	ignition	on		0.5 [s] continuous	2 DCY
	P2603	short to battery plus	signal current	> 5.5...10.0	[A]	ignition	on		0.5 [s] continuous	2 DCY
	P2602	short to ground	signal voltage	< 2.8...3.2	[V]	ignition	on		0.5 [s] continuous	2 DCY
Coolant Pump Low-Temperature Circuit	P023A	open circuit	signal voltage	4.8...5.3	[V]	ignition	on		0.5 [s] continuous	2 DCY
	P0634	over-temperature power stage	power stage temperature	> 170	[°C]	ignition	on		0.5 [s] continuous	2 DCY
	P023C	short to battery plus	signal current	> 2.2...4.0	[A]	ignition	on		0.5 [s] continuous	2 DCY
	P023B	short to ground	signal voltage	< 2.8...3.2	[V]	ignition	on		30.0 [s] continuous	2 DCY
Coolant Pump Low-Temperature Circuit	P190E	communication check	received data for time	no message > 7820	 [ms]	time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY
Supplementary Coolant Pump	P261A	open circuit	signal voltage	< 4.7	[V]	ignition	on		11.0 [s] continuous	2 DCY
	P0634	over-temperature power stage	power stage temperature	> 150	[°C]	ignition	on		0.5 [s] continuous	2 DCY
	P261D	short to battery plus	signal current	> 2.2...4.0	[A]	ignition	on		0.5 [s] continuous	2 DCY
	P261C	short to ground	signal voltage	< 2.8...3.2	[V]	ignition	on		0.5 [s] continuous	2 DCY
Supplementary Coolant Pump	P261B	communication check	received data for time	no message > 7820	 [ms]	time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY
Engine Coolant Temperature	P0117	short to battery plus	signal voltage	> 4.90	[V]				0.5 [s] continuous	2 DCY
	P0118	short to ground	signal voltage	< 0.10	[V]				0.5 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
Engine Coolant Temperature	P0116	cross check	diff. ECT vs. ECT2 at DCY start (depending on engine off time) **or** diff. ECT vs. AAT at DCY start (depending on engine off time)	> 24.8 [K] > 24.8 [K]	vehicle off time **Check steady temp** vehicle speed for time diff. actual ECT vs. ECT since begin DCY diff. actual ECT2 vs. ECT2 since begin DCY diff. actual AAT vs. AAT since begin DCY	> 7.78 [h] > 25 [km/h] > 30.0 [s] < 8.3 [K] < 8.3 [K] < 8.3 [K]	0.5 [s] once / DCY	2 DCY
Engine Coolant Temperature Sensor	P0116	no change on signal	diff. between max. ECT and min. ECT	<= 0.0...1.5 [K]	**Monitor Entry Conditions:** ECT @ start **driving condition L:** vehicle speed mass air flow (lower threshold) mass air flow (upper threshold) engine speed **or** fuel cut off **for** for time frequency **driving condition H:** modeled ECT vehicle speed mass air flow (lower threshold) mass air flow (upper threshold) for time frequency	 -44...137 [°C] 0...180 [km/h] n.a. < 56.00...96.00 [kg/h] n.a. [rpm] active > 35.0 [s] 3 times > 48 [°C] 0...180 [km/h] > 68.00...112.00 [kg/h] < 1020.00 [kg/h] > 15.0 [s] 3 times	1.0 [s] once / DCY	2 DCY
Radiator Outlet Temperature Sensor	P2184	rationality check	diff. between max. Radiator Outlet Temperature and min. AAT	< 5.3 [K]	**Monitor entry conditions:** modeled ECT	 > 75...85 [°C]	1.0 [s] once / DCY	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						integrated air mass for modeled ECT above threshold	> 15	[kg]		
						Measurement window - engine off:				
						vehicle speed	< 0...65	[km/h]		
						for time	> 20.0	[s]		
						supplem. coolant pump pwm input-signal	> 60.00	[%]		
						(reset condition for check with engine off)				
						engine running				
						for time	> 15.0	[s]		
						Measurement window - engine running:				
						vehicle speed	< 30...73	[km/h]		
						for time	> 10.0	[s]		
						(reset condition for check with engine running):				
						vehicle speed	> 75	[km/h]		
						for time	> 7.0	[s]		
						Conditions at fault decision:				
						number of checks with engine off	>= 4			
						number of checks with engine running	>= 2			
						number of total checks	>= 4			
Engine Coolant Temperature (ECT) Sensor after Radiator 1	P2186	signal check	absolute value of high pass filtered signal voltage	> 1.00	[V]				5.0 [s] continuous	2 DCY
Engine Coolant Temperature Sensor (after Radiator 1)	P2185	short to battery plus	ECT	> 139	[°C]				2.0 [s] continuous	2 DCY
	P2184	short to ground	ECT	< -44	[°C]				2.0 [s] continuous	2 DCY
Engine Coolant Temperature (after Radiator 1)	P2183	cross check				vehicle off time	> 7.78	[h]	0.0 once / DCY	2 DCY
			diff. AAT vs. ECT 2 at DCY start (depending on engine off time)	> 24.8	[K]	**Check steady temp**				
			or			vehicle speed	> 25	[km/h]		
			diff. ECT vs. ECT 2 at DCY start	> 24.8	[K]	for time	> 30.0	[s]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			(depending on engine off time)			diff. actual ECT vs. ECT since begin DCY	< 8.3	[K]		
						diff. actual ECT 2 vs. ECT 2 since begin DCY	< 8.3	[K]		
						diff. actual AAT vs. AAT since begin DCY	< 8.3	[K]		
Engine Coolant Temperature Sensor @ Cylinder Head	P017D	short to battery / open circuit	signal voltage	> 4.65	[V]				1.0 [s] continuous	2 DCY
	P017C	short to ground	signal voltage	< 0.10	[V]				1.0 [s] continuous	2 DCY
Engine Coolant Temperature Sensor @ Cylinder Head	P017B	stuck in range	cylinder head temperature	>= 80	[°C]	engine off time	>= 28000.0	[s]	5.0 [s] once / DCY	2 DCY
						engine stop temperature	>= -48	[°C]		
Engine Coolant Temperature Sensor @ Cylinder Head	P017B	rationality check high	diff. between cylinder head temperature and ECT @ start	>= 25.0	[K]	ECT cross check	finished		0.0 [s] once / DCY	2 DCY
			or			IAT cross check	finished			
			diff. between ECT@cylinder head and IAT@manifold @ start	>= 25.0	[K]	AAT cross check	finished			
	P017B	rationality check low	diff. between cylinder head temperature and ECT @ start	<= -(25.0)	[K]	ECT cross check	finished		0.0 [s] once / DCY	2 DCY
			or			IAT cross check	finished			
			diff. between ECT@cylinder head and IAT@manifold @ start	<= -(25.0)	[K]	AAT cross check	finished			
Engine Coolant Temperature Sensor @ Cylinder Head	P017B	rationality check	difference between modelled and measured cylinder head temperature	> 9.8	[K]	modeled temperature	< 60...92	[°C]	0 [s] once / DCY	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Engine Coolant Temperature Sensor @ Cylinder Head	P017D	loose connection	difference between raw value vs. filtered value (low pass)	> 1.00	[V]				5.0 [s] continuous	2 DCY
Engine Coolant Temperature Sensor @ Cylinder Head	P017B	no change on signal	diff. MAX cylinder head temperature vs. MIN cylinder head	<= 1.6	[K]	cylinder head temperature @ engine start **<u>driving condition L:</u>** vehicle speed mass air flow (lower threshold) mass air flow (upper threshold) engine speed **or** fuel cut off for time frequency **<u>driving condition H:</u>** modeled cylinder head temperature vehicle speed mass air flow (lower threshold) mass air flow (upper threshold) for time frequency	-40...120 0...160 n.a. < 56.00...96.00 n.a. active > 20.0 1 > 19 20...160 > 68.00...112.00 < 1000.00 > 20.0 3	[°C] [km/h] [kg/h] [s] times [°C] [km/h] [kg/h] [kg/h] [s] times	2.0 [s] continuous	2 DCY
Engine Coolant Temperature Sensor	P3081	rationality check	diff. between reference model temperature and measured ECT	> 9.8	[K]	engine running			25.0 [s] continuous	2 DCY
Engine Coolant Temperature Sensor	P0119	rationality check	absolute value of high pass filtered signal voltage	> 1.00	[V]				5 [s] continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Lower Temperature Coolant System Performance	P026A	lower cooling system performance not in a expect range	difference between measured intake air temperature and modeled	> 8.0	[K]	mass air flow time after last engine start supplementary water pump in lower temperature circuit	> 47.00 n.a. > 30.00	[kg/h] [%]	10.0 [s] multiple	2 DCY
Engine Oil Temperature Sensor	P0197	functional check - short to battery	sensor signal to battery for time	> 10.0	[s]	ignition	on		5.0 [s] continuous	2 DCY
	P0198	functional check - short to ground	sensor signal to ground for time	> 10.0	[s]	ignition	on		5.0 [s] continuous	2 DCY
Engine Oil Temperature Sensor	P0196	no change on signal	diff. MAX engine oil temperature vs. MIN engine oil temperature	<= 2.0	[K]	time after engine start ECT integrated air mass cross check (ECT vs. ECT2 vs. AAT) **condition** engine off **and** vehicle speed **for** time **condition** fuel cut off **or** engine load **or** engine load **for** integrated air mass	> 10.0 > 45 > 5.00 finished > 0 < 500.0 active > 150.00 < 26.00 < 2.00	[s] [°C] [kg] [km/h] [s] [%] [%] [kg]	0 [s] once / DCY	2 DCY
Engine Oil Temperature Sensor	P0196	rationality check high	diff. engine oil temperature @ start vs. ECT @ start	> 25.0	[K]	cross check (ECT vs. IAT vs. AAT)	finished		1 [s] once / DCY	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			or diff. engine oil temperature @ start vs. IAT after intercooler 1 @ start	> 25.0	[K]					
	P0196	rationality check low	diff. engine oil temperature @ start vs. ECT @ start **or** diff. engine oil temperature @ start vs. IAT after intercooler 1 @ start	<= -(25.0) <= -(25.0)	[K] [K]	cross check (ECT vs. IAT vs. AAT)	finished		1 [s] once / DCY	2 DCY
Phase Sensor 1	P0343	rationality check	signal voltage **and** crankshaft signals	permanently high 8	 [-]				0.5 [s] continuous	2 DCY
	P0342	rationality check	signal voltage **and** crankshaft signals	permanently low 8.00	 [-]				0.5 [s] continuous	2 DCY
	P0341	rationality check	signal pattern defect counter	incorrect 24.00	 [-]				0.5 [s] continuous	2 DCY
Phase Sensor 2	P0348	rationality check	signal voltage **and** crankshaft signals	permanently high 8.00	 [-]				0.5 [s] continuous	2 DCY
	P0347	rationality check	signal voltage **and** crankshaft signals	permanently low 8.00	 [-]				0.5 [s] continuous	2 DCY
	P0346	rationality check	signal pattern defect counter	incorrect 24	 [-]				0.5 [s] continuous	2 DCY
VVT Actuator Intake	P000C	slow response	difference between target position vs. actual position	> |12.00...40.00|	[°CRK]	time after engine start	> 4.0...300.0	[s]	9.0 [s] multiple	2 DCY
	P000A		for time	> 3.0	[s]	engine speed	920...6400	[rpm]		
			defect counter **and** adjustment angle	3 >= | 3.00 |	times [°CRK]	modeled oil temperature	-10...105	[°C]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	P0021	target error	difference between target position vs. actual position	> |12.00...40.00|	[°CRK]	time after engine start	> 4.0...300.0	[s]	9.0 [s] multiple	2 DCY
	P0011		for time	> 3.0	[s]	engine speed	920...6400	[rpm]		
			defect counter	3	times					
			and			modeled oil temperature	-10...105	[°C]		
			adjustment angle	< | 3.00 |	[°CRK]					
VVT Actuator Intake	P0020	open circuit	signal voltage	4.70...5.40	[V]	camshaft actuator solenoid valve	off		0.5 [s] continuous	2 DCY
	P0010					engine speed	> 0	[rpm]		
	P2092	short to ground	signal voltage	0.0...3.25	[V]	camshaft actuator solenoid valve	off		0.5 [s] continuous	2 DCY
	P2088					engine speed	> 0	[rpm]		
	P2093	short to battery plus	signal current	> 2.20	[A]	camshaft actuator solenoid valve	on		0.5 [s] continuous	2 DCY
	P2089					engine speed	> 0	[rpm]		
Cold Start Monitoring	P052C	target error	difference between target position vs. actual position	> |12.00...40.00|	[°CRK]	time after engine start	>= 4.0	[s]	3.0 [s] once / DCY	2 DCY
VVT Actuator Intake	P052A					engine speed	>= 720	[rpm]		
						modeled oil temperature	>= -48	[°C]		
						commanded camshaft timing correction for catalyst heating	active			
Camshaft Position Sensor Intake	P0016	angular offset check	permissible deviation	< -14.00	[°CRK]				20 [rev] multiple	2 DCY
	P0018		**or**							
			permissible deviation	> 14.00	[°CRK]					
Crankshaft Position Sensor	P0321	rationality check	counted teeth vs. reference	incorrect					1.5 [s] multiple	2 DCY
			or							
			monitoring reference gap	failure						
	P0322	signal activity check	camshaft signals	> 3.00	[-]				2.5 [s] multiple	2 DCY
			and							
			engine speed	no signal						
Barometric Pressure Sensor	P0606	cross check	diff. barometric pressure to average value of all pressure sensors @ start	< -5.10	[kPa]	engine shut-off-time	> 3.0	[s]	0 [s] once / DCY	2 DCY
						engine speed	n.a.			

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	P0606	cross check	diff. barometric pressure to average value of all pressure sensors @ start	> 5.10	[kPa]	engine shut-off-time engine speed	> 3.0 n.a.	[s]	0 [s] once / DCY	2 DCY
Barometric Pressure Sensor	P0606	short to battery / open circuit	signal voltage	> 4.90	[V]				0.2 [s] multiple	2 DCY
	P0606	short to ground	signal voltage	< 0.20	[V]				0.2 [s] multiple	2 DCY
Barometric Pressure Sensor	P0606	out of range high	measured barometric pressure	> 115.00	[kPa]				0.5 [s] continuous	2 DCY
	P0606	out of range low	measured barometric pressure	< 45.00	[kPa]				0.5 [s] continuous	2 DCY
Ambient Air Temperature	P0071	cross check	diff. AAT vs. ECT at DCY start (depending on engine off time) **or** diff. AAT vs. ECT2 at DCY start (depending on engine off time)	> 24.8 > 24.8	[K] [K]	engine off time no active DrvCyc (incl. E-Mode) **<u>Check steady temp</u>** vehicle speed for time diff. actual ECT vs. ECT since begin DCY diff. actual ECT2 vs. ECT2 since begin DCY diff. actual AAT vs. AAT since begin DCY	> 7.78 > 7.78 > 25 > 30.0 < 8.3 < 8.3 < 8.3	[h] [h] [km/h] [s] [K] [K] [K]	0.5 once / DCY	2 DCY
Turbocharger Boost Pressure Sensor	P0240 P0236	rationality check low	difference boost pressure - lower threshold model model range	< 0 173...2500	[kPa] [kPa]				5.0 [s] multiple	2 DCY
	P0240 P0236	rationality check high	difference boost pressure - upper threshold model model range	> 0 224...4419	[kPa] [kPa]				5.0 [s] multiple	2 DCY
	P0240 P0236	rationality check	diff. BARO signal vs. boost pressure signal at engine start	> 115.00	[kPa]	time after engine start engine speed	= 0.0 = 0	[s] [rpm]	5.0 [s] multiple	2 DCY
Turbocharger Boost Pressure Sensor	P0242 P0238	out of range@start	boost pressure	> 115.00	[kPa]	engine off time	> 3.0	[s]	0 [s] once / DCY	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Turbocharger Boost Pressure Sensor	P0240 P0236	cross check	diff. boost pressure to average value of all pressure sensors @ start	< -5.12	[kPa]	engine shut-off-time	> 3.0	[s]	0 [s] once / DCY	2 DCY
	P0240 P0236	cross check	diff. boost pressure to average value of all pressure sensors @ start	> 5.12	[kPa]	engine shut-off-time	> 3.0	[s]	0 [s] once / DCY	2 DCY
Turbocharger Boost Pressure Sensor	P0236	cross check @ part load	difference between boost pressure 1 and boost pressure 2 **and** difference boost pressure to pressure downstream throttle	> 11.23 > 8.33	[kPa] [kPa]	time after engine start engine speed supercharger control flap for time	n.a. 600...1800 wide open > 1.0	 [rpm] [s]	2.5 [s] multiple	2 DCY
	P0236	cross check @ part load	difference between boost pressure 1 and boost pressure 2 **and** difference boost pressure to pressure downstream throttle	< -11.23 < -8.33	[kPa] [kPa]	time after engine start engine speed supercharger control flap for time	n.a. 600...1800 wide open > 1.0	 [rpm] [s]	2.5 [s] multiple	2 DCY
Turbocharger Boost Pressure Sensor	P0241 P0237	short to ground	signal voltage	< 0.25	[V]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
	P0242 P0238	short to battery / open circuit	signal voltage	> 4.75	[V]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
Turbocharger Boost Pressure Sensor 1/2	P00C7	pressure check	difference between boost pressure 1 and boost pressure 2	> | 10.20 |	[kPa]				0.0 [s] continuous	2 DCY
Turbocharger Boost Pressure Sensor 2	P0240	cross check @ part load	difference between boost pressure 2 and boost pressure 1 **and** difference boost pressure 2 to pressure downstream throttle	> 11.23 > 8.33	[kPa] [kPa]	time after engine start engine speed supercharger control flap for time	n.a. 600...1800 wide open > 1.0	 [rpm] [s]	2.5 [s] multiple	2 DCY
	P0240	cross check @ part load	difference between boost pressure 2 and boost pressure 1 **and**	< -11.23	[kPa]	time after engine start engine speed	n.a. 600...1800	 [rpm]	2.5 [s] multiple	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			difference boost pressure 2 to pressure downstream throttle	< -8.33	[kPa]	supercharger control flap for time	wide open > 1.0	 [s]		
Turbocharger Boost Pressure Control	P2262	functional check	ratio between boost pressure and manifold pressure	< 1.00...1.25	[-]	compressor throttle valve throttle position engine speed	< 3.00...55.00 > 25 1700...6500	[%] [%] [rpm]	6.0 [s] continuous	2 DCY
	P2263	functional check	diff. between setpoint and actual boost pressure	> 25.00...75.00	[kPa]	engine speed barometric pressure desired load value	1700...6000 > 69 > 90.00	[rpm] [kPa] [%]	6.0 [s] continuous	2 DCY
Supercharger Control Flap	P10A4	monitoring of PID-setting range	duty cycle	> |68.00...108.00|	[%]	controller	commanded on		5.0 [s] multiple	2 DCY
	P10A4	control deviation	deviation between setpoint and actual angle	> 6.00	[%]	controller	commanded on		0.7 [s] multiple	2 DCY
Supercharger Control Flap	P10A0 P10A0 P10A0	functional check	ECM power stage	failure		controller	commanded on		0.5 [s] continuous	2 DCY
Supercharger Control Flap Position Sensor	P10A8	monitoring of adaptation TOL/BOL	sensor signal	< 0.41	[V]	ignition engine speed ECT IAT @ downstream throttle	on 0 5...120 5	 [rpm] [°C] [°C]	0 [s] once / DCY	2 DCY
	P10A7	monitoring of adaptation TOL/BOL	sensor signal	> 0.80	[V]	ignition engine speed ECT IAT @ downstream throttle	on 0 5...120 5	 [rpm] [°C] [°C]	0 [s] once / DCY	2 DCY
Supercharger Control Flap Position Sensor	P10A6	short to ground	sensor voltage	< 0.30	[V]				0.5 [s] continuous	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	P10A5	short to battery / open circuit	sensor voltage	> 4.82	[V]				0.5 [s] continuous	2 DCY
Intake Air Temperature Sensor downstream intercooler 1	P0112	short to ground	IAT	> 128	[°C]				1.0 [s] continuous	2 DCY
	P0113	short to battery / open circuit	IAT	< -47	[°C]				1.0 [s] continuous	2 DCY
Intake Air Temperature Sensor downstream intercooler 2	P00AB	rationality check high	diff. IAT after intercooler 2 @ start vs. ECT @ start **or** diff. IAT after intercooler 2 @ start vs. IAT after intercooler 1 @ start	> 26 > 26	[°C] [°C]	cross check (ECT vs. IAT vs. AAT)	finished		0 [s] once / DCY	2 DCY
Intake Air Temperature Sensor downstream intercooler 2	P00AC	short to ground	IAT	> 128	[°C]				1.0 [s] continuous	2 DCY
	P00AD	short to battery / open circuit	IAT	< -47	[°C]				1.0 [s] continuous	2 DCY
Throttle Position Sensor 1	P0122	out of range low	signal voltage	< 0.20	[V]				0.1 [s] multiple	2 DCY
	P0123	out of range high	signal voltage	> 4.81	[V]				0.1 [s] multiple	2 DCY
	P0121	rationality check	|TPS1-TPS2| **and** |actual TPS1-calc.value| **or** |TPS1 - calc.value|	> 5.10...6.30 > |actual TPS2-calc.value| > 9.00	[%] [%]	engine speed	> 480	[rpm]	0.3 [s] multiple	2 DCY
Throttle Position Sensor 2	P0222	out of range low	signal voltage	< 0.20	[V]				0.1 [s] multiple	2 DCY
	P0223	out of range high	signal voltage	> 4.81	[V]				0.1 [s] multiple	2 DCY
	P0221	rationality check	|TPS1-TPS2|	> 5.10...6.30	[%]	engine speed	> 480	[rpm]	0.3 [s] multiple	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			and |actual TPS2-calc.value| **or** |TPS2 - calc.value|	> |actual TPS1-calc.value| > 9.00	 [%]					
Throttle Actuator	P2106	short to battery plus/ short to ground	internal check	failed					0.5 [s] continuous	2 DCY
	P2106	open circuit	internal check	failed		duty cycle **or** deviation throttle value angles vs. throttle value setpoint	> 80 > 4.00...50.00	[%] [%]	0.5 [s] continuous	2 DCY
	P2106	temperatur / current monitoring	internal check	failed					0.5 [s] continuous	2 DCY
	P2106	functional check	internal check	failed					0.5 [s] continuous	2 DCY
	P2101 P2101	signal range check	duty cycle **and** ECM power stage	> 80 no failure	[%]				5.0 [s] continuous	2 DCY
	P2101	rationality check	deviation throttle value angles vs. throttle value setpoint	> 4.00...50.00	[%]				0.5 [s] continuous	2 DCY
Throttle Actuator Basic Settings	P0638	rationality check close movement	time to close to reference point **and** reference point	> 0.6 2.88	[s] [%]	engine speed vehicle speed ECT IAT @ downstream intercooler **Case 1:** ignition **Case 2:** engine shut-off-time number of checks	0 0 > -20 > -20 on > 0.5 3.00	[rpm] [km/h] [°C] [°C] [s] [-]	5.0 [s] multiple	2 DCY
	P0638	signal range check @ mechanical stop low	TPS 1 signal voltage **or** TPS 2 signal voltage	< 0.40; > 0.80 < 4.20; > 4.60	[V] [V]	engine speed vehicle speed **Case 1:** ignition	0 0 on	[rpm] [km/h]	0.3 [s] multiple	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						ECT	> -20	[°C]		
						IAT @ downstream intercooler	> -20	[°C]		
						Case 2:				
						engine shut-off-time	n.a.			
						ECT	n.a.			
						IAT @ downstream intercooler	n.a.			
Intake Air Temperature Sensor downstream throttle	P305C	short to ground	IAT	> 128	[°C]				1.0 [s] continuous	2 DCY
	P305D	short to battery / open circuit	IAT	< -47	[°C]				1.0 [s] continuous	2 DCY
Intake Air Temperature Sensor downstream throttle	P305E	rationality check high	diff. IAT downstream throttle @ start vs. ECT @ start	> 26	[°C]	cross check (ECT vs. IAT vs. AAT)	finished		0 [s] once / DCY	2 DCY
			or							
			diff. IAT downstream throttle @ start vs. IAT after intercooler 1 @ start	> 26	[°C]					
Pressure Sensor downstream throttle	P012B	cross check @ part load	difference pressure downstream throttle to boost pressure	> 8.33	[kPa]	time after engine start	n.a.		2.5 [s] multiple	2 DCY
			and			engine speed	600...1800	[rpm]		
			difference boost pressure 2 to pressure downstream throttle	> 8.33	[kPa]	supercharger control flap	wide open			
						for time	> 1.0	[s]		
	P012B	cross check @ part load	difference pressure downstream throttle to boost pressure	< -8.33	[kPa]	time after engine start	n.a.		2.5 [s] multiple	2 DCY
			and			engine speed	600...1800	[rpm]		
			difference pressure downstream throttle to boost pressure 2	< -8.33	[kPa]	supercharger control flap	wide open			
						for time	> 1.0	[s]		

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Pressure Sensor downstream throttle	P012B	cross check	diff. pressure downstream throttle to average value of all pressure sensors @ start	< -5.12	[kPa]	engine shut-off-time engine speed	> 3.0 n.a.	[s]	2.0 [s] continuous	2 DCY
	P012B	cross check	diff. pressure downstream throttle to average value of all pressure sensors @ start	> 5.12	[kPa]	engine shut-off-time engine speed	> 3.0 n.a.	[s]	2.0 [s] continuous	2 DCY
Pressure Sensor downstream throttle	P012C	short to ground	signal voltage	< 0.25	[V]				0.2 [s] continuous	2 DCY
	P012D	short to battery / open circuit	signal voltage	> 4.85	[V]				0.2 [s] continuous	2 DCY
Pressure Sensor downstream throttle	P012B	rationality check low	difference pressure downstream throttle - lower threshold model model range	< 0 70...125	[kPa] [kPa]	boost pressure control for time	active > 1.0	[s]	3.5 [s] continuous	2 DCY
	P012B	rationality check high	difference pressure downstream throttle - upper threshold model model range	> 0 70...125	[kPa] [kPa]	boost pressure control for time	active > 1.0	[s]	3.5 [s] continuous	2 DCY
Accelerator Pedal Position Sensor 1	P2122	out of range low	signal voltage	< 0.65	[V]				0.50 [s] continuous	2 DCY
	P2123	out of range high	signal voltage	> 4.89	[V]				0.50 [s] continuous	2 DCY
Accelerator Pedal Position Sensor 1 and 2	P2138	rationality check	signal voltage sensor 1 vs. 2	> |0.14...0.26|	[V]	signal voltage sensor 1 signal voltage sensor 2	> 445 > 445	[mV] [mV]	0.43 [s] continuous	2 DCY
Accelerator Pedal Position Sensor 2	P2127	out of range low	signal voltage	< 0.28	[V]				0.5 [s] continuous	2 DCY
	P2128	out of range high	signal voltage	> 2.64	[V]				0.5 [s] continuous	2 DCY
Idle Controller	P0506	out of range low	engine speed deviation **and** RPM controller torque value	> 100 n.a.	[rpm] [Nm]	time after engine start vehicle speed barometric pressure ECT IAT @ downstream intercooler	n.a. 0 > 73.40 20...143 > -48	 [km/h] [kPa] [°C] [°C]	5.0 [s] multiple	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						torque safety limitation driver request for time **for manual transmission:** engine load	not active not active n.a. < n.a.	 [%]		
	P0507	out of range high	engine speed deviation **and** RPM controller torque value **or** integrated number of fuel cut off transitions	< -200 n.a. >= 3.00	[rpm] [Nm] [-]	time after engine start vehicle speed barometric pressure ECT IAT @ downstream intercooler torque safety limitation driver request for time	n.a. 0 > 73.40 20...143 > -48 not active not active n.a.	 [km/h] [kPa] [°C] [°C]	10.0 [s] multiple	2 DCY
Cold Start Monitoring **Idle Controller**	P050A	out of range low	engine speed deviation **and** RPM controller torque value	> 200 n.a.	[rpm] [Nm]	catalyst heating time after engine start vehicle speed barometric pressure ECT torque safety limitation driver request for time **for manual transmission:** engine load	active n.a. = 0 > 73.40 -10...80 not active not active n.a. < n.a.	 [km/h] [kPa] [°C] [%]	5.0 [s] multiple	2 DCY
	P050A	out of range high	engine speed deviation **and** RPM controller torque value **or** integrated number of fuel cut off transitions	< -400 n.a. >= n.a.	[rpm] [Nm] [-]	catalyst heating time after engine start vehicle speed barometric pressure ECT torque safety limitation driver request for time	active n.a. = 0 > 73.40 -10...80 not active not active n.a.	 [km/h] [kPa] [°C] 	7.0 [s] multiple	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Electric Clutch between engine and drive motor	P309F	slip detection	difference between combustion engine speed and drive motor speed (full torque)	> 200...300	[rpm]	hybrid drive electric clutch	commanded on closed		0.3 [s] continuous	2 DCY
	P309F	slip detection	difference between combustion engine speed and drive motor speed (reduced torque)	> 200...300	[rpm]	hybrid drive electric clutch	commanded on closed		0.5 [s] continuous	2 DCY
	P309D	functional check - unable to open	combustion engine speed is detected while electronic clutch is open	> 60	[rpm]	electric drive electric clutch	commanded on opened		0.4 [s] continuous	2 DCY
	P309D	adaptation value monitoring	combustion engine drag up at touch point	> 60	[rpm]	electric drive drive motor speed clutch adaptation	commanded on > 500 completed	[rpm]	0.4 [s] multiple	2 DCY
Turbocharger Boost Pressure Sensor	P0241 P0237	range check	boost pressure signal	< 15.00	[kPa]				2.0 [s] multiple	2 DCY
	P0242 P0238	range check	boost pressure signal	> 250.00	[kPa]				2.0 [s] multiple	2 DCY
Leak to Intake Manifold	P2279	adaptation value monitoring	offset value throttle mass flow **and** correction factor	> 16.00 > 0.95	[kg/h] [-]	desired mass air flow ECT barometric pressure evap purge valve EGR	0.00...35.00 -48...143 n.a. closed n.a.	[kg/h] [°C]	8.0 [s] multiple	2 DCY
Electric Clutch between engine and drive motor	P309D	functional check - unable to open during DMCM Service	combustion engine speed is detected while electronic clutch is open	> 25	[rpm]	**DMCM Service enabled case 1:** fault memory erased in preceding dcy **or** **DMCM Service enabled case 2:** error position sensor detected in preceding dcy **or** **DMCM Service enabled case 3:** efficiency of drive motor too low during preceding dcy **DMCM Service performed:** drive motor offset angle calibration	

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
						drive motor excitation flux calibration electric drive electric clutch **<u>flux calibration performed:</u>** engine shut-off-time **and** drive motor temperature **or** difference between drive motor temperature and coolant temperature **and** drive motor temperature	ready commanded on opened > 7200 <= 80 < 20 < 60	 [s] [°C] [K] [°C]		
Airbag	P1609	safety measures due to crash with airbag activation	airbag(s)	activated					0 [s] continuous	2 DCY
Intake Air Temperature	P0127	temperatur / current monitoring	IAT	> 100	[°C]				2.0 [s] continuous	2 DCY
Intake Air Temperature 1/2	P2199	rationality check	difference between IAT 1 and IAT 2	> | 10 |	[°C]				0.0 [s] continuous	2 DCY
Intake Air Temperature 2	P0127	temperatur / current monitoring	IAT 2	> 100	[°C]				2.0 [s] continuous	2 DCY
Intake Air Temperature (IAT) Sensor @ Manifold	P0114	loose connection	absolute value of high pass filtered signal voltage	> 1.00	[V]				5.0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Intake Air Temperature (IAT) Sensor 2 @ Manifold	P00AE	loose connection	absolute value of high pass filtered signal voltage	> 1.00	[V]				5.0 [s] continuous	2 DCY
Intake Air Temperature Sensor downstream intercooler	P0111	rationality check high	diff. IAT after intercooler @ start vs. ECT @ start (depending on engine off time) **or** diff. IAT after intercooler @ start vs. IAT after intercooler 2 @ start (depending on engine off time)	>= 20.3...24.0 > 20.3...24.0	[K] [K]	cross check (ECT vs. ECT2 vs. vs. AAT)	finished		0.0 once / DCY	2 DCY
	P0111	rationality check low	diff. IAT after intercooler @ start vs. ECT @ start (depending on engine off time) **or** diff. IAT after intercooler @ start vs. IAT after intercooler 2 @ start (depending on engine off time)	<= -(20.3...24.0) <= -(20.3...24.0)	[K] [K]	cross check (ECT vs. ECT2 vs. vs. AAT)	finished		0.0 once / DCY	2 DCY
Intake Air Temperature (IAT) Sensor downstream Throttle	P305E	loose connection	difference between raw value vs. filtered value	> 1.00	[V]				5.0 [s] continuous	2 DCY
Intake Manifold Runner Flap Position Sensor	P2019 P2014	out of range low	signal voltage	< 0.20	[V]				0.2 [s] continuous	2 DCY
	P2022 P2017	out of range high	signal voltage	> 4.88	[V]				0.2 [s] continuous	2 DCY
Intake Manifold Runner Flap Actuator	P2020 P2015	rationality check	difference between target position vs. actual position **and** actual position	> | 40.00 | < 0; > 100	[%] [%]				3.0 [s] multiple	2 DCY
	P2005 P2004	rationality check high	difference between target position vs. actual position **and** actual position	> | 40.00 | 0...100	[%] [%]	flap	commanded on		3.0 [s] multiple	2 DCY
	P2007 P2006	rationality check low	difference between target position vs. actual position **and** actual position	> | 40.00 | 0...100	[%] [%]	flap	commanded off		3.0 [s] multiple	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Intake Manifold Runner Control Valve	P2008	open circuit	signal voltage	4.70...5.40	[V]	tumble flap engine speed	commanded off > 0	 [rpm]	0.5 [s] continuous	2 DCY
	P2009	short to ground	signal voltage	0.0...3.26	[V]	tumble flap engine speed	commanded off > 0	 [rpm]	0.5 [s] continuous	2 DCY
	P2010	short to battery plus	signal current	> 2.20	[A]	tumble flap engine speed	commanded on > 0	 [rpm]	0.5 [s] continuous	2 DCY
Vehicle Speed Sensor	U0415	out of range high	vehicle speed	> 325	[km/h]				2.0 [s] continuous	2 DCY
Knock Control	P0324	internal hardware check	signal fault counter (combustion) **or** signal fault counter (measuring window)	> 28.00 > 5.00	[-] [-]	engine speed	> 2500	[rpm]	0.5 [s] multiple	2 DCY
Knock Sensor	P0327 P0332	short to ground Port B	lower threshold	< -0.70	[V]	engine speed	> 1000	[rpm]	0.5 [s] continuous	2 DCY
	P0327 P0332	short to ground Port A	lower threshold	< -0.70	[V]	engine speed	> 1000	[rpm]	0.5 [s] continuous	2 DCY
	P0328 P0333	short to battery plus Port B	upper threshold	> 1.00	[V]	engine speed	> 1000	[rpm]	0.5 [s] continuous	2 DCY
	P0328 P0333	short to battery plus Port A	upper threshold	> 1.00	[V]	engine speed	> 1000	[rpm]	0.5 [s] continuous	2 DCY
Knock Sensor	P0327 P0332	signal range check	lower threshold	< 0.45...2.50	[V]	engine speed ECT engine load	> 1960 > 45 > 30.80...42.00	[rpm] [°C] [%]	2.5 [s] multiple	2 DCY
	P0328 P0333	signal range check	upper threshold	> 165.00...240.00	[V]	engine speed ECT engine load	> 1960 > 45 > 30.80...42.00	[rpm] [°C] [%]	2.5 [s] multiple	2 DCY

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Brake Light Switch	P0703	signal range check	sensed voltage	> 2430	[mV]				1.0 [s] continuous	2 DCY
Brake Light Switch	P0703	signal range check	sensed voltage	< 6	[mV]				1.0 [s] continuous	2 DCY
Brake Pedal Position Sensor	P057B	check of duty cycle	duty cycle	> 92.00	[%]	pressure of brake system	< 1.50	[MPa]	0.1 [s] continuous	2 DCY
	P057B	check of duty cycle	duty cycle	< 8.00	[%]	pressure of brake system	< 1.50	[MPa]	0.1 [s] continuous	2 DCY
	P057B	check of period of time	period of time	> 5	[ms]	pressure of brake system	< 1.50	[MPa]	0.1 [s] continuous	2 DCY
	P057B	check of period of time	period of time	< 2	[ms]	pressure of brake system	< 1.50	[MPa]	0.1 [s] continuous	2 DCY
	P057B	signal activity check	position sensor signal	no signal					0.5 [s] continuous	2 DCY
	P057B	rationality check high	offset adaption value	> 90.00	[%]	brake light switch pressure of brake system	not active < 0.20	[MPa]	1.0 [s] continuous	2 DCY
	P057B	rationality check low	offset adaption value	< 55.00	[%]	brake light switch pressure of brake system	not active < 0.20	[MPa]	1.0 [s] continuous	2 DCY
	P30A2	plausibility check of brake pedal position sensor with brake light switch	brake light switch **and** brake pedal position	not active > 27.00	 [%]				3.0 [s] continuous	2 DCY
	P30A2	plausibility check of brake pedal position sensor with brake light switch	brake light switch	active					3.0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			and brake pedal position	< 2.00	[%]					
Brake Booster Pressure Sensor	P0555	short to battery / open circuit	sensor voltage	> 4.80	[V]	time after ignition on	> 500	[ms]	0.5 [s] continuous	2 DCY
	P0557	short to ground	sensor voltage	< 0.20	[V]	time after ignition on	> 500	[ms]	0.5 [s] continuous	2 DCY
Brake Booster Pressure Sensor	P0556	rationality check	diff. brake booster pressure vs. barometric pressure **or** gradient brake booster pressure	> 10.00 > 15.00	[kPa] [kPa/s]	brake light switch	off		0.6 [s] multiple	2 DCY
Brake Booster Pressure Sensor	P0556	out of range high	brake booster pressure	> 130.00	[kPa]	brake light switch	off		0.6 [s] continuous	2 DCY
	P0556	out of range low	brake booster pressure	< 4.00	[kPa]	brake light switch	off		0.6 [s] continuous	2 DCY
Electrical Vacuum Pump	P1427	short to battery plus	signal current	> 2.2	[A]	engine speed electrical vacuum pump	> 80 commanded on	[rpm]	0.5 [s] continuous	2 DCY
	P1428	short to ground	signal voltage	< 2.15	[V]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
	P1429	open circuit	signal voltage	4.4...5.6	[V]	engine speed	> 80	[rpm]	0.5 [s] continuous	2 DCY
Electrical Vacuum Pump	P0556	rationality check	brake booster pressure difference between measurement 1 and 2	< 0.30...5.00	[kPa]	**Monitor Entry Conditions:** vacuum pump for time brake light switch brake booster pressure **Pressure Measurement 1:** entry conditions **Pressure Measurement 2:** time after entry conditions fulfilled	 commanded on > 0.4 off >= (barometric pressure * 0.00) + 18.00 fulfilled 1.0	 [s] [kPa] [s]	0.0 [s] multiple	2 DCY
Cold Start Monitoring	P13EA	**part load**	**part load**			commanded spark retard during catalyst heating	< 75.0	[%]		

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Ignition Control		ignition timing monitor	difference between commanded spark timing vs. actual value	> 22.00	[%]	catalyst heating	active		8.0 [s] once / DCY	2 DCY
						for time	> 1.0	[s]		
						fuel cut off	not active			
						barometric pressure	> 73	[kPa]		
						idle condition	not active			
						vehicle speed	>= 2	[km/h]		
						diff. relative engine load vs. filtered relative engine load (for relative engine load dynamic detection)	<= | 150.00 |	[%]		
						diff. engine speed vs. filtered engine speed (for engine speed dynamic detection)	<= | 10000 |	[rpm]		
	P050B	**idle**	difference between commanded spark timing vs. actual value	> 22.00	[%]	commanded spark retard during catalyst heating	< 60.0	[%]	10.0 [s] once / DCY	2 DCY
		ignition timing monitor				catalyst heating	active			
						for time	> 1.0	[s]		
						fuel cut off	not active			
						barometric pressure	> 7.50	[kPa]		
						idle condition	active			
						vehicle speed	=0.0	[km/h]		
						diff. relative engine load vs. filtered relative engine load (for relative engine load dynamic detection)	<= | 150.00 |	[%]		
						diff. engine speed vs. filtered engine speed (for engine speed dynamic detection)	<= | 10000 |	[rpm]		
						relative engine load	<= 100.01	[%]		
Ignition Coils	P0351 P0354 P0353	open circuit	signal current **or** internal check	0.25...-2.0 failed	[mA]	engine speed	> 680	[rpm]	2.0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	P0356 P0352 P0355									
	P2300 P2309 P2306 P2315 P2303 P2312	short to ground	signal current	> 24.0	[mA]	engine speed	> 680	[rpm]	2.0 [s] continuous	2 DCY
	P2301 P2310 P2307 P2316 P2304 P2313	short to battery plus	signal voltage	> 5.1...7.0	[V]	engine speed	> 680	[rpm]	2.0 [s] continuous	2 DCY
Battery Voltage	P0560	out of range low	battery voltage for time	< 2.54 > 4.0	[V] [s]				0 [s] continuous	2 DCY
Battery Voltage	P0688	out of range high	battery voltage	> 16.01	[V]	vehicle speed **or** time after system ready for drive state	> 5 > 120.0	[km/h] [s]	4.0 [s] continuous	2 DCY
	P0562	out of range low	**while engine is running** engine operation condition battery voltage **or** **while engine is not running** engine operation condition battery voltage for time	 engine running < 10.08 engine off < 10.08 > 4.0	 [V] [V] [s]	battery voltage time after system ready for drive state	>= 2.54 > 180.0	[V] [s]	0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Engine-Off-Time	P150A	comparison of engine off time from instrument cluster control unit with engine after run time	difference between engine-off-time and ECM after-run time	< -(12.0...60.0)	[s]	ignition CAN	on active		2 [s] once / DCY	2 DCY
	P150A	comparison of engine off time from instrument cluster control unit with engine after run time	difference between engine-off-time and ECM after-run time	> 12.0...60.0	[s]	ignition (during ECM keep alive-time) CAN	on active		2 [s] once / DCY	2 DCY
ECM: 5V Supply Voltage	P0606 P0606 P0606 P0606 P0606 P0606	internal hardware check	under-/ overvoltage detection						2.0 [s] continuous	2 DCY
ECM: EEPROM	P0606 P0606 P0606 P0606	functional check	internal checksum	failed		ignition	on		0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0606 P0606	function monitoring: A/D converter	test voltage / test pulse check	failed					0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0606	function monitoring: torque	comparison with allowed engine torque	incorrect		internal engine speed	> 560	[rpm]	0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0606	function monitoring: max torque	internal calculated engine torque	incorrect					0.5 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
ECM: Electronic Throttle Control Module	P0606	function monitoring: Start/Engine running	engine restart/run	not allowed					0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0606	function monitoring: engine speed deviation	difference between calculated and internal engine speed	> 320	[rpm]	internal engine speed	> 520	[rpm]	0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0606	function monitoring: ignition timing	internal check	failed					0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0606	function monitoring: intern	system reaction	incorrect					0.5 [s] continuous	2 DCY
	P0606	function monitoring: injection rate limitation	system reaction	incorrect					0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0169	function monitoring: injection time	comparison with fuel quantity	incorrect		internal engine speed	> 1200	[rpm]	0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0169	function monitoring: lambda mode	internal check	failed		internal engine speed	> 1200	[rpm]	0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0606	function monitoring: accelerator position	internal check	failed					0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0169	function monitoring: mixture control	correction factor	incorrect		internal engine speed	> 1200	[rpm]	0.5 [s] continuous	2 DCY
	P0169	function monitoring: mixture control	fuel quantity	incorrect		internal engine speed	> 1200	[rpm]	0.5 [s] continuous	2 DCY
ECM: Electronic Throttle Control Module	P0606	monitoring module	function controller check **and**	failed		SPI-interface	no failure		0.5 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
			monitoring module check	no failure						
ECM: Electronic Throttle Control Module	P0169	function monitoring: load plausibility	abs. difference between predicted and real air mass	> 11.30	[%]	engine speed	>= 1200	[rpm]	0.5 [s] continuous	2 DCY
ECM: HEV Service Mode	U1106	vehicle in service mode	HEV service mode	active		**for activation:** during ECM keep alive-time after ignition off vehicle speed engine speed drive motor	 0 0 off	 [km/h] [rpm]	0 [s]	1 DCY
ECM: Production Mode	U1103	vehicle in production mode	production mode	active		**for activation:** during ECM keep alive-time after ignition off vehicle speed engine speed max trip mileage since initial vehicle start-up **for hybrid:** drive motor	 < 5 0 < 100 off	 [km/h] [rpm] [km]	0 [s]	1 DCY
ECM: Reset	P0606 P0606 P0606	reset monitoring	internal logic						0.5 [s] continuous	2 DCY
ECM: Self Check for Sensor Integrated Circuit	P0606 P0606 P0606 P0606 P0606 P0606	internal hardware check (electrical adjustment communication, voltage supply)	check	failed					0.50 [s] continuous	2 DCY
ECM: Sensor Reference Circuit A	P0641	signal range check	signal voltage	< 4.8; > 5.2	[V]				0.5 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
ECM: Sensor Reference Circuit B	P0651	signal range check	signal voltage	< 4.8; > 5.2	[V]				0.5 [s] continuous	2 DCY
ECM: Sensor Reference Circuit C	P0697	signal range check	signal voltage	< 4.8; > 5.2	[V]				0.5 [s] continuous	2 DCY
ECM: Transport Mode	P169A	vehicle in transport mode	transport mode	active		**for activation:** during ECM keep alive-time after ignition off vehicle speed engine speed max trip mileage since initial vehicle start-up production mode **for hybrid:** drive motor	 < 5 0 < 100 not active off	 [km/h] [rpm] [km]	0 [s]	1 DCY
ECM: WDA	P0606	function monitoring: WDA	general cause	failure					0.5 [s] continuous	2 DCY
	P0606	function monitoring: WDA	internal check	failure					0.5 [s] continuous	2 DCY
	P0606	function monitoring: WDA	overvoltage detection	failure					0.5 [s] continuous	2 DCY
COM: Ambient Air Temperature (AAT) Sensor	U0422	communication with BCM	AAT value (initialization)	FEh	[-]	ignition COM: BCM (Body Control Module)	on no time out		30.0 [s] continuous	2 DCY
COM: Ambient Air Temperature (AAT) Sensor	P0072	communication with AAT Sensor	AAT signal: short to ground	failure		time after ignition on	> 1.0	[s]	30.0 [s] continuous	2 DCY
	P0070	communication with AAT Sensor	AAT signal: short to battery / open circuit	failure		time after ignition on	> 1.0	[s]	30.0 [s] continuous	2 DCY
COM: Ambient Air Temperature (AAT) Sensor	P0074	loose connection	absolute value of high pass filtered signal voltage	> 10.0	[K]	time after ignition on	> 1.0	[s]	5.0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
COM: Battery Energy Control Module (BECM)	U0112	communication with BECM	received message	no message		time after ignition on	> 500	[ms]	5.0 [s] continuous	2 DCY
COM: Battery Energy Control Module (BECM)	U0413 U0413 U0413 U0413 U0413 U0413 U0413 U0413 U0413 U0413	communication with BECM	received data	implausible message		time after ignition on	> 500	[ms]	2.5 [s] continuous	2 DCY
COM: Battery Energy Control Module (BECM)	U0413 U0413	communication with BECM	received data	implausible message		time after ignition on	> 500	[ms]	2.0 [s] continuous	2 DCY
COM: Battery Energy Control Module (BECM)	U0112	communication with BECM	received message	no message		time after ignition on	> 500	[ms]	4000 [ms] continuous	2 DCY
COM: Battery Charger Control Module	U049C U049C U049C U049C	communication with Battery Charger Control Module	received data	implausible message		time after ignition on	> 500	[ms]	2.0 [s] continuous	2 DCY
COM: Battery Charger Control Module	U019B	communication with Battery Charger Control Module	received message	no message		time after ignition on	> 500	[ms]	3000 [ms] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
COM: Body Control Module (BCM)	U0140	communication with BCM	time out	no message		time after ignition on	> 500	[ms]	2.0 [s] continuous	2 DCY
COM: Brake System Control Module (BSCM)	U0415 U0415 U0415 U0415 U0415 U0415 U0415 U0415 U0415 U0415 U0415 U0415	communication with BSCM	received data	implausible message		time after ignition on	> 500	[ms]	0.4 [s] continuous	2 DCY
COM: Brake System Control Module (BSCM)	U0121	communication with BSCM	received message	no message		time after ignition on	> 500	[ms]	0.5 [s] continuous	2 DCY
COM: Brake System Control Module (BSCM)	C0062	communication with BSCM	received data	BSCM reports longitudinal acceleration sensor fault		time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY
COM: Brake System Control Module (BSCM)	C0500 C0506	communication with BSCM	received data	BSCM reports open circuit fault of wheel speed sensor		time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	C050C C0512									
	C0503 C0509 C050F C0515	communication with BSCM	received data	BSCM reports out of range high fault of wheel speed sensor		time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY
	C0501 C0507 C050D C0513	communication with BSCM	received data	BSCM reports rationality check fault of wheel speed sensor		time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY
COM: Brake System Control Module (BSCM)	U0415	communication with BSCM	brake pressure signal	invalid signal		time after ignition on	> 500	[ms]	500 [ms] continuous	2 DCY
COM: Brake System Control Module (BSCM)	U1017	communication with BSCM	driver brakes signal	invalid signal		time after ignition on	> 500	[ms]	2500 [ms] continuous	2 DCY
COM: Brake System Control Module (BSCM)	U1017	communication with BSCM	received message	BSCM system error		time after ignition on	> 500	[ms]	50 [ms] continuous	2 DCY
COM: Brake System Control Module (BSCM)	C0540	communication with BSCM	received data	BSCM reports electric fault of brake pressure sensor		time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY
	C053D	communication with BSCM	received data	BSCM reports plausibility fault of brake pressure sensor		time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	C053D	communication with BSCM	received data	BSCM reports plausibility fault of brake pressure sensor by comparison with brake light switch		time after ignition on	> 500	[ms]	0 [s] continuous	2 DCY
COM: Climate Control (CC)	U103C	communication with CC Module	received data	implausible message		time after ignition on	> 500	[ms]	2.0 [s] continuous	2 DCY
COM: Climate Control (CC)	U0164	communication with CC Module	received message	no message		time after ignition on	> 500	[ms]	1.0 [s] continuous	2 DCY
COM: Climate Control (CC)	U0424	communication with CC Module	received data	implausible message		time after ignition on	> 500	[ms]	2.0 [s] continuous	2 DCY
COM: Climate Control (CC)	U103B	communication with CC Module	received message	no message		time after ignition on	> 500	[ms]	4000 [ms] continuous	2 DCY
COM: Clutch Control Module	U10DD	communication with Clutch Control Module	received message	no message		time after ignition on	> 500	[ms]	0.5 [s] continuous	2 DCY
	U10DE U10DE U10DE	communication with Clutch Control Module	received data	implausible message		time after ignition on	> 500	[ms]	0.5 [s] continuous	2 DCY
COM: Drive Motor Control Module (DMCM)	U0411 U0411 U0411	communication with DMCM	received data	implausible message		time after ignition on	> 500	[ms]	2.5 [s] continuous	2 DCY
COM: Drive Motor Control Module (DMCM)	U0411 U0411 U0411	communication with DMCM	received data	implausible message		time after ignition on	> 500	[ms]	2.5 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	U0411 U0411 U0411 U0411									
COM: Drive Motor Control Module (DMCM)	U0110	communication with DMCM	received message	no message		time after ignition on	> 500	[ms]	5.0 [s] continuous	2 DCY
COM: Electric Clutch Actuator	P18D0	CAN communication with Clutch Control Unit	received CAN message	invalid signal		time after ignition on	> 300	[ms]	300 [ms] continuous	2 DCY
COM: Electric Clutch Actuator	U10DD	communication with Clutch Control Module	actuator CAN	failure					0.1 [s] continuous	2 DCY
	P309C P309C P309C	communication with Clutch Control Module	actuator hardware	failure					0.1 [s] continuous	2 DCY
	P309C	communication with Clutch Control Module	actuator voltage	failure					0.1 [s] continuous	2 DCY
COM: Engine Hood	P254F	communication with Gateway	engine hood switch	failure		engine hood vehicle speed	open > 45	 [km/h]	5.0 [s] continuous	2 DCY
COM: Gateway	U0146	communication with Gateway	received message	no message		time after ignition on	> 500	[ms]	0.5 [s] continuous	2 DCY
COM: Gateway	U0447 U0447	communication with Gateway	received data	implausible message		time after ignition on	> 500	[ms]	0.3 [s] continuous	2 DCY
COM: Instrument Panel Cluster (IPC)	U0423 U0423	communication with IPC	received data	implausible message		time after ignition on	> 500	[ms]	3.0 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
COM: Instrument Panel Cluster (IPC)	U0155	communication with IPC	received message	no message		time after ignition on	> 500	[ms]	2.0 [s] continuous	2 DCY
COM: Powertrain Bus	U0002	communication check	global time out	receiving no message		time after ignition on	> 500	[ms]	0.45 [s] continuous	2 DCY
COM: Hybrid Bus	U0029	communication check	global time out	receiving no message		time after ignition on	> 500	[ms]	0.45 [s] continuous	2 DCY
COM: Transmission Control Module (TCM)	U0302	communication with TCM	received AT vehicle data	TCM signal		time after ignition on	> 500	[ms]	5.0 [s] continuous	2 DCY
COM: Transmission Control Module (TCM)	U0402 U0402 U0402 U0402	communication with TCM	received data	implausible message		time after ignition on	> 500	[ms]	0.3 [s] continuous	2 DCY
COM: Transmission Control Module (TCM)	U0101	communication with TCM	received message	no message		time after ignition on	> 500	[ms]	0.5 [s] continuous	2 DCY
COM: Vehicle Speed Sensor (VSS)	U0415	communication with VSS	speed sensor signal: initialisation error	655.34	[km/h]	time after ignition on	> 500	[ms]	1.98 [s] continuous	2 DCY
	U0415	communication with VSS	speed sensor signal: low voltage error	655.33	[km/h]	time after ignition on	> 500	[ms]	1.98 [s] continuous	2 DCY
	U0415	communication with VSS	speed sensor signal: sensor error	655.35	[km/h]	time after ignition on	> 500	[ms]	0.48 [s] continuous	2 DCY

ECU Summary Table Cayenne S e Hybrid MY15

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
CAN: Powertrain BUS	U0001	reading back sent message	message	no feedback		time after ignition on	> 500	[ms]	0.25 [s] continuous	2 DCY
CAN: Controller	P0606	controller RAM check	RAM error	memory checksum error		initialization phase			none [-] once / DCY	2 DCY
CAN: Hybrid Bus	U0028	reading back sent message	message	no feedback		time after ignition on	> 500	[ms]	0.25 [s] continuous	2 DCY

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ECU_OBD SUMMARY TABLE MY15 (ESP-part)

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
Wheel Speed Sensors (WSS)	C0500, C0506, C050C, C0512	electrical monitoring	Sensor current at signal line OR Sensor current at signal line	< 4.5 > 38	[mA]				140 [ms]	2 DCY
	C0501, C0507, C050D, C0513	signal plausibility	differences of wheel speeds	fastest wheel > 2.78 and slowest wheel < 1.25 fastest non driven wheel ≥ 8.75 and slowest wheel < 1.25 three wheels at same speed (± 5%) and 2000 % of slowest whl speed three whls at same speed (± 10%) and 2000 % of slowest whl speed	[mph]		velocity > 2.78 velocity ≥ 8.75	[mph]	180 [s] immediately 5 s 10 s	2 DCY
	C0502, C0508, C050E, C0514	signal plausibility	continous deviation	25 % .. 50 % deviation (dependent on velocity)			velocity ≥ 12.43	[mph]	10..30 s (dependent on velocity)	2 DCY
	C0501, C0507, C050D, C0513	signal plausibility	speed continuity				velocity change > 21.75 per loop	[mph]	170 [ms]	2 DCY
	C0502, C0508, C050E, C0514	signal plausibility	defective areas at tone wheel				velocity ≥ 8.70	[mph]		2 DCY
	C0501, C0507, C050D, C0513	signal plausibility	implausible ABS interventions: ABS slip too high	permanent pressure reduction or hold		ABS control active	driver brake		28 [s]	2 DCY
	C0501, C0507, C050D, C0513	signal protocol monitoring	Pulse width of the WSS signal or missing protocol	> 10 standstill protocols invalid data protocols		-	10 after initialisation	[s]	10 [s] 1 [s]	2 DCY
Brake Pressure Sensor (PS)	C0540	sensor electrical monitoring	signal in upper or lower fault band	< 0.2 or > 4.8	[V]		after initialisation		70 ms	2 DCY
	C053D	signal plausibility	deviation between pressure signals P1 and P2	$\|P1 - P2\| < 2 \cdot P_{Offset} + (\|P1 + P2\| + \|P1 - P2\|) \cdot \varepsilon$		P_{Offset} = 10 bar ε = 2,5 %	after initialisation		60 ms	2 DCY
	C053D	temperature plausibility	temperature gradient time for temperature sample exceeded	7.5 120	[K/s] [s]		after initialisation		35 λ 120 s	2 DCY
	C053D	initialisation monitoring	missing or wrong P2T multiplex signal				once after initialisation		750 ms	2 DCY
	C053D	cycle time monitoring	reduced or exceeded cycle time	< min Cycle time > max cycle time · 2			after initialisation		220 ms	2 DCY
	C053D	offset monitoring	Offset > threshold	P1 8.0, P2 10.5	[bar]		after initialisation		10 ms	2 DCY
	C053D	noise monitoring	integrated signal noise deviation	195	[mV]					
Sensor Cluster (SC)	C0552	CAN communication monitoring	RAM read write pattern	difference			once after power on		10 ms	2 DCY
	C0551	CAN communication monitoring	Busoff flag in CAN controller	for 10 times in succession					10 ms	2 DCY
	C0551	timeout monitoring	time for minimum fault duration exceeded	100	[ms]		starting 3 s after power-on		100 ms	2 DCY
	C0551	message counter monitoring	message counter from SYNC is read and retransmitted to ECU	difference			starting 3 s after power-on		100 ms	2 DCY
	C0551	checksum monitoring	monitoring of received and calculated checksum, fault time duration exceeded	difference			starting 3 s after power-on		100 ms	2 DCY
	C0551	data length monitoring	monitoring of received and expected data length, fault time duration exceeded	difference			starting 3 s after power-on		100 ms	2 DCY
	C0551	voltage monitoring	BUS messages while sensor voltage switched off				after power-on until ECU switches on sensor cluster supply		20 ms	2 DCY
	C0551	initialisation monitoring	message "not initialized" from sensor cluster				starting 3 s after power-on		10 ms	2 DCY
	C0552	SYNC under/overflow monitoring	repetition rate of the SYNC messages from the ECU	< 4 or > 25	[ms]		continous		250 ms	2 DCY

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ECU_OBD SUMMARY TABLE MY15 (ESP-part)

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
	C0552	SYNC CRC monitoring	monitoring of received and calculated checksum	difference			continous		250 ms	2 DCY
	C0552	SYNC counter monitoring	message counter	difference >3			continous		250 ms	2 DCY
	C0552	extended electrical monitoring	signal in upper or lower fault band	< 0.2 or > 4.8	[V]		continous		1.2 s	2 DCY
	C0552	longtime offset and calibration monitoring	calculated offset	> 1.9	[m/s²]				10 ms	2 DCY
	C0552	horizontal sensor mounting	comparison of measured value with the wheel speed signals	> 0.8 > 0.2 during constant driving	[g]	initialisation depending on acceleration signal	continous		0.7..1.07 s 2.7..8.6 s or 171 s	2 DCY
	C0552	vertical sensor mounting	comparison of measured value with the calculated value	> 0.35 < -0.35	[g]	90° turned 180° turned	< 8.7 mph < 43.51 mph		2.85 s 1.5 s	2 DCY
	C0552	mounting during ABS	comparison of measured value with the ABS reference speed	difference > 0.25 while measured deceleration > -0.1 difference > 0.4 while measured deceleration > - 0.1 during ABS difference > 0.7 and signal < calculated value	[g]				80 ms	2 DCY
	C0552	ECE handling monitoring	comparison fo emasured value with calculated acceleration	difference > 0.15 g for 500 ms & calculated acceleration > 0.15	[g]		once after power-up & speed > 3.11 mph & acceleration > 0.15 g		300 s	2 DCY

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ECU_OBD SUMMARY TABLE MY15 (ESP-part)

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Condition	Monitoring Time Length	MIL Illum.
ECU	U1017	PCU watchdog	comparison of MCU to PCU control word functionality of PCU watchdog circuit			continous once after power-on	10 ms	1 DCY
	U1017	redundancy check	comparison of the two CPU bus signals functionality of bus compare unit			continous every 2nd loop	10 ms	1 DCY
	U1017	ROM ECC check	read-write pattern functionality of ECC compare unit			every read access every 2nd loop	10 ms	1 DCY
	U1017	bus and ECC compare unit monitoring	defined toogling of one signal expected functionality of MCU compare unit			continous once after power-on	10 ms	1 DCY
	U1017	reset source monitoring	check of the reset source			once after each hardware reset	once at beginning of startup	1 DCY
	U1017	interrupt source monitoring	check of the interrupt source			continous	10 ms	1 DCY
	U1017	RAM self-test	read-write pattern			every 30.72 s	30.72 s	1 DCY
	U1017	ROM CRC check	difference			every 220 ms	220 ms	1 DCY
	U1017	non-volatile memory check	write access not possible			10 ms during write access	40 ms	1 DCY
	U1017	runtime monitoring	finish of former loop execution			continous	10 ms	1 DCY
	U1017	stack monitoring	read-write pattern			each call of OS stack dispatcher	1,25 ms from start of OS	1 DCY
	U1017	OSEK system check	corecction check of internal data			each call of OS API functions	10 ms	1 DCY
	U1017	HW failsafe module monitoring	check of voltage deviations			once after ignition on	80 ms	1 DCY

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Shift Solenoid									
S1	P0973	Conduction check in ON/OFF solenoid.	Comparison of the signal of solenoid monitor and solenoid driver output	Wrong output signal for more than 100 ms	--	--	100ms 5 times	continous	2 DCY
S1	P0974								
TV	P2754	Conduction check in ON/OFF solenoid.	Comparison of the signal of solenoid monitor and solenoid driver output	Wrong output signal for more than 100 ms	--	--			
TV	P2755								
Pressure Control Solenoid									
SLT	P0748	Linear solenoid feedback current check	Comparison of target current and Feedback current	Sum of difference of two current >20000	Input AD value Voltage Main Solenoid Switch	< 1333mA > 10.5 V ON	3 times	continous	2 DCY
SLB1	P0778								
SLC1	P0798								
SLC2	P2716								
SLC3	P2725								
SLC4	P2734								
SLU	P2759								
SLT	P0963	Input AD value check in every Linear solenoid.	Detection of wrong input AD value	Feedback current > 1333mA (AD value > 1000) for more than 100 ms			100ms 5 times		
SLB1	P0777								
SLC1	P0797								
SLC2	P2715								
SLC3	P2724								
SLC4	P2733								
SLU	P2758								

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
SLT	P0962			Feedback current < 23mA (AD value < 15) for more than 100 ms			100ms 5 times		
SLB1	P0776								
SLC1	P0796								
SLC2	P2714								
SLC3	P2723								
SLC4	P2732								
SLU	P2757								

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Speed sensor									
Output speed sensor	P19AB	Electrical check	Detection of wrong input AD value	Voltage < 0.2 Volt (AD value < 45) for more than 100 ms	Output sensor	Not after failure decision for output sensor "no pulse check"	100ms 5 times	continous	2 DCY
Output speed sensor	P077D			(AD value > 545) Voltage > 2.72 Volt for more than 100 ms					
Output speed sensor	P0721	No pulse check	Comparison pulse of input revolution and output revolution	No pulse of input sensor more than 12 times	Engine speed No emergency mode Gear engagement condition Range Inhibitor switch Input sensor S1,SLC1,SLC2,SLC3,SLC4, SLB1,SLT (Input rev. / defined current gear ratio) Output sensor	> 400rpm Engage D,S No fault Active No fault >= 300 rpm Not during failure detection or after failure decision for output sensor electrical failure.	500ms		
Input speed sensor	P19AA	Electrical check	Detection of wrong input AD value	Voltage < 0.2 Volt (AD value < 45) for more than 100 ms	Input sensor	Not after failure decision for input sensor "no pulse check"	100ms 5 times		
Input speed sensor	P07C0			(AD value > 545) Voltage > 2.72 Volt for more than 100 ms					
Input speed sensor	P0716	No pulse check	Comparison pulse of input revolution and output revolution	No pulse of input sensor more than 30 times	Engine speed Output sensor Output speed	> 400rpm Active >= 300rpm	500ms		

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
					Input sensor	Not during failure detection or after failure decision for input sensor electrical failure.			
Inhibitor switch									
Inhibitor switch	P0706	A, B, C and PA signal check in every shift lever position.	Detection of wrong combination of the A, B, C and PA signal	Wrong combination for more than 350 ms	--	--	350 ms		2 DCY
Inhibitor switch	P0709		Detection of no signal of the A, B, C and PA signal	All signals lost					

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Oil temperature sensor									
Oil temperature sensor Stuck	P0710	Electrical check **(Only for Start/Stop and Hybrid vehicle)**	Detection of wrong input AD value	Measurementblock shows Value between 30°C and 150°C and doesn't change this value by 5° during 10 min	--	--	100ms	continous	2 DCY
Oil temperature sensor GND short	P0712			Measurementblock shows Value 0V	--	--	5s		
Oil temperature sensor Battery short / open	P0713			Measurementblock shows Value of 4.9V	--	--	10s		
Microcontroller Hardware									
Flash ROM	P0700	ROM area check	Comparison of stored checksum value and calculated checksum	Two checksum values are not the same.	--	--	40 s	continous	2 DCY
Random Access Memory	P0700	RAM area check	Comparison of writing data and reading data.	Writing data is different from reading one.	--	--			
EEPROM	P0700	RAM area check	Comparison of stored checksum value and calculated checksum	Two checksum values are not the same.	--	--			
Safety processor	P2711	High breaking torque detection	Detect high braking torque condition by reading back of the solenoid feedback current in order to determine the pattern and ATCU compares it and the pattern of possible high braking torque conditions calculated with input torque	Breaking Torqe 1888Nm	--	--	700ms		
	P0613	Miscalculation detected	Wrong gear select detection	Single reset does not cover problem	--	--	150ms		
	P0613		CPU core check failed	Single reset does not cover problem	--	--	1 time		
	P0613		ROM check is failed	Single reset does not cover problem	--	--	1 time		
	P0613		RAM data protect is failed	Single reset does not cover problem	--	--	1 time		
	P0613		Communication data check is failed	Single reset does not cover problem	--	--	1 time		

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
	P0613		Program flow check is failed	Single reset does not cover problem	--	--	1 time		
	P0613		Safe state shift check	Single reset does not cover problem	--	--	1 time		
CAN									
Bus off	U0001	CAN communication check	Detection of communication error	CAN BUS off condition for more than 250 ms	ignition on	> 500 ms	250 ms	continous	2 DCY
ECU no communication	U0100	CAN communication check	Detection of communication error	ECU no communication for more than 50 ms	CAN bus	Active	500ms		
					ignition on	> 500 ms			
ECU malfunction	U0401	CAN receive data check	ECU signal data freeze	Data counter not updated	CAN bus ECU communication	Active Active	5 messages continuously		
ECU malfunction	U0401			Chksum is wrong			3 messages continuously		
Accelerator pedal	U0401		Detection of error signal	0xFF	CAN bus ECU communication ECU data update	Active Active Active	250ms		
Engine speed	U0401		Detection of error signal	0xFFFF					
Engine torque	U0401		Detection of error signal	0x3FF					
ECU wrong level	U0301		Detection of error signal	Transmission coding is manual transmission code (0Fh) Or MO_Code is not same as one in ATCU or MO_Leistung is not same as one in ATCU					

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Driver Electrical Oil Pump									
EOP_Driver_Error **(Only Hybrid)**	P0C2A	Input AD value check of OPST PWM signal	OPST PWM sends signal "Motor system failure"				500ms	continous	2 DCY
EOP_Driver_Input_AD_Failure **(Only for Start/Stop)**	P0C2B		OPST PWM sends signal "A/D failure"		OPST PWM Signal sends not "Duty continuously low" or "Duty continuously high"				
EOP_Driver_OPST_Duty_High **(Only for Start/Stop and Hybrid vehicle)**	P0C2E		OPST PWM Signal sends "Duty continuously high"						
EOP_Driver_OPST_Duty_Low **(Only for Start/Stop and Hybrid vehicle)**	P0C2D		OPST PWM Signal sends "Duty continuously low"						
EOP_Driver_OPST_PWM_wrong **(Only for Start/Stop and Hybrid vehicle)**	P0C2C		OPST PWM Signal sends "PWM Wrong"						
EOP_Driver_SIG_PWM_wrong **(Only for Start/Stop)**	P0C29		OPST PWM sends signal "Motor system failure"						
EOP_Driver_Motor_lock **(Only for Start/Stop)**	P0C2A		OPST PWM Signal sends "Lock or over rev."				1000ms		
EOP_Driver_temperature_area_stuck *(Only Hybrid)*	P0C1D		OPST PWM Signal sends "Over heat (118~125°C)" or OPST PWM Signal sends "Over heat (>125°C)" and Target EOP revolution = 0[rpm]				900s		
Motor Electrical Oil Pump									
EOP_Motor_Functional_Failure_Hybrid	P0C26	Functional diagnosis **(Hybrid only)**	Comparison of target an actual EOP Motor revolution		EOP System normal		10s	continous	2DCY
EOP_Motor_Functional_Failure_IdleStop	P0C26	Functional diagnosis **(Start/Stopp only)**	Comparison of indicated slip and actual slip with stored values		EOP System normal		20s (OT Value < 0°C) 400ms (OT Value > 0°C)		
EOP_Motor_Temp_Sensor_SC-	P0C1E	Electrical check **(Hybrid only)**	Measurement block shows value of 208°C		EOP System normal		5x 1s		
EOP_Motor_temp_sensor_temperature_area_stuck	P0C1D	Electrical check **(Hybrid only)**	EOP Motor temperature > 130 [°C] and Target EOP motor revolution = 0[rpm]		EOP System normal		715s		

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Functional lock up control									
Lock up control	P0741	OFF stuck check.	Comparison of engine rpm and input rpm	Engine rpm – input rpm > -100 rpm for 2s (hybrid only) Engine rpm – input rpm > 100 rpm for 2s	Engine speed Shift Lever Estimated engine torque Revolution sensor SLU target current Model oil temp. Common parameter (see footnote)	> 400 rpm < 4000 rpm D or S >= 0 Nm No back up condition > 1000mA >= 20°C common condition (see footnote)	2 s 6 times	continous	2 DCY

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Gear ratio error									
1st gear	P0731	Input and output rpm signal check. Separate error memory for each gear.	Comparison of indicated slip and actual slip with stored values	**1.** abs(input rev. – output rev. x other gear ratio) < (0.04 x other gear ratio x output rev.) for more than 1s **2.** Slip differences > (0.20 x current gear ratio x output rev.) for more than 1 s	Engine speed	> 400rpm	**1.** 1000ms 12 times cumulative **2.** 450ms 5 times cumulative	continous	2 DCY
2nd gear	P0732				Output rev.	> 250rpm			
3rd gear	P0733				Shift Lever	D or S			
4th gear	P0734				Brake	off			
5th gear	P0735				slip difference of output speed(In case ABS valid)	difference < 10%			
6th gear	P0729				Revolution sensor	No back up condition			
7th gear	P076F				Model oil temp.	>= 20°C			
8th gear	P07D9				Common parameter (see footnote)	common condition (see footnote)			

Common parameter for enabling gear ratio or Lock up errors:

Main solenoid switch	ON
Gear condition	Engaged
S1 solenoid	No fault
Linear solenoid	No fault
Inhibitor switch	No fault
CAN communication	No fault
ECU data update	No fault
Estimated engine trq	No fault
Engine speed	No fault
Accelerator pedal	No fault
ROM	No fault
RAM	No fault
Safety processor	No fault

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Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Logic	Threshold Value	Threshold Units	Secondary Parameters	Enable Logic	Enable Value	Enable Units	Monitoring Time	Monitoring Time	Frequency of	MIL Illum.
Battery engery control module / voltage monitoring	P0B1F	The pack voltage is compared with the voltage on the contactor terminal on the positive side.	Absolute difference voltage |(a) - (b)|	>	2,5	V	contactors closed	=	TRUE	-	1000	ms	continous	1dcy
			Absolute difference voltage |(a) - (c)|	<=	1,500015	V	NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
			with (a) pack voltage (b) link voltage (c) positive link voltage											
	P0B21	The voltage on the contactor terminal on the negative side is compared with an upper voltage threshold.	negative link voltage	>	480	V	contactors closed	=	TRUE	-	1000	ms	continous	1dcy
							NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
	P0B1A	The voltage on the contactor terminal on the positive side is compared with the Sum of the cell voltages.	Absolute difference voltage |(a) - (b)|	>	2,5	V	contactors closed	=	TRUE	-	500	ms	continous	1dcy
			Absolute difference voltage |(a) - (c)|	>	1,500015	V	NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
			Absolute difference voltage |(c) - (d)|	>	5	V								
			(c) > (d) with (a) pack voltage (b) link voltage (c) positive link voltage (d) sum of the cell voltages	=	TRUE	-								
	P0B1A	The voltage on the contactor terminal on the positive side is compared with the Sum of the cell voltages.	Absolute difference voltage |(a) - (b)|	>	2,5	V	contactors closed	=	TRUE	-	500	ms	continous	1dcy
			Absolute difference voltage |(a) - (c)|	>	1,500015	V	NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
			Absolute difference voltage |(c) - (d)|	>	5	V								
			(c) < (d) with (a) pack voltage (b) link voltage (c) positive link voltage (d) Sum of the cell voltages	=	TRUE	-								
	P0B1C	The voltage on the contactor terminal on the positive side is compared with an upper voltage threshold.	positive link voltge	>	480	V	contactors closed	=	TRUE	-	1000	ms	continous	1dcy
							NO Pending or Confirmed DTCs:	=	see sheet inhibit tables					
	P0B1B	The voltage on the contactor terminal on the positive side is compared with a lower voltage threshold.	positive link voltge	<	100	V	contactors closed	=	TRUE	-	1000	ms	continous	1dcy
							NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
	P0ABB	The pack voltage is compared with the Sum of the cell voltages.	Absolute difference voltage |(a) - (b)|	>	2,5	V	Ignition ON	=	TRUE	-	500	ms	continous	1dcy
			and				or							
			(a) > (b) with	=	TRUE	-	Battery is charging NO Pending or Confirmed DTCs:	=	TRUE see sheet inhibit tables	-				
			(a) pack voltage (b) Sum of the cell voltages											
	P0ABB	The pack voltage is compared with the Sum of the cell voltages.	Absolute difference voltage |(a) - (b)|	>	2,5	V	(				500	ms	continous	1dcy
			and				Ignition ON	=	TRUE	-				
			(a)< (b) with	=	TRUE	-	or Battery is charging	=	TRUE	-				
			(a) pack voltage (b) Sum of the cell voltages				) NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
	P0ABD	The pack voltage is compared with an upper voltage threshold.	positive pack voltage	>	480	V	(				1000	ms	continous	1dcy
							Ignition ON	=	TRUE	-				
							or Battery is charging	=	TRUE	-				
							)							

BECM Summary Table Cayenne S e Hybrid MY15

							NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
	P0ABC	The pack voltage is compared with a lower voltage threshold.	positive pack voltage	<	100	V	(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	1000	ms	continous	1dcy
	P0E44	The on board charger fuse voltage is compared with an upper voltage threshold.	on board charger fuse voltage	>	504	V	Ignition ON or Battery is charging	= =	TRUE TRUE	- -	500	ms	continuous	2dcy
Battery engery control module / voltage monitoring	P0DAF	The cell voltage of each particular cell of module 00 is compared with the median cell voltage of module 00	difference between one particular cell voltage and median voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
	P0DB3	The cell voltage of each particular cell of module 01 is compared with the median cell voltage of module 01	difference between one particular cell voltage and median voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
	P0DB7	The cell voltage of each particular cell of module 02 is compared with the median cell voltage of module 02	difference between one particular cell voltage and median voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
	P0DBB	The cell voltage of each particular cell of module 03 is compared with the median cell voltage of module 03	difference between one particular cell voltage and median voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
	P0DBF	The cell voltage of each particular cell of module 04 is compared with the median cell voltage of module 04	difference between one particular cell voltage and median voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
	P0DC3	The cell voltage of each particular cell of module 05 is compared with the median cell voltage of module 05	difference between one particular cell voltage and median voltage	>	2,000046	V	(Ignition ON or Battery is charging)	 = =	 TRUE TRUE	 - -	500	ms	continuous	2dcy

						CSC communication error No pending or confirmed DTCs:	= =	FALSE see sheet inhibit table	- -				
P0DC7	The cell voltage of each particular cell of module 06 is compared with the median cell voltage of module 06	difference between one particular cell voltage and median voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DCB	The cell voltage of each particular cell of module 07 is compared with the median cell voltage of module 07	difference between one particular cell voltage and median voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DAF	The cell voltage of each particular cell of module 00 is compared with the median cell voltage of module 00	difference between median voltage and one particular cell voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DB3	The cell voltage of each particular cell of module 01 is compared with the median cell voltage of module 01	difference between median voltage and one particular cell voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DB7	The cell voltage of each particular cell of module 02 is compared with the median cell voltage of module 02	difference between median voltage and one particular cell voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DBB	The cell voltage of each particular cell of module 03 is compared with the median cell voltage of module 03	difference between median voltage and one particular cell voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DBF	The cell voltage of each particular cell of module 04 is compared with the median cell voltage of module 04	difference between median voltage and one particular cell voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error	 = = =	 TRUE TRUE FALSE	 - - -	500	ms	continuous	2dcy

						No pending or confirmed DTCs:		see sheet inhibit table	-				
P0DC3	The cell voltage of each particular cell of module 05 is compared with the median cell voltage of module 05	difference between median voltage and one particular cell voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DC7	The cell voltage of each particular cell of module 06 is compared with the median cell voltage of module 06	difference between median voltage and one particular cell voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DCB	The cell voltage of each particular cell of module 07 is compared with the median cell voltage of module 07	difference between median voltage and one particular cell voltage	>	2,000046	V	(Ignition ON or Battery is charging) CSC communication error No pending or confirmed DTCs:	 = = = 	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	500	ms	continuous	2dcy
P0DAC	Signal range check of particular cell voltage of module 00	one particular cell voltage of the module 01	>	4,800034	V	(Ignition ON or Battery is charging) CSC communication error	 = = =	 TRUE TRUE FALSE	 - - -	500	ms	continuous	1dcy
P0DB0	Signal range check of particular cell voltage of module 01	one particular cell voltage of the module 02	>	4,800034	V	(Ignition ON or Battery is charging) CSC communication error	 = = =	 TRUE TRUE FALSE	 - - -	500	ms	continuous	1dcy
P0DB4	Signal range check of particular cell voltage of module 02	one particular cell voltage of the module 03	>	4,800034	V	(Ignition ON or Battery is charging) CSC communication error	 = = =	 TRUE TRUE FALSE	 - - -	500	ms	continuous	1dcy
P0DB8	Signal range check of particular cell voltage of module 03	one particular cell voltage of the module 04	>	4,800034	V	(Ignition ON or Battery is charging) CSC communication error	 = = =	 TRUE TRUE FALSE	 - - -	500	ms	continuous	1dcy
P0DBC	Signal range check of particular cell voltage of module 04	one particular cell voltage of the module 05	>	4,800034	V	(Ignition ON or Battery is charging) CSC communication error	 = = =	 TRUE TRUE FALSE	 - - -	500	ms	continuous	1dcy
P0DC0	Signal range check of particular cell voltage of module 05	one particular cell voltage of the module 06	>	4,800034	V	(Ignition ON or Battery is charging	 = =	 TRUE TRUE	 - -	500	ms	continuous	1dcy

						)								
						CSC communication error	=	FALSE	-					
P0DC4	Signal range check of particular cell voltage of module 06	one particular cell voltage of the module 07	>	4,800034	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DC8	Signal range check of particular cell voltage of module 07	one particular cell voltage of the module 08	>	4,800034	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DAC	Signal range check of particular cell voltage of module 00	one particular cell voltage of the module 01	<	2,000046	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DB0	Signal range check of particular cell voltage of module 01	one particular cell voltage of the module 02	<	2,000046	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DB4	Signal range check of particular cell voltage of module 02	one particular cell voltage of the module 03	<	2,000046	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DB8	Signal range check of particular cell voltage of module 03	one particular cell voltage of the module 04	<	2,000046	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DBC	Signal range check of particular cell voltage of module 04	one particular cell voltage of the module 05	<	2,000046	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DC0	Signal range check of particular cell voltage of module 05	one particular cell voltage of the module 06	<	2,000046	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DC4	Signal range check of particular cell voltage of module 06	one particular cell voltage of the module 07	<	2,000046	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					
P0DC8	Signal range check of particular cell voltage of module 07	one particular cell voltage of the module 08	<	2,000046	V	(				500	ms	continuous	1dcy	
						Ignition ON	=	TRUE	-					
						or								
						Battery is charging	=	TRUE	-					
						)								
						CSC communication error	=	FALSE	-					

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Battery engery control module / voltage monitoring	P0B3E	each cell voltage of each module is compared with a threshold for detecting over-voltage error	one particular cell voltage of module 01	>	4,15	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	= = =	TRUE TRUE see sheet inhibit tables	- - -	1	sec	continuous	1dcy
	P0B43	each cell voltage of each module is compared with a threshold for detecting over-voltage error	one particular cell voltage of module 02	>	4,15	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	= = =	TRUE TRUE see sheet inhibit tables	- - -	1	sec	continuous	1dcy
	P0B48	each cell voltage of each module is compared with a threshold for detecting over-voltage error	one particular cell voltage of module 03	>	4,15	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	= = =	TRUE TRUE see sheet inhibit tables	- - -	1	sec	continuous	1dcy
	P0B4D	each cell voltage of each module is compared with a threshold for detecting over-voltage error	one particular cell voltage of module 04	>	4,15	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	= = =	TRUE TRUE see sheet inhibit tables	- - -	1	sec	continuous	1dcy
	P0B52	each cell voltage of each module is compared with a threshold for detecting over-voltage error	one particular cell voltage of module 05	>	4,15	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	= = =	TRUE TRUE see sheet inhibit tables	- - -	1	sec	continuous	1dcy
	P0B57	each cell voltage of each module is compared with a threshold for detecting over-voltage error	one particular cell voltage of module 06	>	4,15	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	= = =	TRUE TRUE see sheet inhibit tables	- - -	1	sec	continuous	1dcy
	P0B5C	each cell voltage of each module is compared with a threshold for detecting over-voltage error	one particular cell voltage of module 07	>	4,15	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	= = =	TRUE TRUE see sheet inhibit tables	- - -	1	sec	continuous	1dcy
	P0B61	each cell voltage of each module is compared with a threshold for detecting over-voltage error	one particular cell voltage of module 08	>	4,15	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	= = =	TRUE TRUE see sheet inhibit tables	- - -	1	sec	continuous	1dcy
	P0B3D	each cell voltage of each module is compared with a threshold for detecting under-voltage error	one particular cell voltage of module 01	<	2,1 to 2,8	V	(Ignition on or Battery is charging)	= =	TRUE TRUE	- -	2,9	sec	continuous	1dcy

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							No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
	P0B42	each cell voltage of each module is compared with a threshold for detecting under-voltage error	one particular cell voltage of module 02	<	2,1 to 2,8	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	2,9	sec	continuous	1dcy
	P0B47	each cell voltage of each module is compared with a threshold for detecting under-voltage error	one particular cell voltage of module 03	<	2,1 to 2,8	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	2,9	sec	continuous	1dcy
	P0B4C	each cell voltage of each module is compared with a threshold for detecting under-voltage error	one particular cell voltage of module 04	<	2,1 to 2,8	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	2,9	sec	continuous	1dcy
	P0B51	each cell voltage of each module is compared with a threshold for detecting under-voltage error	one particular cell voltage of module 05	<	2,1 to 2,8	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	2,9	sec	continuous	1dcy
	P0B56	each cell voltage of each module is compared with a threshold for detecting under-voltage error	one particular cell voltage of module 06	<	2,1 to 2,8	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	2,9	sec	continuous	1dcy
	P0B5B	each cell voltage of each module is compared with a threshold for detecting under-voltage error	one particular cell voltage of module 07	<	2,1 to 2,8	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	2,9	sec	continuous	1dcy
	P0B60	each cell voltage of each module is compared with a threshold for detecting under-voltage error	one particular cell voltage of module 08	<	2,1 to 2,8	V	(Ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	2,9	sec	continuous	1dcy
Battery engery control module / current monitoring	P0B0E	circuit continuity and communication check of hall sensor signal line	general communication error (checksum, implausible messages)	=	TRUE	-	Ignition on	=	TRUE	-	250	ms	continuous	1dcy
			OR				or							
	P0B11		signal line pin permanently on high level (broken wire, short circuit to battery)	=	TRUE	-	Battery is charging	=	TRUE	-				
			OR											
	P0B10		signal line pin permanently on low level (short circuit to ground)	=	TRUE	-								
	P0B0F	signal range check high of hall sensor signal	hall sensor current signal	>	480	A	Ignition on or Battery is charging	= =	TRUE TRUE	-	250	ms	continuous	1dcy

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	P0B0F	signal range check low of hall sensor signal	hall sensor current signal	<	-480	A	Ignition on or Battery is charging	= = 	TRUE TRUE	- -	250	ms	continuous	1dcy
	P0AC0	hardware of shunt current sensor is monitored	sensor reports an HW error (open circuit and short to ground) in the measurement path or failures in the voltage channel by evaluating the corresponding status flag of the ADC	=	TRUE	-	Ignition on or Battery is charging	= = 	TRUE TRUE	- -	250	ms	continuous	1dcy
	P0ABF P0AC1 P0ABF P0ABF	circuit continuity and communication check of shunt sensor signal line	general communication error (checksum, implausible messages, signal line broken wire, signal line short circuit to battery) OR signal line pin permanently on low level (short circuit to ground) OR supply line pin permanently on high level (broken wire, short circuit to battery) OR supply line pin permanently on low level (short circuit to ground)	= = = =	TRUE TRUE TRUE TRUE	- - - -	Ignition on or Battery is charging	= = 	TRUE TRUE 	- -	250	ms	continuous	1dcy
	P0AC0	signal range check high of shunt sensor signal	Sensor has reportet „saturation“ via LIN shunt sensor current signal	= >	TRUE 330	 A	Ignition on or Battery is charging	= = 	TRUE TRUE 	- -	250	ms	continuous	1dcy
	P0AC0	signal range check low of shunt sensor signal	Sensor has reportet „saturation“ via LIN shunt sensor current signal	= <	TRUE -330	 A	Ignition on or Battery is charging	= = 	TRUE TRUE 	- -	250	ms	continuous	1dcy
Battery engery control module / current monitoring	P0B13	The hall sensor measured current value is compared with the shunt sensor measured current value	absolute difference between Hall sensor measured current value and Shunt sensor measured current value	>	(a)*(b)+(c) with (a) Higher value of hall sensor measured current value and shunt sensor measured current value (b) Current Sensor Tolerance coefficient 0,0293 (c) Current Sensor Tolerance constant 4,5000017	A - A	contactors closed No pending or confirmed DFCs:	= =	TRUE see sheet inhibit table	- -	600	ms	continuous	1dcy
	P0B0F	The absolute current measured offset value of the hall sensor is compared with a calibrated threshold	absolute measured current value	>	1,9999981	A	(Ignition on or Battery is charging) contactors closed No pending or confirmed DFCs:	 = = = =	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	250	ms	continuous	1dcy
	P0AC0	The absolute current measured offset value of the shunt sensor is compared with a calibrated threshold	absolute measured current value	>	1,9999981	A	(Ignition on or Battery is charging) contactors closed No pending or confirmed DFCs:	 = = = =	 TRUE TRUE FALSE see sheet inhibit table	 - - - -	250	ms	continuous	1dcy

P0B0F	The absolute difference between the current value of the hall sensor, detected as implausible sensor, and the current value of the shunt sensor, not detected as implausible sensor, is compared with a threshold.	absolute difference between hall sensor current value and shunt sensor current value	>	10,0000024	A	contactors closed	=	TRUE	-	250	ms	continuous	1dcy
		difference between hall sensor current value and shunt sensor current value	>	0	A	(							
						difference between actual and stored high voltage value	>	0	V				
						difference between actual and stored hall sensor current value	<	0	A				
						)							
						or							
						(							
						difference between actual and stored high voltage value	<	0	V				
						difference between actual and stored hall sensor current value	>	0	A				
						)							
						No pending or confirmed DFCs:	=	see sheet inhibit table	-				
P0AC0	The absolute difference between the current value of the shunt sensor, detected as implausible sensor, and the current value of the hall sensor, not detected as implausible sensor, is compared with a threshold.	absolute difference between shunt sensor current value and hall sensor current value	>	10,0000024	A	contactors closed	=	TRUE	-	250	ms	continuous	1dcy
		difference between shunt sensor current value and hall sensor current value	>	0	A	(							
						difference between actual and stored high voltage value	>	0	V				
						difference between actual and stored shunt sensor current value	<	0	A				
						)							
						or							
						(							
						difference between actual and stored high voltage value	<	0	V				
						difference between actual and stored shunt sensor current value	>	0	A				
						)							
						No pending or confirmed DFCs:	=	see sheet inhibit table	-				
P0B0F	The absolute difference between the current value of the hall sensor, detected as implausible sensor, and the current value of the shunt sensor, not detected as implausible sensor, is compared with a threshold.	absolute difference between hall sensor current value and shunt sensor current value	>	10,0000024	A	contactors closed	=	TRUE	-	250	ms	continuous	1dcy
		difference between hall sensor current value and shunt sensor current value	<	0	A	(							
						difference between actual and stored high voltage value	>	0	V				
						difference between actual and stored hall sensor current value	<	0	A				
						)							
						or							
						(							
						difference between actual and stored high voltage value	<	0	V				
						difference between actual and stored hall sensor current value	>	0	A				
						)							
						No pending or confirmed DFCs:	=	see sheet inhibit table	-				
P0AC0	The absolute difference between the current value of the shunt sensor, detected as implausible sensor, and the current value of the hall sensor, not detected as implausible sensor, is compared with a threshold.	absolute difference between shunt sensor current value and hall sensor current value	>	10,0000024	A	contactors closed	=	TRUE	-	250	ms	continuous	1dcy
		difference between shunt sensor current value and hall sensor current value	<	0	A	(							

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							difference between actual and stored high voltage value	>	0	V				
							difference between actual and stored shunt sensor current value	<	0	A				
							)							
							or							
							(							
							difference between actual and stored high voltage value	<	0	V				
							difference between actual and stored shunt sensor current value	>	0	A				
							)							
							No pending or confirmed DFCs:	=	see sheet inhibit table	-				
	P0B0F	A minimal high voltage gradient is necessary to start the monitoring of the measured current value. The absolute current gradient of the hall sensor is compared to a threshold.	absolute difference between actual and last measured current value	<	0,0100017	A	contactors closed	=	TRUE	-	2500	ms	continuous	1dcy
							difference between actual and previous high voltage value	>	0,299988	V				
							No pending or confirmed DFCs:	=	see sheet inhibit table	-				
	P0AC0	A minimal high voltage gradient is necessary to start the monitoring of the measured current value. The absolute current gradient of the shunt sensor is compared to a threshold.	absolute difference between actual and last measured current value	<	0,0100017	A	contactors closed	=	TRUE	-	2500	ms	continuous	1dcy
							difference between actual and previous high voltage value	>	0,299988	V				
							No pending or confirmed DFCs:	=	see sheet inhibit table	-				
Battery engery control module / temperature monitoring	P0A7E	Batterie pack temperature check high	Temperature of one of the module temperature sensors	>	60	°C	(				15	sec	continuous	1dcy
							Ignition ON	=	TRUE					
							or							
							Battery is charging	=	TRUE	-				
							)							
							NO Pending or Confirmed DTCs:	=	see sheet inhibit tables					
	P0AFD	Batterie pack temperature check low	Temperature of one of the module temperature sensors	<	-33	°C	(				15	sec	continuous	1dcy
							Ignition ON	=	TRUE					
							or							
							Battery is charging	=	TRUE	-				
							)							
							NO Pending or Confirmed DTCs:	=	see sheet inhibit tables					
Battery engery control module / temperature monitoring	P0C43	The difference between inlet coolant temperature and average module temperature is compared with a threshold for detecting plausibility error	inlet coolant temperature - average module temperature	>	10	°C	Battery off time (Ignition off and Battery not charging)	>=	300	min	0.5	sec	once per dcy	2dcy
							No confirmed or pending DFCs	=	see sheet inhibit table	-				
	P0C43	The difference between inlet coolant temperature and average module temperature is compared with a threshold for detecting plausibility error	inlet coolant temperature - average module temperature	<	-10	°C	Battery off time (Ignition off and Battery not charging)	>=	300	min	0.5	sec	once per dcy	2dcy
							No confirmed or pending DFCs	=	see sheet inhibit table	-				
Battery engery control module / temperature monitoring	P0C45	Signal range check of inlet coolant temperature - out of range high	Inlet coolant temperature	>	85,5	GradC	(				1	sec	continuous	2dcy
							Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
	P0C44	Signal range check of inlet coolant temperature - out of range low	Inlet coolant temperature	<	-40	Grad C	(				1	sec	continuous	2dcy
							Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				

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							)							
							NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
Battery engery control module / temperature monitoring	P0514	Checks if more than one module temperature sensor is defect	More than ONE temperature sensor:				(				15	sec	continuous / once per dcy	1dcy
			module temperature	>	125	Grad C	Ignition ON	=	TRUE	-				
			OR				or							
			module temperature	<	-49	Grad C	Battery is charging	=	TRUE					
			OR				)							
			(				NO Pending or Confirmed DTCs:	=	see sheet inhibit tables	-				
			Battery off time	>=	120	min								
			(											
			temperature difference between sensor # and each neighbor	>	5	K								
			OR											
			temperature difference between each neighbor and sensor #	>	5	K								
			)											
			)											
Battery engery control module / thermal system management	P0CDF	circuit continuity - coolant radiator valve - Open Load	power stage output voltage	>	2,34	V	(				50	ms	continuous	2dcy
			power stage output voltage	<	3,74	V	Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							radiator valve commanded active	=	FALSE	-				
	P0E20	circuit continuity - coolant radiator valve - Over temperature	power stage temperature	>	170	deg C	(				50	ms	continuous	2dcy
							Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							radiator valve commanded active	=	FALSE	-				
	P0CE3	circuit continuity - coolant radiator valve - short circuit to battery	power stage output current	>	3	A	(				50	ms	continuous	2dcy
							Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							radiator valve commanded active	=	FALSE	-				
	P0CE2	circuit continuity - coolant radiator valve - short circuit to ground	power stage output voltage	<	1,44	V	(				50	ms	continuous	2dcy
							Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							radiator valve commanded active	=	FALSE	-				
	P0D1A	circuit continuity - coolant chiller valve - Open Load	power stage output voltage	>	2,34	V	(				50	ms	continuous	2dcy
			power stage output voltage	<	3,74	V	Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							chiller valve commanded active	=	FALSE	-				
	P0E21	circuit continuity - coolant chiller valve - Over temperature	power stage temperature	>	170	deg C	(				50	ms	continuous	2dcy
							Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							chiller valve commanded active	=	FALSE	-				
	P0D1E	circuit continuity - coolant chiller valve - short circuit to battery	power stage output current	>	3	A	(				50	ms	continuous	2dcy
							Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							chiller valve commanded active	=	FALSE	-				

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	P0D1D	circuit continuity - coolant chiller valve - short circuit to ground	power stage output voltage	< 	1,44 	V 	(Ignition ON or Battery is charging) chiller valve commanded active	 = = =	 TRUE TRUE FALSE	 - - -	50	ms	continuous	2dcy
Battery engery control module / thermal system management	P0C32	Temperature response - Monitoring of the chiller temperature response	difference between reference inlet temperature, which is determined the first time the chiller is commanded on, and measured inlet temperature for time	< >	2 180	°C sec	Coolant pump speed ratio for time Chiller commanded active NO Pending or Confirmed DTCs	>= >= = =	0,5 30 TRUE see sheet inhibit tables	0..1 sec - -	180	sec	once per dcy	2dcy
	P0E15	Temperature response - Monitoring of the heater temperature response	difference between measured inlet temperature and reference inlet temperature, which is determined the first time the heater is commanded on for time	< >	3 300	°C sec	Coolant pump speed ratio for time Heater commanded active NO Pending or Confirmed DTCs	>= >= = =	0,5 0 TRUE see sheet inhibit tables	0..1 sec - -	300	sec	once per dcy	2dcy
Battery engery control module / thermal system management	P0E15	Heater internal fault detection - current draw too high	Heater internal fault detection - current draw too high means Current draw	= >	TRUE 30	- A	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
	P0E15	Heater internal fault detection - leakage current	Heater internal fault detection - Leakage current	=	TRUE	-	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
	P0E15	Heater internal fault detection - IGBT1	Heater internal fault detection - IGBT1 defect	=	TRUE	-	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
	P0E15	Heater internal fault detection - IGBT2	Heater internal fault detection - IGBT2 defect	=	TRUE	-	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
	P0E15	Heater internal fault detection - IGBT3	Heater internal fault detection - IGBT3 defect	=	TRUE	-	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
	P0E15	Heater internal fault detection - heater defect	Heater internal fault detection - HV-PTC defect means Heater detects one or more of the following defects: - leakage current detected - internal current sensor defect - both temperature sensors defect - AD-converter defect - all heater circuits failed	=	TRUE	-	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
	P0E15	Heater internal fault detection - defect during heater power up	Heater internal fault detection - HV-PTC error means Heater detects one or more of the following defects during power up: - leakage current detected - internal current sensor defect - both temperature sensors defect - AD-converter defect - all heater circuits failed	=	TRUE	-	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
	P0E15	Heater internal fault detection - power degradation due to overtemperature	Heater internal fault detection - overtemperature	=	TRUE	-	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
	P0E15	Heater internal fault detection - internal error	Heater internal fault detection - internal error	=	TRUE	-	Ignition ON				200	ms	continuous	2dcy

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			means Heater detects one or more of the following defects during power up: - one or more temperature sensors defekt - AD-converter defect - EEPROM failure (checksum, read, write)				LIN communication in Normal mode	=	TRUE	-				
	P0E15	Heater internal fault detection - LIN communication error	Heater internal fault detection - LIN communication error	=	TRUE	-	Ignition ON LIN communication in Normal mode	 =	 TRUE	 -	200	ms	continuous	2dcy
Battery engery control module / thermal system management	P0C4A	The coolant pump detects an over current	(Length of diagnostic frame Length of diagnostic frame) for time	 > < >	 1110 1260 20000	 ms ms ms	(Ignition ON or Battery is charching) Pump switch ON means High pulse for time	 = = = >	 TRUE TRUE TRUE 3	 - - - ms	5	events	continuous	2dcy
	P0C4A	The colant pump detects a dry run	Length of diagnostic frame Length of diagnostic frame	> <	1430 1580	ms ms	(Ignition ON or Battery is charching) Pump switch ON means High pulse for time	 = = = >	 TRUE TRUE TRUE 3	 - - - ms	5	events	continuous	2dcy
	P0C4A	The coolant pump detects an over temperature	Length of diagnostic frame Length of diagnostic frame	> <	1590 1760	ms ms	(Ignition ON or Battery is charching) Pump switch ON means High pulse for time	 = = = >	 TRUE TRUE TRUE 3	 - - - ms	5	events	continuous	2dcy
	P0C47	No reception of PWM diagnostics from cooling pump	Idle time between two diagnostic frames Idle time between two diagnostic frames OR Length of diagnostic frame OR Time between 2 valid frames	< > > >	400 1100 1760 7500	ms ms ms ms	(Ignition ON or Battery is charching) Pump switch ON means High pulse for time	 = = = >	 TRUE TRUE TRUE 3	 - - - ms	5	events	continuous	2dcy
	P0C4B	circuit continuity - The pump relay power stage detects an Open Load.	power stage output voltage power stage output voltage	> <	2,6 3,4	V V	(Ignition ON or Battery is charging) Pump relay commanded active Battery voltage Battery voltage NO Pending or Confirmed DTCs	 = = = > < =	 TRUE TRUE FALSE 8760 16240 see sheet inhibit tables	 mV mV -	200	ms	continuous	2dcy
	P0C4B	circuit continuity - The pump relay power stage detects an Over Temperature on the digital output.	power stage temperature	>	170	°C	(Ignition ON or Battery is charging) Pump relay commanded active	 = = =	 TRUE TRUE FALSE		2000	ms	continuous	2dcy

						Battery voltage Battery voltage NO Pending or Confirmed DTCs	> < =	8760 16240 see sheet inhibit tables	mV mV -				
P0C4D	circuit continuity - The pump relay power stage detects a Short Circuit to Battery on the digital output.	power stage output current	>	4	A	(Ignition ON or Battery is charging) Pump relay commanded active Battery voltage Battery voltage NO Pending or Confirmed DTCs	 = = = > < =	 TRUE TRUE FALSE 8760 16240 see sheet inhibit tables	 mV mV -	500	ms	continuous	2dcy
P0C4C	circuit continuity - The pump relay power stage detects a Short Circuit to Ground on the digital output.	power stage output voltage	<	2	V	(Ignition ON or Battery is charging) Pump relay commanded active Battery voltage Battery voltage NO Pending or Confirmed DTCs	 = = = > < =	 TRUE TRUE FALSE 8760 16240 see sheet inhibit tables	 mV mV -	500	ms	continuous	2dcy
P0C47	circuit continuity - The power stage detects an Open Load on the PWM output	power stage output voltage power stage output voltage	> <	2,6 3,4	V V	(Ignition ON or Battery is charging) Pump commanded active Battery voltage Battery voltage NO Pending or Confirmed DTCs	 = = = > < =	 TRUE TRUE TRUE 8760 16240 see sheet inhibit tables	 mV mV -	200	ms	continuous	2dcy
P0E1F	circuit continuity - The power stage detects an Over Temperature on the PWM output	power stage temperature	>	170	°C	(Ignition ON or Battery is charging) Pump commanded active Battery voltage Battery voltage NO Pending or Confirmed DTCs	 = = = > < =	 TRUE TRUE TRUE 8760 16240 see sheet inhibit tables	 mV mV -	2000	ms	continuous	2dcy
P0C49	circuit continuity - The power stage detects a Short Circuit to Battery on the PWM output	power stage output current	>	4	A	(Ignition ON or Battery is charging) Pump commanded active Battery voltage Battery voltage NO Pending or Confirmed DTCs	 = = = > < =	 TRUE TRUE TRUE 8760 16240 see sheet inhibit tables	 mV mV -	200	ms	continuous	2dcy
P0C48	circuit continuity - The power stage detects a Short Circuit to Ground on the PWM output	power stage output voltage	<	2	V	(Ignition ON or Battery is charging) Pump commanded active Battery voltage Battery voltage NO Pending or Confirmed DTCs	 = = = > < =	 TRUE TRUE TRUE 8760 16240 see sheet inhibit tables	 mV mV -	2500	ms	continuous	2dcy

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Battery engery control module / contactor monitoring	P0AE0 P0ADC P0AE7	circuit continuity - high side powerstage - short circuit to battery by measuring output voltage	(low side power stage active hold voltage commanded on feedback voltage from high side power stage for contactor) OR (low side power stage active feedback voltage from high side power stage for contactor)	 = = > = >	 true true 3,9 true 3,5	 V V	(Condition ignition on OR Battery is charging) high side power stage active none of the following DTC's is set	 = = =	 true TRUE false	 - 	20	ms	continuous	1dcy
	P0ADF P0ADB P0AE6	circuit continuity - high side powerstage - short circuit to ground by measuring output voltage	(high side power stage active hold voltage commanded on low side power stage active feedback voltage from high side power stage for contactor) OR (high side power stage active hold voltage commanded on low side power stage active feedback voltage from high side power stage for contactor) OR (high side power stage active hold voltage commanded on low side power stage active feedback voltage from high side power stage for contactor)	 = = = < = = = < = = = <	 false true true 2,1 true false true 4,5 true false false 4,5	 V V V	(Condition ignition on OR Battery is charging) none of the following DTC's is set	 = =	 true TRUE	 - 	20	ms	continuous	1dcy
	P0ADE P0ADA P0AE5	circuit continuity - low side powerstage - over temperature of power stage measured internal in power stage	low side power stage temperature	>	170	°C	(Condition ignition on OR Battery is charging) low side power stage active high side power stage active none of the following DTC's is set	 = = = =	 true TRUE true true	 - 	20	ms	continuous	1dcy
	P0AE0 P0ADC P0AE7	circuit continuity - low side powerstage - short circuit to battery by measuring output current internal in power stage	low side power stage output current	>	4	A	(Condition ignition on OR Battery is charging) low side power stage active high side power stage active none of the following DTC's is set	 = = = =	 true TRUE true true	 - 	20	ms	continuous	1dcy
	P0ADF P0ADB P0AE6	circuit continuity - low side powerstage - short circuit to ground by measuring output voltage internal in power stage	low side power stage output voltage	<	2	V	(Condition ignition on OR Battery is charging) low side power stage active high side power stage active none of the following DTC's is set	 = = = =	 true TRUE false true	 - 	20	ms	continuous	1dcy
	P0ADD P0AD9	circuit continuity- low side powerstage - open load by measuring output voltage internal in power stage	low side power stage output voltage low side power stage output voltage	> <	0,8 3,5	V V	(Condition ignition on	 =	 true	 	20	ms	continuous	1dcy

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	P0AE4						OR Battery is charging) power stage active high side power stage active none of the following DTC's is set	= = = 	TRUE false true 	- 				
Battery engery control module / contactor monitoring	P0AA5	Voltage monitoring at different switching states / negative contactor stuck open	Absolute voltage of negtive link voltage contact to high voltage ground	>=	4	V	(Ignition on or Battery is charging) Negative contactor commanded closed) ((Positive contactor commanded closed Precharge contactor commanded closed) OR (Positive contactor commanded closed Precharge contactor commanded closed Absolute difference between battery pack voltage and link voltage for time) OR (Positive contactor commanded closed Precharge contactor commanded closed))	 = = = = = = > > = =	 TRUE TRUE FALSE FALSE FALSE TRUE 10 1 TRUE FALSE	 - - V sec 	0,1	sec	continuous	1dcy
	P0AA4	Voltage monitoring at different switching states / negative contactor stuck closed	If link voltage close switch S2 and then Absolute voltage of negative link voltage contact to high voltage ground If link voltage Absolute voltage of negative link voltage contact to high voltage ground	<= < > <	24 4 24 4	V V V V	(Ignition on or Battery is charging) Negative contactor commanded closed Positive contactor commanded closed Precharge contactor commanded closed	 = = = =	 TRUE TRUE FALSE FALSE FALSE	 - - 	0,13	sec	once per dcy	1dcy
	P0AA2	Voltage monitoring at different switching states / positive contactor stuck open	Absolut diiference between the voltage of positive link voltage contact to high voltage ground and the battery pack voltage	>=	10	V	(Ignition on or Battery is charging) Negative contactor commanded closed Positive contactor commanded closed Precharge contactor commanded closed	 = = = =	 TRUE TRUE TRUE FALSE	 - - 	0,1	sec	continuous	1dcy
	P0AE3	Voltage monitoring at different switching states / precharge contactor stuck open	Absolut diiference between the voltage of positive link voltage contact to high voltage ground and the battery pack voltage	>=	10	V	(Ignition on	 =	 TRUE	 -	0,1	sec	once per dcy	1dcy

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						or								
						Battery is charging	=	TRUE	-					
						)								
						Negative contactor commanded closed	=	TRUE						
						Positive contactor commanded closed	=	FALSE						
						Precharge contactor commanded closed	=	TRUE						
						Absolute difference between battery pack voltage and link voltage	>	10	V					
	P0AA1	Voltage monitoring at different switching states / positive or precharge contactor stuck closed	Absolute diiference between the voltage of positive link voltage contact to high voltage ground and the battery pack voltage	<	10	V	(				0,13	sec	once per dcy	1dcy
							Ignition on	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							Negative contactor commanded closed	=	FALSE					
							Positive contactor commanded closed	=	FALSE					
							Precharge contactor commanded closed	=	FALSE					
							Battery pack voltage	>	20	V				
			Battery pack current	>	5,0000012	A	(							
							Ignition on	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
							Negative contactor commanded closed	=	TRUE					
							Positive contactor commanded closed	=	FALSE					
							Precharge contactor commanded closed	=	FALSE					
			If link voltage	<=	24	V	(							
			for time	>=	0,2	sec	Ignition on	=	TRUE	-				
			close switch S2 and then				or							
			Absolute diiference between the voltage of positive link voltage contact to high voltage ground and the battery pack voltage	<	10	V	Battery is charging	=	TRUE	-				
			for time	>=	0,13	sec	)							
			OR				Negative contactor commanded closed	=	FALSE					
			If link voltage	>	24	V	Positive contactor commanded closed	=	FALSE					
			for time	>=	0,2	sec	Precharge contactor commanded closed	=	FALSE					
			Absolute diiference between the voltage of positive link voltage contact to high voltage ground and the battery pack voltage	<	10	V								
			for time	>=	0,13	sec								
Battery engery control module / contactor monitoring	P0C77	rationality / gradient of link voltage monitoring	Link voltage reached too fast	=	TRUE		(				0.5	sec	once per dc	1dcy
			means				Ignition on	=	TRUE	-				
			(Absolute differcence between link voltage and battery pack voltage	<=	10	V	or							
			within time after precharge contactor is closed, depending on link voltage)	<	0.01 to 0.05	sec	Battery is charging	=	TRUE	-				
							)							
							link voltage	<	87.5	V				
							negative contactor closed	=	TRUE					
							precharge contactor closed	=	TRUE					
	P0C78	rationality / gradient of link voltage monitoring	Link voltage not reached although current flows	=	TRUE		(				0.1	sec	once per dc	1dcy
			means				Ignition on	=	TRUE	-				
			(Absolute differcence between link voltage and battery pack voltage	>	10	V	or							
			Absolute of battery pack current	>	2,9999971	A	Battery is charging	=	TRUE	-				
			for time after precharge contactor is closed)	>=	0,1	sec	)							

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							negative contactor closed precharge contactor closed	= =	TRUE TRUE					
Battery engery control module / battery system monitoring	P0A7D	Range check - Monitoring the "Status Of Charge" of the battery pack	Charge of lowest cell	<	2	%	(Ignition ON or Battery is charging) NO pending or confirmed DFC	 = = =	 TRUE TRUE see sheet inhibit tables		500	ms	continuous	1dcy
Battery engery control module / battery system monitoring	P0A80	Range check - Monitoring the state of health (based on internal resistance) of the battery pack cells	State of health array of cell with highest internal resistance	>	197	%	absolute value of high-pass filtered pack current accumulated time of state of health filter (based on internal resistance) active NO pending or confirmed DFC	> > =	10 60 see sheet inhibit tables	A sec	0.5	sec	once per dcy	2dcy
Battery engery control module / battery system monitoring	P0AA4	The voltage on the negative line of the high-voltage relay is compared with a threshold for detecting a stuck at closed contact.	voltage of high-voltage relay on negative line	<	4	V	(Condition ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	500	ms	continuous	1dcy
	P0A1F	The diagnosis for detecting a stuck at closed contact could not be performed.	number of events of opening the contactor without performing a stuck closed check	>	0	-	Ignition on or Battery is charging	= =	TRUE TRUE	- -	500	ms	once per dcy	1dcy
	P0D34	The time without correct received battery current signal is compared with a threshold for detecting current acquisition error.	No correct battery current signal received for time	 >	 100	 ms	(Condition ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	500	ms	continuous	1dcy
	P0AF8	The time without correct received cell voltage signal is compared with a threshold for detecting cell voltage acquisition error.	No correct cell voltage signal received for time	 >	 100	 ms	(Condition ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	500	ms	continuous	1dcy
	P0514	The time without correct received battery temperature signal is compared with a threshold for detecting temperature acquisition error.	No correct battery temperature signal received for time	 >	 50	 ms	(Condition ignition on or Battery is charging) No confirmed or pending DFCs:	 = = =	 TRUE TRUE see sheet inhibit tables	 - - -	500	ms	continuous	1dcy
	P0D34	Maximal and minimal current sensors values are compared with calculated threshold for detecting over- or under-current error.	(Maximal current sensors value Current threshold depending on the **maximum** measured module temperature and (b)	 > 	 Min(a,b) with (a) 1.094 to 200 	 A 	(Condition ignition on or Battery is charging)	 = =	 TRUE TRUE	 - -	500	ms	continuous	1dcy

		Current threshold depending on the **minimum** measured module temperature		1.094 to 200	A	No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
		)											
		for number of events	>	300	events								
		or											
		(											
		Minimal current sensors value	<	Max(a,b) with (a)									
		Current threshold depending on the **maximum** measured module temperature		-320 to -1.094	A								
				and (b)									
		Current threshold depending on the **minimum** measured module temperature		-320 to -1.094	A								
		)											
		for number of events	>	300	events								
P0D34	The difference between two current sensors values is compared with a calculated threshold for detecting plausibility error	Absolute difference between two current sensors	>	(a)*(b)+(c)		(				500	ms	continuous	1dcy
		for number of events	>	1000	events	Condition ignition on	=	TRUE	-				
		with				or							
		(a)				Battery is charging	=	TRUE	-				
		maximal value between two current sensors	=	maximal value between two current sensors		)							
		(b)		and		No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
		tolerance coefficient	=	0,0313	-								
		(c)		and									
		tolerance constant	=	4,531	A								
P0DAB	Each cell voltage channel is testing by an Open Line Detection (OLD) measurement and has to provide a correct response within a time for detecting broken line on cell voltage measurement line.	(				Postdrive active	=	TRUE		500	ms	continuous	1dcy
		ratio of OLD voltage to normal cell voltage	<	-0,400024	-	High voltage contactors open	=	TRUE	-				
		or				No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
		ratio of OLD voltage to normal cell voltage	>	-0,150024	-								
		or											
		number of good test results per channel	<	2	counts								
		)											
		for number of events	>	5	events								
P0AFD	The lowest value of all battery temperature sensors is compared with a threshold for detecting under-temperature error.	Lowest battery temperature module	<	-38	Grad C	(				500	ms	continuous	1dcy
		for number of events	>	250		Condition ignition on	=	TRUE	-				
						or							
						Battery is charging	=	TRUE	-				
						)							
						No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
P0A7E	The highest value of all battery temperature sensors is compared with a threshold for detecting over-temperature error.	highest battery temperature value	>	65	Grad C	(				500	ms	continuous	1dcy
		for number of events	>	50	events	Condition ignition on	=	TRUE	-				
						or							
						Battery is charging	=	TRUE	-				
						)							
						No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
P0514	The number of implausible temperature pairs is compared with a threshold for detecting plausibility error	Number of implausible temperature sensor pairs	>	3	-	(				500	ms	continuous	1dcy
		with				Condition ignition on	=	TRUE	-				
		a difference between temperature values	>	15	Grad C	or							
		for number of events	>	100	events	Battery is charging	=	TRUE	-				

						)							
						No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
P0AF8	The difference between battery pack voltage value and sum of cell voltage value is compared with a calculated threshold for detecting battery voltage validity error	difference between battery pack voltage value and sum of cell voltage value	>	(a)*(b)+(c)		(				500	ms	continuous	1dcy
		with (a)				Condition ignition on	=	TRUE	-				
		Measured battery pack voltage	=	Measured battery pack voltage		or							
		(b)				Battery is charging	=	TRUE	-				
		relative tolerance coefficient	=	0,0508	-	)							
		and (c)				No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
		absolute tolerance offset	=	5,156	V								
		for number of events	>	150	events								
P0AF8	All cell voltages are compared with lower and higher threshold for detecting cell voltage error.	(				(				500	ms	continuous	1dcy
		Cell voltage	<	2,099976 to 2,799927	V	Condition ignition on	=	TRUE	-				
		or				or							
		Cell voltage	>	4.15	V	Battery is charging	=	TRUE	-				
		)				)							
		for number of events	>	155	events	No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
P0AF8	The absolute difference between calculated module voltage value and summarized cell voltages value of the module is compared with a threshold for detecting module voltage signal error.	Absolute difference between calculated module voltage value and summarized cell voltages value of the module	>	0,1016	V	(				500	ms	continuous	1dcy
		for number of events	>	100	events	Condition ignition on	=	TRUE	-				
						or							
						Battery is charging	=	TRUE	-				
						)							
						No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
P0AF8	the voltage ampitude, alive counter and source of test-signal channel are monitored for detecting any failure in the measurement of the cell voltages.	Case 1: Amplitude check				(				500	ms	continuous	1dcy
		(				Condition ignition on	=	TRUE	-				
		absolute difference between measured test signal voltage value and defined upper test voltage	>	0,055054	V	or							
		or				Battery is charging	=	TRUE	-				
		absolute difference between measured test signal voltage value and defined lower test voltage	>	0,055054	V	)							
		)				No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
		for number of events	>	50	events								
		or											
		Case 2: Alive check											
		(											
		actual and last measured test signal voltage values are equal (e. g. stuck at upper or lower test voltage)	=	TRUE									
		or											
		measured test signal voltage detected as out of range (see Case 1)	=	TRUE									
		)											
		for number of events	>	100	events								
		or											
		Case 3: Source check											
		(											
		note: One test signal is disabled											
		absolute difference between measured disabled test signal voltage value and defined lower test voltage	>	0,055054	V								
		for number of events	>	60	events								
		)											
		or											
		(											

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			note: All test signals except one are disabled											
			actual and last voltage values of measured enabled test signal channel are equal (e. g. stuck at upper or lower test voltage)	=	TRUE	-								
			for number of events	>	20	events								
			)											
			for number of events	>	1	events								
Battery engery control module / battery system monitoring	P0658	Signal range check - Monitoring of the supplying voltage of the high voltage relais	Raw battery voltage	<	6	V	12V power supplied	=	TRUE		0	sec	continuous	1dcy
							NO Pending or Confirmed DTCs	=	see sheet inhibit tables	-				
Battery engery control module / battery system monitoring	P0A0A	Interlock circuit electrical errors, open load, SCB, SCG	Voltage difference between interlock output and interlock input pins (open load)	>	3480	mV	(				500	ms	continous	1dcy
			OR				Condition ignition on	=	TRUE	-				
			Voltage at interlock input pin (short circuit ground)	<	360	mV	or							
			OR				Battery is charging	=	TRUE					
			Absolute voltage difference between interlock output pin and battery voltage (short circuit battery)	<	600	mV	)							
			OR				Vehicle speed	<	1,864	mph				
			(				or							
			Voltage at interlock input pin	>	360	mV	System is in Afterrun	=	TRUE	-				
			Voltage at interlock input pin	<	400	mV								
			OR											
			Voltage at interlock input pin (HW error)	>	3000	mV								
			)											
Battery engery control module / battery system monitoring	P0CA6	the charging current is compared with a temperature depending threshold	charging current	>	0 to 180	A	(				500	ms	continuous	2dcy
			Note: Threshold depends on battery pack temperature				Condition ignition on	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
	P0CA6	the ratio of the RMS current value to a expected current is compared with threshold for detecting excessive current by charging	ratio of RMS charging current to expected charging current	>	1		(				500	ms	continuous	2dcy
							Condition ignition on	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
	P0CA7	the discharging current is compared with a temperature depending threshold	discharging current	>	0 to 309	A	(				500	ms	continuous	2dcy
			Note: Threshold depends on battery pack temperature				Condition ignition on	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
	P0CA7	the ratio of the RMS current value to a expected current is compared with threshold for detecting excessive current by discharging	ratio of RMS discharging current to expected discharging current	>	1		(				500	ms	continuous	2dcy
							Condition ignition on	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
Battery engery control module / battery system monitoring	P0E2E	The on board charger fuse voltage is compared with the voltage at the positive link of the battery pack for detecting defect fuse.	absolute difference between fuse voltage and positive link voltage	>	50	V	Condition ignition on	=	TRUE	-	1000	ms	continuous	2dcy
							or							
							Battery is charging	=	TRUE	-				
							No confirmed or pending DFCs:	=	see sheet inhibit table	-				

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Battery engery control module / battery engery control module monitoring	P0658	Monitoring of battery voltage during initialisation	Battery voltage	<	6500	mV	Control unit is in initialisation state	=	TRUE		500	ms	once per dcy	2dcy
	P0658	Monitoring of battery voltage	Battery voltage	<	6500	mV	Ignition on or Battery is charging	= =	TRUE TRUE		500	ms	continuous	2dcy
Battery engery control module / battery engery control module monitoring	P06A6	Out Of Range low - Voltage of "5V sensor supply1" too low	Voltage of "5V supply"	<	4,8	V	Ignition ON or Battery is charging	= =	TRUE TRUE	- -	500	ms	continuous	2dcy
	P06A6	Out Of Range high - Voltage of "5V sensor supply1" too high	Voltage of "5V supply"	>	5,2	V	Ignition ON or Battery is charging	= =	TRUE TRUE	- -	500	ms	continuous	2dcy
	P06A7	Out Of Range - Voltage of "5V sensor supply2" out of range	Voltage of "5V supply" OR Voltage of "5V supply"	< >	4,8 5,2	V V	Ignition ON or Battery is charging	= =	TRUE TRUE	- -	500	ms	continuous	2dcy
Battery engery control module / battery engery control module monitoring	P0A1F	the query-response communication between the function controller and the monitoring module is monitored	monitoring module is diagnosed as defective	=	TRUE	-	(Ignition on or Battery is charging)	 = =	 TRUE TRUE	 - -	5	event	continuous	1dcy
Battery engery control module / battery engery control module monitoring	P0A1F	Testing of the shut-down path of the monitoring module	powerstage shut-off test error detected	=	TRUE		(Condition ignition on or Battery is charging)	 = =	 TRUE TRUE	 - -	3	event	once per dcy	1dcy
Battery engery control module / battery engery control module monitoring	P0A1F P0A1F P0A1F	The microcontroller communicates with the power stage via Serial Peripheral Interface (SPI). In case of a corrupted communication an IC-internal fault message is activated.	IC-internal fault message: 'SPI error' active	=	true		(Condition ignition on or Battery is charging)	 = =	 TRUE TRUE	 - -	500	ms	continuous	2dcy 2dcy 2dcy
Battery engery control module / battery engery control module monitoring	P0A8E	The battery voltage is compared with an upper voltage threshold	Battery voltage	>	16240	mV	(Ignition ON or Battery is charging)	 = =	 TRUE TRUE	 - -	60000	ms	continuous	2dcy
	P0A8D	The battery voltage is compared with a lower voltage threshold	Battery voltage	<	8760	mV	(Ignition ON or Battery is charging)	 = =	 TRUE TRUE	 - -	2000	ms	continuous	2dcy
	P0A8D	The AD converter value of battery voltage is compared with a lower voltage threshold.	Raw value of Battery voltage which is equivalent to Battery voltage	< <	500 2,87	mV V	Ignition on or Battery is charging	= =	TRUE TRUE	- -	50	ms	continuous	1 dcy
	P0A8E	The AD converter value of battery voltage is compared with an upper voltage threshold.	Raw value of Battery voltage which is equivalent to Battery voltage	> >	3200 18,3	mV V	Ignition on or Battery is charging	= =	TRUE TRUE	- -	50	ms	continuous	1 dcy

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Battery engery control module / battery engery control module monitoring	P262B	Comparison of stop counter time with the system time	ratio of stop counter time to system time since begin of diagnosis	>	1,095	-	(				8	sec	continuous	2dcy
			or				Ignition ON	=	TRUE	-				
			ratio of stop counter time to system time since begin of diagnosis	<	0,905	-	or							
							Battery is charging	=	TRUE	-				
							)							
	P262B	Monitoring of the communication between the microcontroller and the real time clock	communication between the microcontroller and the real time clock is corrupted	=	true	-	(				0,5	sec	continuous	2dcy
							Ignition ON	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
							)							
Battery engery control module / battery engery control module monitoring	P262B	Monitoring of the real time clock - real time clock failed to wake up the BECM	difference of wake up time set in last BECM active phase and actual BECM off time from real time clock	>	120	s	BECM state	=	wake up	-	0,5	s	once per dcy	2dcy
Battery engery control module / battery engery control module monitoring	P0604	Control unit internal eeprom check by monitoring response from eeprom	Sector erase process cannot be performed	=	TRUE	-	Ignition ON	=	TRUE	-	0.5	sec	continuous	1dcy
			or				or							
			Change of sector access cannot be successfully completed	=	TRUE	-	Predrive active	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
	P0604	Control unit internal eeprom check by monitoring response from eeprom	One data block can not be read	=	TRUE	-	Ignition ON	=	TRUE	-	3	events	continuous	1dcy
			or				or							
			Read order of data blocks is not successfully accomplished	=	TRUE	-	Predrive active	=	TRUE	-				
							or							
							Postdrive active	=	TRUE	-				
							or							
							Battery is charging							
	P0604	Control unit internal eeprom check by monitoring response from eeprom	One data block can not be written	=	TRUE	-	Ignition ON	=	TRUE	-	3	events	continuous	1dcy
							or							
							Predrive active	=	TRUE	-				
							or							
							Postdrive active	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
Battery engery control module / battery engery control module monitoring	P0606	reset monitoring	internal logic				Ignition ON	=	TRUE	-	0,5	s	continuous	2dcy
							or							
							Predrive active	=	TRUE	-				
							or							
							Postdrive active	=	TRUE	-				
							or							
							Battery is charging	=	TRUE	-				
Battery engery control module / battery engery control module monitoring	P0A1F	Internal component monitoring - nano controller and CSC restart	nanocontroller start failed	=	TRUE		(				500	ms	continuous	1dcy
			OR				Ignition ON	=	TRUE	-				
			CSCs start failed	=	TRUE		or							
							Battery is charging	=	TRUE	-				
							)							
							Battery voltage	>	6500	mV				
							Battery Management System in RUN mode	=	TRUE	-				
							No confirmed or pending DFCs:	=	see sheet inhibit tables	-				
Battery engery control module / communication monitoring	U0001	BusOff error - CAN A (Drive-CAN)	Number of Bus off CAN A restart	>	2		Ignition ON	=	TRUE		0	ms	continuous	1dcy
							or							

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							Baterry is charging	=	TRUE					
	U0028	BusOff error - CAN B (Hybrid-CAN)	Number of Bus off CAN B restart	>	2		Igntion ON or Baterry is charging	= =	TRUE TRUE		0	ms	continuous	1dcy
	U0074	BusOff error - Internal Bus	Number of Bus off Internal Bus restart with interval restart time	> =	254 10000	 ms	Igntion ON or Baterry is charging	= =	TRUE TRUE		500	ms	continuous	1dcy
	P0A1F	CAN hardware error	CAN Controller 's RAM error detected	=	TRUE		Battery voltage Battery voltage (BECM Initialization tasks in progress for time)	> < = >	9000 16500 TRUE 2000	mV mV ms	500	ms	continuous	1dcy
Battery engery control module / communication monitoring	U0002	Vehicle CAN bus communiation error (CAN A)	Time between 2 frames on the CAN A bus	>	200	ms	(Battery voltage Battery voltage) for time (Ignition ON OR Battery is charging) for time NO Pending or Confirmed DTCs:	 > < > = = > =	 9000 16500 2000 TRUE TRUE 2000 see sheet inhibit tables	 mV mV ms ms -	500	ms	continuous	1dcy
	U0029	Hybrid CAN bus communiation error (CAN B)	Time between 2 frames on the CAN B bus	>	200	ms	(Battery voltage Battery voltage) for time (Ignition ON OR Battery is charging) for time NO Pending or Confirmed DTCs:	 > < > = = > =	 9000 16500 2000 TRUE TRUE 2000 see sheet inhibit tables	 mV mV ms ms -	500	ms	continuous	1dcy
Battery engery control module / communication monitoring	U0401	Monitoring of the Vehicle CAN (CAN A) - Communication of "angle of acceleration pedal & engine speed" - counter error Message not received in expected order	Message counter halted	=	TRUE		Ignition ON or Battery is charging	= =	TRUE TRUE		40	ms	continuous	2dcy
	U0401	Monitoring of the vehicle CAN (CAN A) - Communication of "hybrid status" - counter error Message not received in expected order	Message counter halted	=	TRUE		Ignition ON or Battery is charging	= =	TRUE TRUE		80	ms	continuous	2dcy
	U0401	Monitoring of the Hybrid CAN (CAN B) - Communication of "Hybrid charging status" - counter error Message not received in expected order	Message counter halted	=	TRUE		Ignition ON or Battery is charging	= =	TRUE TRUE		400	ms	continuous	1dcy
	U0415	Monitoring of the vehicle CAN (CAN A) - Communication of "Porsche Management Stability unit" - counter error Message not received in expected order	Message counter halted	=	TRUE		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	80	ms	continuous	2dcy

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U0401	Monitoring of the Vehicle CAN (CAN A) - Communication of "angle of acceleration pedal & engine speed" - check sum error Contents of message corrupt	Checksum of message incorrect	=	TRUE		Ignition ON or Battery is charging	= =	TRUE TRUE		30	ms	continuous	2dcy
U0401	Monitoring of the Hybrid CAN (CAN B) - Communication of "Hybrid charging status" - check sum error Contents of message corrupt	Checksum of message incorrect	=	TRUE		Ignition ON or Battery is charging	= =	TRUE TRUE		30	ms	continuous	1dcy
U0415	Monitoring of the vehicle CAN (CAN A) - Communication of "Porsche Management Stability unit" - check sum error Contents of message corrupt	Checksum of message incorrect	=	TRUE		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	- 	60	ms	continuous	2dcy
U0401	Monitoring of the Vehicle CAN (CAN A) - Communication of "angle of acceleration pedal & engine speed" - length error Message not received with expected length	Message length Message length	< >	8 8		Ignition ON or Battery is charging	= =	TRUE TRUE		500	ms	continuous	2dcy
U0401	Monitoring of the vehicle CAN (CAN A) - Communication of "diagnostic activation" - length error Message not received with expected length	Message length Message length	< >	8 8		Ignition ON or Battery is charging	= =	TRUE TRUE		2000	ms	continuous	2dcy
U0401	Monitoring of the vehicle CAN (CAN A) - Communication of "hybrid status" - length error Message not received with expected length	Message length Message length	< >	8 8		Ignition ON or Battery is charging	= =	TRUE TRUE		1000	ms	continuous	2dcy
U0401	Monitoring of the vehicle CAN (CAN A) - Communication of "Raw engine speed" - length error Message not received with expected length	Message length Message length	< >	8 8		Ignition ON or Battery is charging	= =	TRUE TRUE		500	ms	continuous	2dcy
U0401	Monitoring of the Hybrid CAN (CAN B) - Communication of "Hybrid charging status" - length error Message not received with expected length	Message length Message length	< >	8 8		Ignition ON or Battery is charging	= =	TRUE TRUE		1000	ms	continuous	1dcy
U0401	Monitoring of the vehicle CAN (CAN A) - Communication of "diagnostic condition" - length error Message not received with expected length	Message length Message length	< >	8 8		Ignition ON or Battery is charging	= =	TRUE TRUE		1000	ms	continuous	1dcy
U0447	Monitoring of the Vehicle CAN (CAN A) - Communication of "internal on board information" - length error Message not received with expected length	Message length Message length	< >	8 8		Ignition ON or Battery is charging	= =	TRUE TRUE		2000	ms	continuous	2dcy
U0447	Monitoring of the Vehicle CAN (CAN A) - Communication of "fan activation" - length error Message not received with expected length	Message length Message length	< >	8 8		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	1000	ms	continuous	2dcy
U0415	Monitoring of the vehicle CAN (CAN A) - Communication of "Porsche Management Stability unit" - length error Message not received with expected length	Message length Message length	< >	8 8		(Ignition ON	 =	 TRUE		1000	ms	continuous	2dcy

						or Battery is charging) NO Pending or Confirmed DTCs	= = =	TRUE see sheet inhibit tables	-				
U049C	Monitoring of the vehicle CAN (CAN A) - Communication of "charger voltage measurement" - length error Message not received with expected length	Message length Message length	< >	8 8		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	5000	ms	continuous	2dcy
U049C	Monitoring of the vehicle CAN (CAN A) - Communication of "calibration number for OBD tester" - length error Message not received with expected length	Message length Message length	< >	8 8		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	4000	ms	continuous	2dcy
U049C	Monitoring of the vehicle CAN (CAN A) - Communication of "On Board Charger received signals" - length error Message not received with expected length	Message length Message length	< >	8 8		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	5000	ms	continuous	2dcy
U0447	Monitoring of the vehicle CAN (CAN A) - Communication of "vehicle type information" - length error Message not received with expected length	Message length Message length	< >	4 4		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	2000	ms	continuous	2dcy
U0100	Monitoring of the Vehicle CAN (CAN A) - Communication of "angle of acceleration pedal & engine speed" - time out error No message received within expected time	No message received	=	TRUE		Ignition ON or Battery is charging	= = 	TRUE TRUE 		500	ms	continuous	2dcy
U0100	Monitoring of the vehicle CAN (CAN A) - Communication of "diagnostic activation" - time out error No message received within expected time	No message received	=	TRUE		Ignition ON or Battery is charging	= = 	TRUE TRUE 		500	ms	continuous	2dcy
U0100	Monitoring of the vehicle CAN (CAN A) - Communication of "hybrid status" - time out error No message received within expected time	No message received	=	TRUE		Ignition ON or Battery is charging	= = 	TRUE TRUE 		500	ms	continuous	2dcy
U0100	Monitoring of the vehicle CAN (CAN A) - Communication of "Raw engine speed" - time out error No message received within expected time	No message received	=	TRUE		Ignition ON or Battery is charging	= = 	TRUE TRUE 		500	ms	continuous	2dcy
U0100	Monitoring of the Hybrid CAN (CAN B) - Communication of "Hybrid charging status" - time out error No message received within expected time	No message received	=	TRUE		Ignition ON or Battery is charging	= = 	TRUE TRUE 		1000	ms	continuous	1dcy
U0100	Monitoring of the vehicle CAN (CAN A) - Communication of "diagnostic condition" - time out error No message received within expected time	No message received	=	TRUE		Ignition ON or Battery is charging	= = 	TRUE TRUE 		1000	ms	continuous	1dcy

	U0146	Monitoring of the Vehicle CAN (CAN A) - Communication of "internal on board information" - time out error No message received within expected time	No message received	=	TRUE		Ignition ON or Battery is charging	= =	TRUE TRUE		5000	ms	continuous	2dcy
	U0146	Monitoring of the Vehicle CAN (CAN A) - Communication of "fan activation" - time out error No message received within expected time	No message received	=	TRUE		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	1000	ms	continuous	2dcy
	U0121	Monitoring of the vehicle CAN (CAN A) - Communication of "Porsche Management Stability unit" - time out error No message received within expected time	No message received	=	TRUE		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	500	ms	continuous	2dcy
	U019B	Monitoring of the vehicle CAN (CAN A) - Communication of "charger voltage measurement" - time out error No message received within expected time	No message received	=	TRUE		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	5000	ms	continuous	2dcy
	U019B	Monitoring of the vehicle CAN (CAN A) - Communication of "calibration number for OBD tester" - time out error No message received within expected time	No message received	=	TRUE		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	5000	ms	continuous	2dcy
	U019B	Monitoring of the vehicle CAN (CAN A) - Communication of "On Board Charger received signals" - time out error No message received within expected time	No message received	=	TRUE		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	5000	ms	continuous	2dcy
	U0146	Monitoring of the vehicle CAN (CAN A) - Communication of "vehicle type information" - time out error No message received within expected time	No message received	=	TRUE		(Ignition ON or Battery is charging) NO Pending or Confirmed DTCs	 = = =	 TRUE TRUE see sheet inhibit tables	 -	5000	ms	continuous	2dcy
Battery engery control module / communication monitoring	U0073	The frame transmission on the LIN Bus is monitored for detecting circuit continuity error	counter of circuit continuity error on the LIN Bus	>=	5	count	(Condition ignition on or Battery is charging) normal state of the INM (Interconnect Network Monitoring) LIN Bus monitoring is enabled	 = = = =	 TRUE TRUE TRUE TRUE	 - - - -	0.5	sec	continuous	2dcy
	U0073	The reception of frames on the LIN Bus is monitored for detecting node1 (PTC heater) absent	counter of node1 absent error on the LIN Bus	>=	80	-	Condition ignition on	=	TRUE	-	500	s	continuous	2 dcy

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							and normal state of the INM (Interconnect Network Monitoring) and LIN Bus monitoring is enabled	= =	TRUE TRUE	- -				
Battery engery control module / communication monitoring	U01A9	The communication protocol between the nanocontroller and the microcontroller is monitored for detecting communication error	Path 1: message frame timeout or Path 2: same frame is received one after the other or Path 3: message identifier incorrect or Path 4: message length incorrect	= = = =	TRUE TRUE TRUE TRUE	- - - -	(Ignition on or Battery is charging)	= =	TRUE TRUE	- -	5	ms	continuous	1dcy
Battery engery control module / coding monitoring	U0300	consistency check of calibrated HW-version number and coded HW-version	calibrated HW-version number equals the coded HW-version	=	FALSE	-	Ignition on or Battery is charging	= =	TRUE TRUE	- -	0,5	s	once per dcy	2dcy
Battery engery control module / coding monitoring	U0300	compatibility check of BECM software and software of the cell controllers	calibrated cell controller SW-version numbers are equal to the SW-versions of the cell controllers	=	FALSE	-	Ignition on or Battery is charging	= =	TRUE TRUE	- -	0,5	s	once per dcy	2dcy
	U0300	compatibility check of BECM software and software of the nano controller	calibrated nano controller SW-version number is equal to the SW-version of the nano controller	=	FALSE	-	Ignition on or Battery is charging	= =	TRUE TRUE	- -	0,5	s	once per dcy	2dcy
Battery engery control module / coding monitoring	P064F	Variant coding check	variant coding can not be read from EEPROM or variant coding is implausible or checksum of the variant coding is incorrect	= = =	TRUE TRUE TRUE	- - -	(Ignition on or Battery is charging)	= =	TRUE TRUE	- -	500	ms	continuous	1dcy
Battery engery control module / coding monitoring	P0610	Variant coding plausibility between ECM and BECM	variant coding received from ECM via CAN does not match with the variant coding stored in the EEPROM of the BECM	=	TRUE	-	(Ignition on or Battery is charging)	= =	TRUE TRUE	- -	50	ms	continuous	1dcy

Component / System	Fault Code	Monitor Strategy Description	Malfunction Criteria	Threshold Value		Secondary Parameters	Enable Condition		Monitoring Time Length	MIL Illum.
OBC - Battery Charger Control Module Processor										
HV-DC-Voltage Sensors	P0E5E	**Over HV-DC-Voltage**	HV-DC-Voltage	> 514,9	[V]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	2 DCY
		OR								
		Under HV-DC-Voltage	HV-DC-Voltage	< -0,6	[V]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	
		OR								
		Implausible HV_DC-Voltage Value	absolute value of sensor difference	> 5	[V]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	
Exceedance HV-DC-Voltage	P0E5E	**Exceedance maximum HV-DC-Voltage**	HV-DC-Voltage	> 450	[V]	Current mode	= AC-charging	[-]	2 [s] / continuous (during status standby and AC-charging)	2 DCY
HV-DC-Current Sensor	P0E5E	**Out of range high**	HV-DC-Current	> 20,4	[A]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	2 DCY
		OR								
		Out of range low	HV-DC-Current	< -0,3	[A]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	
Exceedance HV-DC-Current	P0E5E	**Exceedance maximum HV-DC-Current (overcurrent detection by the hardware)**	Current on the primary side of the DCDC-coil	> 23,8	[A]	OnBoard Charger	commanded on	[-]	10 times in 10 mins / continuous	2 DCY
		OR								
		Exceedance maximum HV-DC-Current	HV-DC-Current	> 12	[A]	OnBoard Charger	commanded on	[-]	200 [ms] / continous	
		OR								
		Exceedance maximum current deviation	deviation between commanded and actual current	> 10	[%]	commanded current	>= 1	[A]	10 [s] / continuous	
						AND				

						deviation between commanded and actual current	> 0,5	[A]		
AC-Voltage Sensor	P0E5E	**Over AC-Voltage**	AC-Voltage	> 325	[V]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	2 DCY
		OR								
		Under AC-Voltage	AC-Voltage	< -313	[V]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	
		OR								
		Implausible AC-Voltage value	AC-Voltage	!= DC-link Voltage	[-]	OnBoard Charger	commanded on	[-]	10 times in 10 mins / start of charging process	
AC-Current Sensor	P0E5E	**Over AC-Current**	AC-Current	> 21,2	[A]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	2 DCY
		OR								
		Under AC-Current	AC-Current	< -1,1	[A]	OnBoard Charger	commanded on	[-]	9 [s] / continuous	
Systemboard Temperature Sensor	P0E5E	**Under temperature**	Systemboard temperature	< -50	[°C]	OnBoard Charger	commanded on	[-]	1 [s] / continuous	2 DCY
		OR								
		Over temperature	Systemboard temperature	> 130	[°C]	OnBoard Charger	commanded on	[-]	1 [s] / continuous	
Cooling inlet Temperature Sensor	P0E5E	**Under temperature**	Cooling inlet temperature	< -50	[°C]	OnBoard Charger	commanded on	[-]	1 [s] / continuous	2 DCY
		OR								
		Over temperature	Cooling inlet temperature	> 130	[°C]	OnBoard Charger	commanded on	[-]	1 [s] / continuous	
PFC choke Temperature Sensor	P0E5E	**Under temperature**	PFC choke temperature	< -50	[°C]	OnBoard Charger	commanded on	[-]	6 [s] / continuous	2 DCY
		OR								

		Over temperature	PFC choke temperature	> 130	[°C]	OnBoard Charger	commanded on	[-]	6 [s] / continuous	
DCDC board Temperature Sensor	P0E5E	**Under temperature**	DCDC board temperature	< -50	[°C]	OnBoard Charger	commanded on	[-]	6 [s] / continuous	2 DCY
		OR								
		Over temperature	DCDC board temperature	> 130	[°C]	OnBoard Charger	commanded on	[-]	6 [s] / continuous	
DCDC choke Temperature Sensor	P0E5E	**Under temperature**	DCDC choke temperature	< -50	[°C]	OnBoard Charger	commanded on	[-]	6 [s] / continuous	2 DCY
		OR								
		Over temperature	DCDC choke temperature	> 130	[°C]	OnBoard Charger	commanded on	[-]	6 [s] / continuous	
DCDC-Controller	P0E5E	**Flash failure**	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	10 times in 10 mins / start of subcontroller	2 DCY
		OR								
		Programm execution failure	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	10 times in 10 mins / continuous	
		OR								
		Sensor failure	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	1 [s] / continuous	
		OR								
		Firmware update failure	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	15 [min] / start of update	
PFC-Controller	P0E5E	**Flash failure**	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	10 times in 10 mins / start of subcontroller	2 DCY
		OR								

		Programm execution failure	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	10 times in 10 mins / continuous	
		OR								
		Sensor failure	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	1 [s] / continuous	
		OR								
		Firmware update failure	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	15 [min] / start of update	
Control Unit	P0E5E	**Error Control Unit RAM**	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	3 [min] / start up	2 DCY
		OR								
		Error Control Unit ROM	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	30 [sec] / start up	
		OR								
		Error Control Unit EEPROM	Error detected	yes	[-]	OnBoard Charger	commanded on	[-]	1 [s] / continuous	
		OR								
		Error Control Unit Watchdog	Error detected	yes	[-]	OnBoard Charger	commanded off	[-]	20 [ms] / transition awake to sleep	
OBC - Battery Charger Hybrid										
EV Battery Output Power Performance	P0D5C	**Monitoring of power efficiency**	power efficiency	< 80	[%]	plug inserted	yes	[-]	60 [s] / continuous (during charging process)	2 DCY
						AND				
						power input	> 1000	[W]		
OBC Battery Charger										
Input Circuit Range/Performance	P0D81	**Monitoring of battery charger input voltage**	AC-Voltage	< 90	[V]	plug inserted	yes	[-]	2 [min] / continuous	only Mode$07
						AND				

						AC-Voltage applied at charging infrastructure	yes	[-]		
OBC / Proximity Detection										
Circuit Range/Performance	P0D57	**Monitoring of Proximity Pin - PRX valid (out of definied voltage range)**	PRX-Voltage	0,2 ...0,455	[V]	Plug inserted	yes	[-]	4 [s] / continuous	2 DCY
						AND				
						CP valid	yes	[-]		
			OR							
			PRX-Voltage	0,625...1,078	[V]	Plug inserted	yes	[-]	4 [s] / continuous	
						AND				
						CP valid	yes	[-]		
			OR							
			PRX-Voltage	1,427...2,857	[V]	Plug inserted	yes	[-]	4 [s] / continuous	
						AND				
						CP valid	yes	[-]		
			OR							
			PRX-Voltage	3,435...4,2	[V]	Plug inserted	yes	[-]	4 [s] / continuous	
						AND				
						CP valid	yes	[-]		
Circuit Range/Performance	P0D57	**Monitoring of Proximity Pin - PRX SCB**	PRX-Voltage	4,2...5,1	[V]	Plug inserted	yes	[-]	4 [s] / continuous	2 DCY
						AND				
						CP valid	yes	[-]		
Circuit Low	P0D58	**Monitoring of Proximity Pin - PRX SCG**	PRX-Voltage	< 200	[mV]	[-]	[-]	[-]	4 [s] / continuous	2 DCY
OBC / Control Pilot										
Circuit Range/Performance	P0CF4	**Monitoring of Control Pilot Pin - CP valid (out of definied voltage range)**	CP-Voltage (Mode B)	< 6,9	[V]	Plug inserted	yes	[-]		only Mode$07

						AND				
						PRX valid	yes	[-]		
			OR							
			CP-Voltage (Mode B)	> 9,4	[V]	Plug inserted	yes	[-]		
						AND				
						PRX valid	yes	[-]		
			OR							
			CP-Voltage (Mode C)	< 4	[V]	Plug inserted	yes	[-]		
						AND				
						PRX valid	yes	[-]		
			OR							
			CP-Voltage (Mode C)	> 6,2	[V]	Plug inserted	yes	[-]		
						AND				
						PRX valid	yes	[-]		
Circuit High	P0CF6	**Monitoring of Control Pilot Pin - SCB**	CP-Voltage	> 10,5	[V]	plug inserted	yes	[-]	4 [s] / continuous	2 DCY
OBC / Battery Charger Temperature										
too high	P0D24	**Systemboard temperature too high**	systemboard temperature	> 120	[°C]	plug inserted	yes	[-]	1 [s] / continuous (during charging process)	2 DCY
		OR								
		DCDC board temperature too high	DCDC board temperature	> 120	[°C]	plug inserted	yes	[-]	1 [s] / continuous (during charging process)	
		OR								
		PFC choke temperature too high	PFC choke temperature	> 120	[°C]	plug inserted	yes	[-]	1 [s] / continuous (during charging process)	
		OR								
		DCDC choke temperature too high	DCDC choke temperature	> 120	[°C]	plug inserted	yes	[-]	1 [s] / continuous (during charging process)	
OBC / Battery Charger Coupler										

Temperature Too High	P0E5F	**Monitoring of battery charger coupler temperature**	temperature	> 80	[°C]	[-]	[-]	[-]	1 [s] / continuous	2 DCY
Temperature Sensor Circuit High	P0D9C	**Monitoring of battery charger coupler temperature - ORH**	temperature	> 110	[°C]	[-]	[-]	[-]	1 [s] / continuous	2 DCY
Temperature Sensor Circuit Low	P0D9B	**Monitoring of battery charger coupler temperature - ORL**	temperature	< -50	[°C]	[-]	[-]	[-]	1 [s] / continuous	2 DCY
OBC / Battery Charger coupler lock control										
circuit Performance	P0D94	**Connector locking device disconnected**	coupler interlock motor current	= 0	[A]	active control of coupler interlock	[-]	[-]	1 [s] / continous (by active control of plug interlock)	2 DCY
circuit Performance	P0D94	**Connector locking control TimeOut high**	coupler interlock motor current at current sense pin	> 0	[A]	no active control of coupler interlock	[-]	[-]	100 [ms] / continous (by no active control of plug interlock)	2 DCY
circuit Performance	P0D94	**Monitoring of connector locking device voltage (out of definied voltage range)**	coupler interlock voltage	0,3227...2,7 - 0,2926*(12,8 - U_Bat)	[V]	plug inserted	yes	[-]	4 [s] / continous	2 DCY
						AND				
						coupler commanded locked	no	[-]		
			OR							
			coupler interlock voltage	4,5 - 0,3234*(12,8 - U_Bat)...8 - 0,7619*(12,8 - U_Bat)	[V]	plug inserted	yes	[-]	4 [s] / continous	
						AND				
						coupler commanded locked	no	[-]		
			OR							
			coupler interlock voltage	> 12 - 0,8421*(12,8 - U_Bat)	[V]	plug inserted	yes	[-]	4 [s] / continous	
						AND				
						coupler commanded locked	yes	[-]		

circuit Performance	P0D94	**Monitoring of connector locking device voltage (SCG)**	coupler interlock voltage	0...0,3227	[V]	plug inserted	-	[]	4 [s] / continous	2 DCY
circuit Performance	P0D94	**Monitoring of connector locking device**	attempts to lock	= 3	[-]	plug inserted	yes	[-]	4 [s] / continous (by active control of plug interlock)	2 DCY
						AND				
						coupler commanded unlocked	yes	[-]		
			OR							
			attempts to unlock	= 3	[-]	plug inserted	yes	[-]	4 [s] / continous (by active control of plug interlock)	
						AND				
						coupler commanded locked	yes	[-]		
OBC / High Speed CAN										
Communication Bus	U0001	**CAN communication check**	Bus off	Transmitting no message	[-]	[-]	[-]	[-]	500 [ms] / continuous	2 DCY
Communication Bus Performance	U0002	**CAN communication check**	Global TimeOut	Receiving no message	[-]	[-]	[-]	[-]	500 [ms] / continuous	2 DCY
OBC / Vehicle Communication										
Bus A	U0028	**CAN communication check**	Bus off	Transmitting no message	[-]	[-]	[-]	[-]	500 [ms] / continuous	2 DCY
Bus A Performance	U0029	**CAN communication check**	Global TimeOut	Receiving no message	[-]	[-]	[-]	[-]	500 [ms] / continuous	2 DCY
Battery Charger Input										
Circuit Low	P0D82	**Monitoring of push button / SCG**	PUSH_BUTTON_1_MONITORING	==1	[-]	[-]	[-]	[-]	60 [s] / continuous	2 DCY

Circuit High	P0D83	**Monitoring of disconnected push button / SCB**	Push Button Voltage	> 0,1*(U_Bat)	[V]	[-]	[-]	[-]	2 [s] / continuous	2 DCY

DMCM Summary Table - Cayenne S e-hybrid MY15

Component / system	Fault code	Monitor Strategy Description Anzeigestrategie	Malfunction criteria	Threshold value		Secondary parameters	Enabling conditions		Monitoring time length		MIL Illum.
Drive Motor Stator temperature sensor	**P0A2C**	**Drive Motor Stator temperature sensor out of range high**	Stator temperature too high or short circuit to ground	> + 221	[°C]	System state	Ignition on or battery charging	-	continuously Debounce Time = 1000	[ms]	2 DCY
	P0A2D	**Drive Motor Stator temperature sensor out of range low**	Stator temperature too low or short circuit to LV-battery	< - 50	[°C]	System state	Ignition on or battery charging	-	continuously Debounce Time = 1000	[ms]	2 DCY
	P0A2B	**Stator temperature sensor sensor rationality fault (cross check)**	| Stator temperature - Average rating from IGBT-Phase temperatures |	> 17…34	[°C]	Engine off time System state	> 6 Ready to drive or driving	[h]	once/DCY Debounce Time = 2500	[ms]	2 DCY
		Stator temperature stuck check	Change of stator temperature to small	<0,1563 K within 5s	[K]	Phase current within 8s Measurement Delay EM- Speed Statortemperature	>1800 & <2100 6 >400 <80	[As] [s] [rpm] [°C]	continously Debounce Time = 0	[ms]	1 DCY
Phase U IGBT temperatur	**P0AF0**	**Phase U IGBT temperature sensor out of range high**	Phase U IGBT temperature too high	> + 161	[°C]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	2 DCY
	P0AEF	**Phase U IGBT temperature sensor out of range low**	Phase U IGBT temperature too low	< - 57	[°C]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	2 DCY
	P0AEE	**Phase U IGBT temperature sensor rationality fault offset**	| Phase U IGBT temperature - Phase V IGBT temperature | and | Phase U IGBT temperature - Phase W IGBT temperature |	> 5 > 5	[K] [K]	System state | RMS Phase current | and Diagnostic time	Ready to drive or driving < 10 and > 15	- [A] [sec]	continuously Debounce Time = 1000	[ms]	2 DCY
		Phase U IGBT temperature sensor rationality fault	| Phase U IGBT temperature gradient - Phase V IGBT temperature gradient | and | Phase U IGBT temperature gradient - Phase W IGBT temperature gradient |	> 4 > 4	[°C/sec] [°C/sec]	Drive motor speed | RMS Phase current | and | RMS Phase current | RMS Phase current gradient Diagnostic time	> 600 > 10 < 240 > 500 > 300	[1/min] [A] [A] [A/ms] [ms]	multiple Debounce Time = 300	[ms]	2 DCY
Phase V IGBT temperatur	**P0AF5**	**Phase V IGBT temperature sensor out of range high**	Phase V IGBT temperature too high	> + 161	[°C]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	2 DCY
	P0AF4	**Phase V IGBT temperature sensor out of range low**	Phase V IGBT temperature too low	< - 57	[°C]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	2 DCY
	P0AF3	**Phase V IGBT temperature sensor rationality fault offset**	| Phase V IGBT temperature - Phase U IGBT temperature | and | Phase V IGBT temperature - Phase W IGBT temperature |	> 5 > 5	[K] [K]	System state | RMS Phase current | and Diagnostic time	Ready to drive or driving < 10 and > 15	- [A] [sec]	continuously Debounce Time = 1000	[ms]	2 DCY

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		Phase V IGBT temperature sensor rationality fault	| Phase V IGBT temperature gradient - Phase U IGBT temperature gradient | and | Phase V IGBT temperature gradient - Phase W IGBT temperature gradient |	> 4 > 4	[°C/sec] [°C/sec]	Drive motor speed | RMS Phase current | and | RMS Phase current | RMS Phase current gradient Diagnostic time	> 600 > 10 < 240 > 500 > 300	[1/min] [A] [A] [A/ms] [ms]	multiple Debounce Time = 300	[ms]	2 DCY
Phase W IGBT temperatur	**P0BD4**	**Phase W IGBT temperature sensor out of range high**	Phase W IGBT temperature too high	> + 161	[°C]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	2 DCY
	P0BD3	**Phase W IGBT temperature sensor out of range low**	Phase W IGBT temperature too low	< - 57	[°C]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	2 DCY
	P0BD2	**Phase W IGBT temperature sensor rationality fault offset**	| Phase W IGBT temperature - Phase U IGBT temperature | and | Phase W IGBT temperature - Phase V IGBT temperature |	> 5 > 5	[K] [K]	System state | RMS Phase current | and Diagnostic time	Ready to drive or driving < 10 and > 15	- [A] [sec]	continuously Debounce Time = 1000	[ms]	2 DCY
		Phase W IGBT temperature sensor rationality fault	| Phase W IGBT temperature gradient - Phase U IGBT temperature gradient | and | Phase W IGBT temperature gradient - Phase V IGBT temperature gradient |	> 4 > 4	[°C/sec] [°C/sec]	Drive motor speed | RMS Phase current | and | RMS Phase current | RMS Phase current gradient Diagnostic time	> 600 > 10 < 240 > 500 > 300	[1/min] [A] [A] [A/ms] [ms]	multiple Debounce Time = 300	[ms]	2 DCY

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Phase U current sensor	**P0BE8**	**Drive motor phase U current sensor out of range high**	Phase U current positive value too high	> + 921	[A]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	1 DCY
	P0BE7	**Drive motor phase U current sensor out of range low**	Phase U current negative value too high	< - 921	[A]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	1 DCY
	P0BE6	**Drive motor phase U current rationality fault**	| Phase U current offset |	> 20	[A]	System state:	Ignition on or battery charging	-	once/DCY Debounce Time = 2000	[ms]	1 DCY
			| Phase U average current offset |	> 40	[A]	System state: Drive Motor Speed:	Ready to drive or driving > 600 < 4125	 [1/min] [1/min]	continuously Debounce Time = 2000	[ms]	1 DCY
			| Phase U current amplitude - Phase V current amplitude | and | Phase U current amplitude - Phase W current amplitude |	> 30 > 30	[A] [A]	System state: Drive Motor Speed:	Ready to drive or driving > 600 < 4125	 [1/min] [1/min]	continuously Debounce Time = 2000	[ms]	1 DCY
Phase V current sensor	**P0BEC**	**Drive motor phase V current sensor out of range high**	Phase V current positive value too high	> + 921	[A]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	1 DCY
	P0BEB	**Drive motor phase V current sensor out of range low**	Phase V current negative value too high	< - 921	[A]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	1 DCY
	P0BEA	**Drive motor phase V current rationality fault**	| Phase V current offset |	> 20	[A]	System state:	Ignition on or battery charging	-	once/DCY Debounce Time = 2000	[ms]	1 DCY
			| Phase V average current offset |	> 40	[A]	System state: Drive Motor Speed:	Ready to drive or driving > 600 < 4125	 [1/min] [1/min]	continuously Debounce Time = 2000	[ms]	1 DCY
			| Phase V current amplitude - Phase W current amplitude | and | Phase V current amplitude - Phase U current amplitude |	> 30 > 30	[A] [A]	System state: Drive Motor Speed:	Ready to drive or driving > 600 < 4125	 [1/min] [1/min]	continuously Debounce Time = 2000	[ms]	1 DCY
Phase W current sensor	**P0BF0**	**Drive motor phase W current sensor out of range high**	Phase W current positive value too high	> + 921	[A]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	1 DCY
	P0BEF	**Drive motor phase W current sensor out of range low**	Phase W current negative value too high	< - 921	[A]	System state	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	1 DCY
	P0BEE	**Drive motor phase W current rationality fault**	| Phase W current offset |	> 20	[A]	System state:	Ignition on or battery charging	-	once/DCY Debounce Time = 2000	[ms]	1 DCY

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			| Phase W average current offset |	> 40	[A]	System state: Drive Motor Speed:	Ready to drive or driving > 600 < 4125	 [1/min] [1/min]	continuously Debounce Time = 2000	[ms]	1 DCY
			| Phase W current amplitude - Phase U current amplitude | and | Phase W current amplitude - Phase V current amplitude |	> 30 > 30	[A] [A]	System state: Drive Motor Speed:	Ready to drive or driving > 600 < 4125	 [1/min] [1/min]	continuously Debounce Time = 2000	[ms]	1 DCY
Phase U, V, W current sensors summation	**P0BFD**	**Drive motor phase current U, V, W sensors summation check**	| Phase U + Phase V + Phase W |	> 40	[A]	System state: Drive Motor Speed:	Ready to drive or driving > 600 < 4125	 [1/min] [1/min]	continuously Debounce Time = 1000	[ms]	1 DCY
Phase U, V, W current sensors hardware range	**P0C01**	**Drive motor phase current range check**	| Phase U,V,W signal range check |	> 745	[A]	System state:	Ready to drive or driving	-	continuously	-	1 DCY
DC link voltage sensor	**P0C79**	**DC link voltage out of range high HW detectetion**	DC link voltage too high	> 420	[V]	System state	Ignition on or battery charging	-	continuously	-	1 DCY
	P0D2E	**DC link/inverter voltage rationality**	| DC link voltage(BECM) - DC link voltage(DMCM) |	> 9 … 24	[V]	DC link voltage(BECM) signal and BECM-Contactors	valid close	-	continuously Debounce Time = 1000	[ms]	1 DCY
Drive motor position sensor system	**P0A41**	**Position sensor short cut to ground or open loop**	Signal pattern wrong	0-0-0 ≡ ground	- -	Drive motor speed	> 0	[1/min]	continiously DebouncTime= 10	[ms]	1 DCY
	P0A42	**Position sensor short cut to battery**	Signal pattern wrong	1-1-1 ≡ battery voltage	- -	Drive motor speed	> 0	[1/min]	continiously DebouncTime= 10	[ms]	1 DCY
	P0A40	**Position sensor signal rationality check**	Signal pattern change too fast	< +100	[µs]	Drive motor speed	> +100 < +2000	[1/min] [1/min]	continiously DebouncTime= 100	[ms]	1 DCY

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Drive motor position sensor (pin-pointing)	Sensor 1										
	P0C52	**Position sensor1 short cut to ground or open circuit**	Position sensor signal	= 0 (continiusly)	-	Sensor adaptation	Activated	-	continuously Debounce Time = 10	[ms]	1 DCY
	P0C53	**Position sensor1 short cut to battery**	Position sensor signal	= 1 (continiusly)	-	Sensor adaptation	Activated	-	continuously Debounce Time = 10	[ms]	1 DCY
	Sensor 2										
	P0C5C	**Position sensor2 short to ground or open circuit**	Position sensor signal	= 0 (continiusly)	-	Sensor adaptation	Activated	-	continuously Debounce Time = 10	[ms]	1 DCY
	P0C5D	**Position sensor2 short to battery**	Position sensor signal	= 1 (continiusly)	-	Sensor adaptation	Activated	-	continuously Debounce Time = 10	[ms]	1 DCY
	Sensor 3										
	P0CDC	**Position sensor3 short to ground or open circuit**	Position sensor signal	= 0 (continiusly)	-	Sensor adaptation	Activated	-	continuously Debounce Time = 10	[ms]	1 DCY
	P0CDD	**Position sensor3 short to battery**	Position sensor signal	= 1 (continiusly)	-	Sensor adaptation	Activated	-	continuously Debounce Time = 10	[ms]	1 DCY
Offset angle calibration	**P0C4E**	**Phase cable / position sensor interchanged by checking rotation direction**	Incorrect order of signal change of position sensor	wrong order	-	System state:	Offset angle calibration	-	Once after fault memory was cleared	-	1 DCY
	P0C17	**Drive motor position calibration not plausible**	Wrong direction or rotation in phase 1 of offset angle calibration	< - 150	[1/min]	System state:	Offset angle calibration	-	-	-	1 DCY
	P0C4E	**Drive motor position exceeded learning limit**	Time for acceleration to long	> 2,5	[s]	System state:	Offset angle calibration	-	-	-	1 DCY
	P0C4E	**Drive motor speed too high**	Drive motor speed while acceleration	> 2250	[1/min]	System state:	Offset angle calibration	-	-	-	1 DCY
	P0C4E	**Offset angle calibration possible while freewheeling**	Phase current	> 0	[A]	System state:	Offset angle calibration and active freewheeling	-	-	-	1 DCY
	P0C4E	**Time to calculate offset angle too long**	Time to calculate offset angle	> 0,3	[s]	System state:	Offset angle calibration	-	-	-	1 DCY
	P0C17	**Drive motor position calibration not plausible**	Offset angle deviation	> 54,9976	[°]	System state:	Offset angle calibration	-	-	-	1 DCY

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Performance check	**P0A90**	**Monitoring of drive motor efficiency**	Loss of drive motor efficiency	≥ 30	[%]	Electrical powerDrive motor speed	> ±15000 > 1500 < 4125	[W] [1/min] [1/min]	continuously Debounce Time = 2000	[ms]	2 DCY
Drive motor excitation flux	**P33D4**	**Magnetic flux of drive motor out of range**	Deviation of measured magnetic flux from nominal magnetic flux	> 25	[%]	Offset angle calibration and difference between Inverter temperature model and drive motor stator temperature and drive motor stator temperature	active < 30 < 60	 [K] [°C]	Once after fault memory was cleared Debounce Time = 0	[ms]	1 DCY
Coding	**P064F**	**Internal rationality check**	Internal eeprom value is not plausible	false	-	System state:	Ignition on or battery charging	-	once/DCY		1 DCY
	P151A	**Rationality check with CAN message**	comparison between internal coding value and CAN message coding value	false	-	System state	Ignition on or battery charging	-	continuously	-	1 DCY
EEPROM	**P062F**	**ECU EEPROM check**	EEPROM erase failure	-	-	System state:	Ignition on or battery charging	-	-	-	1 DCY
		ECU EEPROM check	EEPROM read failure	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
		ECU EEPROM check	EEPROM write failure	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
Power supply	**P0A1B**	**Internal power supply range checks**	Power supply voltages out of range Vdd30 High Range or Vdd30 Low Range Vdd5 High Range or Vdd5 Low Range	Internal failure detection > 34 < 26,25 > 5,22 < 4,79	 [V] [V] [V] [V]	System state:	Ignition on or battery charging	-	continuously Debounce Time = 800	[ms]	1 DCY
Clock generator		**ECU internal clock generator**	Internal hardware check	Internal failure detection	-	System state	Ignition on or battery charging	-	-	-	1 DCY
Internal failure detection		**Watch dog; ECU internal hardware check**	ECU internal hardware check internal	Internal failure detection	-	System state	Ignition on or battery charging	-	-	-	1 DCY

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IGBT modul	**P33D7**	**IGBT modul HighSide failure; ECU internal hardware check**	IGBT modul harware check	Internal failure detection	-	System state:	Ignition on or battery charging	-	-	-	1 DCY
	P33D8	**IGBT modul LowSide failure; ECU internal hardware check**	IGBT modul harware check	Internal failure detection	-	System state	Ignition on or battery charging	-	-	-	1 DCY
Power supply	**P06B1**	**Power supply 2 gate driver supply out of range low**	Supply voltage gate driver too low internal hardware check	Internal HW failure detection	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 50	[ms]	1 DCY
	P06B2	**Power supply 2 gate driver supply out of range high**	Supply voltage gate driver too high internal hardware check	Internal HW failure detection	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 50	[ms]	1 DCY
Power supply	**P06B4**	**Position sensor supply out of range low**	Power supply voltage too low	Internal HW failure detection	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 50	[ms]	1 DCY
	P06B5	**Position sensor supply out of range high**	Power supply voltage too high	Internal HW failure detection	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 50	[ms]	1 DCY
Internal processor, FlipFlop	**P0A1B**	**ECU internal hardware check FlipFlop failure**	Internal hardware check	-	-	System state:	Ready to drive or driving	-	-	-	1 DCY
VDD5 power supply	**P06B0**	**ECU internal hardware check**	VDD5 supply voltage too high internal hardware check	Internal HW failure detection	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 0	[ms]	1 DCY
CAN-RAM communication controller	**P0604**	**CAN transceiver RAM failure; communication check**	CAN-transceiver RAM failure	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
CAN-Bus "hybrid CAN"	**U0028**	**CAN-Bus "hybrid CAN" communication check bus A**	CAN-Bus "hybrid CAN" failure	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
CAN-Bus "power train CAN"	**U0001**	**CAN-Bus "power train CAN" communication check bus B**	CAN-Bus "power train CAN" failure	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
CAN communication	**U0002**	**CAN-Bus "power train CAN" lost communication**	CAN-Bus "power train CAN" lost communication	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
	U0029	**CAN-Bus "hybrid CAN" lost communication**	CAN-Bus "hybrid CAN" lost communication	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY

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CAN communication BECM	**U0111**	**Lost communication with battery energy control module**	CAN message time out	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
	U0412	**Communication error with battery energy control module**	CAN checksum error singnal length information content	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
CAN communication ECM	**U0401**	**CAN communication with ECM**	CAN checksum error singnal length information content	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
	U0100	**ECM lost communication**	CAN message time out	-	-	System state	Ignition on or battery charging	-	-	-	1 DCY
CAN communication ESP	**U0416**	**CAN communication with vehicle stability control module**	CAN singnal length	-	-	System state	Ignition on or battery charging	-	-	-	2 DCY
Internal failure detection	**P33CA**	**ECU software version and internal hardware check**	Internal failure detection	Internal failure detection	-	System state	Ignition on or battery charging	-	-	-	1 DCY
	P33DA	**ECU internal hardware check**	ECU internal hardware check internal	Internal failure detection	-	System state	Ignition on or battery charging	-	-	-	1 DCY
Engine off time monitoring	**U3017**	**Timer synchronization monitor**	The CAN time will be monitored for plausibility by doing a comparison check using the ECU time	-	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 50	[ms]	1 DCY
	U0447	**Diagnostic CAN message length check**	Diagnostic CAN message monitored for signal length.	-	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 0	[ms]	1 DCY
	U0146	**Diagnostic CAN message time out check**	Diagnostic CAN message monitored for time out.	-	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 3000	[ms]	1 DCY
	P0A90	**Communication Down Time Plausibility check**	Plausibility check of the communication channel by monitoring the down time.	-	-	System state	Ignition on or battery charging	-	continuously Debounce Time = 5000	[ms]	1 DCY

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Shift Solenoid									
S1	P0973	Conduction check in ON/OFF solenoid.	Comparison of the signal of solenoid monitor and solenoid driver output	Wrong output signal for more than 100 ms	--	--	100ms 5 times	continous	2 DCY
S1	P0974								
TV	P2754	Conduction check in ON/OFF solenoid.	Comparison of the signal of solenoid monitor and solenoid driver output	Wrong output signal for more than 100 ms	--	--			
TV	P2755								
Pressure Control Solenoid									
SLT	P0748	Linear solenoid feedback current check	Comparison of target current and Feedback current	Sum of difference of two current >20000	Input AD value Voltage Main Solenoid Switch	< 1333mA > 10.5 V ON	3 times	continous	2 DCY
SLB1	P0778								
SLC1	P0798								
SLC2	P2716								
SLC3	P2725								
SLC4	P2734								
SLU	P2759								
SLT	P0963	Input AD value check in every Linear solenoid.	Detection of wrong input AD value	Feedback current > 1333mA (AD value > 1000) for more than 100 ms			100ms 5 times		
SLB1	P0777								
SLC1	P0797								
SLC2	P2715								
SLC3	P2724								
SLC4	P2733								
SLU	P2758								

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
SLT	P0962			Feedback current < 23mA (AD value < 15) for more than 100 ms			100ms 5 times		
SLB1	P0776								
SLC1	P0796								
SLC2	P2714								
SLC3	P2723								
SLC4	P2732								
SLU	P2757								

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Speed sensor									
Output speed sensor	P19AB	Electrical check	Detection of wrong input AD value	Voltage < 0.2 Volt (AD value < 45) for more than 100 ms	Output sensor	Not after failure decision for output sensor "no pulse check"	100ms 5 times	continous	2 DCY
Output speed sensor	P077D			(AD value > 545) Voltage > 2.72 Volt for more than 100 ms					
Output speed sensor	P0721	No pulse check	Comparison pulse of input revolution and output revolution	No pulse of input sensor more than 12 times	Engine speed No emergency mode Gear engagement condition Range Inhibitor switch Input sensor S1,SLC1,SLC2,SLC3,SLC4, SLB1,SLT (Input rev. / defined current gear ratio) Output sensor	> 400rpm Engage D,S No fault Active No fault >= 300 rpm Not during failure detection or after failure decision for output sensor electrical failure.	500ms		
Input speed sensor	P19AA	Electrical check	Detection of wrong input AD value	Voltage < 0.2 Volt (AD value < 45) for more than 100 ms	Input sensor	Not after failure decision for input sensor "no pulse check"	100ms 5 times		
Input speed sensor	P07C0			(AD value > 545) Voltage > 2.72 Volt for more than 100 ms					
Input speed sensor	P0716	No pulse check	Comparison pulse of input revolution and output revolution	No pulse of input sensor more than 30 times	Engine speed Output sensor Output speed	> 400rpm Active >= 300rpm	500ms		

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
					Input sensor	Not during failure detection or after failure decision for input sensor electrical failure.			
Inhibitor switch									
Inhibitor switch	P0706	A, B, C and PA signal check in every shift lever position.	Detection of wrong combination of the A, B, C and PA signal	Wrong combination for more than 350 ms	--	--	350 ms		2 DCY
Inhibitor switch	P0709		Detection of no signal of the A, B, C and PA signal	All signals lost					

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Oil temperature sensor									
Oil temperature sensor Stuck	P0710	Electrical check **(Only for Start/Stop and Hybrid vehicle)**	Detection of wrong input AD value	Measurementblock shows Value between 30°C and 150°C and doesn't change this value by 5° during 10 min	--	--	100ms	continous	2 DCY
Oil temperature sensor GND short	P0712			Measurementblock shows Value 0V	--	--	5s		
Oil temperature sensor Battery short / open	P0713			Measurementblock shows Value of 4.9V	--	--	10s		
Microcontroller Hardware									
Flash ROM	P0700	ROM area check	Comparison of stored checksum value and calculated checksum	Two checksum values are not the same.	--	--	40 s	continous	2 DCY
Random Access Memory	P0700	RAM area check	Comparison of writing data and reading data.	Writing data is different from reading one.	--	--			
EEPROM	P0700	RAM area check	Comparison of stored checksum value and calculated checksum	Two checksum values are not the same.	--	--			
Safety processor	P2711	High breaking torque detection	Detect high braking torque condition by reading back of the solenoid feedback current in order to determine the pattern and ATCU compares it and the pattern of possible high braking torque conditions calculated with input torque	Breaking Torqe 1888Nm	--	--	700ms		
	P0613	Miscalculation detected	Wrong gear select detection	Single reset does not cover problem	--	--	150ms		
	P0613		CPU core check failed	Single reset does not cover problem	--	--	1 time		
	P0613		ROM check is failed	Single reset does not cover problem	--	--	1 time		
	P0613		RAM data protect is failed	Single reset does not cover problem	--	--	1 time		
	P0613		Communication data check is failed	Single reset does not cover problem	--	--	1 time		

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
	P0613		Program flow check is failed	Single reset does not cover problem	--	--	1 time		
	P0613		Safe state shift check	Single reset does not cover problem	--	--	1 time		
CAN									
Bus off	U0001	CAN communication check	Detection of communication error	CAN BUS off condition for more than 250 ms	ignition on	> 500 ms	250 ms	continous	2 DCY
ECU no communication	U0100	CAN communication check	Detection of communication error	ECU no communication for more than 50 ms	CAN bus	Active	500ms		
					ignition on	> 500 ms			
ECU malfunction	U0401	CAN receive data check	ECU signal data freeze	Data counter not updated	CAN bus ECU communication	Active Active	5 messages continuously		
ECU malfunction	U0401			Chksum is wrong			3 messages continuously		
Accelerator pedal	U0401		Detection of error signal	0xFF	CAN bus ECU communication ECU data update	Active Active Active	250ms		
Engine speed	U0401		Detection of error signal	0xFFFF					
Engine torque	U0401		Detection of error signal	0x3FF					
ECU wrong level	U0301		Detection of error signal	Transmission coding is manual transmission code (0Fh) Or MO_Code is not same as one in ATCU or MO_Leistung is not same as one in ATCU					

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Driver Electrical Oil Pump									
EOP_Driver_Error **(Only Hybrid)**	P0C2A	Input AD value check of OPST PWM signal	OPST PWM sends signal "Motor system failure"				500ms	continous	2 DCY
EOP_Driver_Input_AD_Failure **(Only for Start/Stop)**	P0C2B		OPST PWM sends signal "A/D failure"		OPST PWM Signal sends not "Duty continuously low" or "Duty continuously high"				
EOP_Driver_OPST_Duty_High **(Only for Start/Stop and Hybrid vehicle)**	P0C2E		OPST PWM Signal sends "Duty continuously high"						
EOP_Driver_OPST_Duty_Low **(Only for Start/Stop and Hybrid vehicle)**	P0C2D		OPST PWM Signal sends "Duty continuously low"						
EOP_Driver_OPST_PWM_wrong **(Only for Start/Stop and Hybrid vehicle)**	P0C2C		OPST PWM Signal sends "PWM Wrong"						
EOP_Driver_SIG_PWM_wrong **(Only for Start/Stop)**	P0C29		OPST PWM sends signal "Motor system failure"						
EOP_Driver_Motor_lock **(Only for Start/Stop)**	P0C2A		OPST PWM Signal sends "Lock or over rev."				1000ms		
EOP_Driver_temperature_area_stuck *(Only Hybrid)*	P0C1D		OPST PWM Signal sends "Over heat (118~125°C)" or OPST PWM Signal sends "Over heat (>125°C)" and Target EOP revolution = 0[rpm]				900s		
Motor Electrical Oil Pump									
EOP_Motor_Functional_Failure_Hybrid	P0C26	Functional diagnosis **(Hybrid only)**	Comparison of target an actual EOP Motor revolution		EOP System normal		10s	continous	2DCY
EOP_Motor_Functional_Failure_IdleStop	P0C26	Functional diagnosis **(Start/Stopp only)**	Comparison of indicated slip and actual slip with stored values		EOP System normal		20s (OT Value < 0°C) 400ms (OT Value > 0°C)		
EOP_Motor_Temp_Sensor_SC-	P0C1E	Electrical check **(Hybrid only)**	Measurement block shows value of 208°C		EOP System normal		5x 1s		
EOP_Motor_temp_sensor_temperature_area_stuck	P0C1D	Electrical check **(Hybrid only)**	EOP Motor temperature > 130 [°C] and Target EOP motor revolution = 0[rpm]		EOP System normal		715s		

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Functional lock up control									
Lock up control	P0741	OFF stuck check.	Comparison of engine rpm and input rpm	Engine rpm – input rpm > -100 rpm for 2s (hybrid only) Engine rpm – input rpm > 100 rpm for 2s	Engine speed Shift Lever Estimated engine torque Revolution sensor SLU target current Model oil temp. Common parameter (see footnote)	> 400 rpm < 4000 rpm D or S >= 0 Nm No back up condition > 1000mA >= 20°C common condition (see footnote)	2 s 6 times	continous	2 DCY

Component / System	Fault Code	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Gear ratio error									
1st gear	P0731	Input and output rpm signal check. Separate error memory for each gear.	Comparison of indicated slip and actual slip with stored values	**1.** abs(input rev. – output rev. x other gear ratio) < (0.04 x other gear ratio x output rev.) for more than 1s **2.** Slip differences > (0.20 x current gear ratio x output rev.) for more than 1 s	Engine speed	> 400rpm	**1.** 1000ms 12 times cumulative **2.** 450ms 5 times cumulative	continous	2 DCY
2nd gear	P0732				Output rev.	> 250rpm			
3rd gear	P0733				Shift Lever	D or S			
4th gear	P0734				Brake	off			
5th gear	P0735				slip difference of output speed(In case ABS valid)	difference < 10%			
6th gear	P0729				Revolution sensor	No back up condition			
7th gear	P076F				Model oil temp.	>= 20°C			
8th gear	P07D9				Common parameter (see footnote)	common condition (see footnote)			

Common parameter for enabling gear ratio or Lock up errors:

Main solenoid switch	ON
Gear condition	Engaged
S1 solenoid	No fault
Linear solenoid	No fault
Inhibitor switch	No fault
CAN communication	No fault
ECU data update	No fault
Estimated engine trq	No fault
Engine speed	No fault
Accelerator pedal	No fault
ROM	No fault
RAM	No fault
Safety processor	No fault

Cayenne, MY 2011-

Diagnosis information - DME Hybrid

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P020100 98
P020200 99
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P020400 101
P020500 102
P020600 103
P021900 104
P022100 105
P022200 106
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P063400 230
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P261B00 453
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P307300 471
P307800 472
P308100 473
P308D00 475
P308E00 476
P309600 477
P309700 478
P309A00 479
P309C00 480
P309D00 481
P309E00 482
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P30E200 489
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P325500 492
P325700 493
P326600 494
P326700 495
U000100 496
U000200 497
U002800 498
U002900 499
C050000 500
C050100 501

C050200 502
C050300 503
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C050700 505
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C050F00 511
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C051400 514
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C053D00 516
C054000 517
U010100 518
U011000 519
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U011200 521
U012100 522
U012600 523
U012800 524
U013200 525
U013C00 526
U014000 527
U014100 528
U014600 529
U015100 530
U015500 531
U015900 532
U016400 533
U016600 534
U019900 535
U019B00 536
U021200 537
U023500 538
U030200 539
U032300 540

U040200 541
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U041500 544
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U042500 550
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U049C00 558
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P000A00

Diagnostic information - DME control unit

P000A00 Bank 1 intake camshaft adjustment too slow

Diagnostic conditions

- No camshaft adjuster output stage fault
- No rpm or phase sensor fault
- Engine running

Fault setting condition(s)

- The fault is set if the camshaft adjuster cannot follow the specified setpoint quickly enough.

Monitored component or system

♦ Bank 1 intake camshaft adjuster

Possible fault causes

♦ **Engine oil pressure** too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or **oil pump** sluggish/stuck)
♦ Loose contact on solenoid valve plug connection
♦ **Solenoid valve** dirty/blocked
♦ **Solenoid valve** sluggish/stuck
♦ **Camshaft adjustment** sluggish/stuck
♦ Wiring for camshaft adjusters interchanged
♦ **Intake camshaft** sluggish/stuck
♦ Camshaft position sender/sender wheel loose

Fault effects

♦ The camshaft is moved to the reference position if possible.
♦ Engine speed limited
♦ Message >>Reduced engine power<< in instrument cluster

P000C00

Diagnostic information - DME control unit

P000C00 Bank 2 intake camshaft adjustment too slow

Diagnostic conditions

- No camshaft adjuster output stage fault
- No rpm or phase sensor fault
- Engine running

Fault setting condition(s)

- The fault is set if the camshaft adjuster cannot follow the specified setpoint quickly enough.

Monitored component or system

♦ Bank 2 intake camshaft adjuster

Possible fault causes

♦ **Engine oil pressure** too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or **oil pump** sluggish/stuck)
♦ Loose contact on solenoid valve plug connection
♦ **Solenoid valve** dirty/blocked
♦ **Solenoid valve** sluggish/stuck
♦ **Camshaft adjustment** sluggish/stuck
♦ Wiring for camshaft adjusters interchanged
♦ **Intake camshaft** sluggish/stuck
♦ Camshaft position sender/sender wheel loose

Fault effects

♦ The camshaft is moved to the reference position if possible.
♦ Engine speed limited
♦ Message >>Reduced engine power<< in instrument cluster

Diagnosis information DME control module

P001000 Bank 1 intake camshaft adjustment - open circuit

► Check in the **>PIWIS information system<** whether the vehicle is designated for the following workshop campaign: **WC54**
► Carry out the campaign if necessary

Diagnostic conditions

- With running engine

Fault setting condition(s)

- Activation voltage higher than diagnostic threshold 4.4...5.6 V
- Output stage diagnostics, line open circuit

Monitored component or system

♦ Bank 1 intake camshaft adjuster output stage

Diagnostic information - DME control unit

P001100 Bank 1 camshaft retardation - setpoint not reached

Diagnostic conditions

- No camshaft adjuster output stage fault
- No rpm or phase sensor fault
- Engine running

Fault setting condition(s)

- The fault is set if the camshaft adjuster cannot follow the specified setpoint quickly enough.

Monitored component or system

♦ Bank 1 intake camshaft adjuster

Possible fault causes

♦ **Engine oil pressure** too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or **oil pump** sluggish/stuck)
♦ Loose contact on solenoid valve plug connection
♦ **Solenoid valve** dirty/blocked
♦ **Solenoid valve** sluggish/stuck
♦ **Camshaft adjustment** sluggish/stuck
♦ Wiring for camshaft adjusters interchanged
♦ **Intake camshaft** sluggish/stuck
♦ Camshaft position sender/sender wheel loose

Fault effects

♦ The camshaft is moved to the reference position if possible.
♦ Engine speed limited
♦ Message >>Reduced engine power<< in instrument cluster

Diagnosis information DME control module

P001600 Bank 1 camshaft position/crankshaft position sensor - incorrect allocation

Diagnostic conditions

- No fault of the crankshaft sensor
- No camshaft adjuster fault
- No other faults of the camshaft sensor
- No sensor supply voltage fault present
- Engine start
- Ignition off, ignition on
- With engine running

Fault setting condition(s)

- Edges of the camshaft sensor signal when the camshaft is in reference position (stop) do not match the crankshaft signal (camshaft impermissibly turned out of position)
- If the camshaft is moved to the reference position (stop) during the driving cycle, a camshaft-to-crankshaft allocation test is performed

Monitored component or system

♦ Bank 1 intake camshaft sensor

Fault finding notes

♦ Check camshaft timing (camshaft position) via the Tester
♦ Check chain drive to determine whether the chain is out of place
♦ Check the camshaft adjuster function (check timing valves, shaft adjuster, oil pressure)
♦ Check wiring of the camshaft adjusters
♦ Check sensor wiring
♦ Check camshaft sensor wheel

Function restrictions

♦ Camshaft adjustment not possible
♦ Loss of power possible
♦ Engine rough running and even "engine stall" possible if the chain is out of position by several teeth

Diagnosis information DME control module

P001800 Bank 2 camshaft position/crankshaft position sensor - incorrect allocation

Diagnostic conditions

- No fault of the crankshaft sensor
- No camshaft adjuster fault
- No other faults of the camshaft sensor
- With engine running

Fault setting condition(s)

- Edges of the camshaft sensor signal when the camshaft is in reference position (stop) do not match the crankshaft signal (camshaft impermissibly turned out of position)

Monitored component or system

♦ Bank 2 intake camshaft sensor

Diagnosis information DME control module

P002000 Bank 2 camshaft adjustment malfunction

► Check in the **>PIWIS information system<** whether the vehicle is designated for the following workshop campaign: **WC54**
► Carry out the campaign if necessary

Diagnostic conditions

- With running engine

Fault setting condition(s)

- Output stage diagnostics, line open circuit
- Activation voltage higher than diagnostic threshold 4.4...5.6 V

Monitored component or system

♦ Bank 2 intake camshaft adjuster output stage

Diagnostic information - DME control unit

P002100 Bank 2 camshaft retardation - setpoint not reached

Diagnostic conditions

- No camshaft adjuster output stage fault
- No rpm or phase sensor fault
- Engine running

Fault setting condition(s)

- The fault is set if the camshaft adjuster cannot follow the specified setpoint quickly enough.

Monitored component or system

♦ Bank 2 intake camshaft adjuster

Possible fault causes

♦ **Engine oil pressure** too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or **oil pump** sluggish/stuck)
♦ Loose contact on solenoid valve plug connection
♦ **Solenoid valve** dirty/blocked
♦ **Solenoid valve** sluggish/stuck
♦ **Camshaft adjustment** sluggish/stuck
♦ Wiring for camshaft adjusters interchanged
♦ **Intake camshaft** sluggish/stuck
♦ Camshaft position sender/sender wheel loose

Fault effects

♦ The camshaft is moved to the reference position if possible.
♦ Engine speed limited
♦ Message >>Reduced engine power<< in instrument cluster

Diagnosis information DME control module

P003000 Bank 1 sensor 1 - heating circuit open circuit

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 1 sensor 1 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P003100 Bank 1 sensor 1 - heating circuit short circuit to ground

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 2.15...3.25 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 1 sensor 1 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

P003200

Diagnosis information DME control module

P003200 Bank 1 sensor 1 - heating circuit short circuit to B+

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater current > 3 A

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 1 sensor 1 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P003600 Bank 1 sensor 2 - heating circuit open circuit

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P003700 Bank 1 sensor 2 - heating circuit short circuit to ground

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 2.15...3.25 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

P003800

Diagnosis information DME control module

P003800 Bank 1 sensor 2 - heating circuit short circuit to B+

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater current > 3 A

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P004000 Bank 1 sensor 1/bank 2 sensor 1 interchanged

Diagnostic conditions

- Oxygen sensor heating completed
- Diagnostics runs continuously

Fault setting condition(s)

- Observation of the controller outputs of the pre-catalytic converters of the two banks
- The lambda controllers of the two banks run in the opposite direction: bank 1 at rich limit (FRMAX) and bank 2 at lean limit (FRMIN) or bank 1 at lean limit (FRMIN) and bank 2 at rich limit (FRMAX)

Monitored component or system

♦ Oxygen sensors ahead of the catalytic converter

Fault finding notes

♦ Oxygen sensors ahead of catalytic converter interchanged

Function restrictions

♦ Rough-running engine

Diagnosis information DME control module

P005000 Bank 2 sensor 1 - heating circuit electrical fault

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensors 2 ahead of the catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 2 sensor 1 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P005100 Bank 2 sensor 1 - heating circuit short circuit to ground

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 2.15...3.25 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 2 sensor 1 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

P005200

Diagnosis information DME control module

P005200 Bank 2 sensor 1 - heating circuit short circuit to B+

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater current > 3 A

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 2 sensor 1 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P005600 Bank 2 sensor 2 - heating circuit electrical fault

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensors 2 ahead of the catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater behind cat. conv., bank 2 sensor 2 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P005700 Bank 2 sensor 2 - heating circuit short circuit to ground

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 2.15...3.25 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater behind cat. conv., bank 2 sensor 2 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

P005800

Diagnosis information DME control module

P005800 Bank 2 sensor 2 - heating circuit short circuit to B+

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater current > 3 A

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater behind cat. conv., bank 2 sensor 2 faulty

Function restrictions

♦ Output stage inactive, failure of the sensor heater

P007000

Diagnosis information DME control module

P007000 Outside-temperature sensor - electrical fault
P007200 Outside-temperature sensor - signal too low
P007400 Outside-temperature sensor - loose contact

Monitored component or system

♦ Ambient temperature sensor

Fault finding notes

♦ see Air conditioning system fault memory

Function restrictions

P007400
♦ Possible radiator fan emergency operation

P007100

Diagnosis information DME control module

P007100 Outside-temperature sensor - implausible signal

Diagnostic conditions

- Cold start detected
- No block heater operation detected
- No solar irradiation detected

Fault setting condition(s)

- Temperature cross-check after engine start in the conditioned vehicle state
- Comparison of intake-air temperature, engine temperature and ambient temperature

Monitored component or system

♦ Ambient-temperature sensor

Diagnosis information DME control module

P007000 Outside-temperature sensor - electrical fault
P007200 Outside-temperature sensor - signal too low
P007400 Outside-temperature sensor - loose contact

Monitored component or system

♦ Ambient temperature sensor

Fault finding notes

♦ see Air conditioning system fault memory

Function restrictions

P007400
♦ Possible radiator fan emergency operation

P007400

Diagnosis information DME control module

P007000 Outside-temperature sensor - electrical fault
P007200 Outside-temperature sensor - signal too low
P007400 Outside-temperature sensor - loose contact

Monitored component or system

♦ Ambient temperature sensor

Fault finding notes

♦ see Air conditioning system fault memory

Function restrictions

P007400
♦ Possible radiator fan emergency operation

P008700

Diagnosis information DME control module

P008700 Fuel rail/system pressure too low

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Monitored component or system

♦ Fuel metering valve

Fault finding notes

♦ Pressure limiting valve faulty
♦ Metering valve faulty
♦ Leaks in the rail
♦ Low pressure system faulty

Function restrictions

♦ Misfiring is detected, and the power is correspondingly less
♦ Engine off

P008800

Diagnosis information DME control module

P008800 Fuel rail/system pressure too high

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Monitored component or system

♦ Fuel metering valve
♦ Fuel rail/system pressure

Fault finding notes

♦ Metering valve faulty
♦ High pressure sensor faulty

Function restrictions

♦ Misfiring is detected, and the power is correspondingly less
♦ Engine off

P008A00

Diagnosis information DME control module

P008A00 Fuel low pressure system pressure too low

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The measured fuel low pressure deviates significantly from the setpoint pressure.

Monitored component or system

♦ Fuel low pressure system

Fault finding notes

♦ Check fuel lines (tightness)
♦ Check fuel filter (soiled/clogged)
♦ Check pressure retaining valve
♦ Check pressure limiting valve
♦ Check activation of electric fuel pump (low pressure)
♦ Check low pressure sensor (in the high pressure pump)
♦ Check electric fuel pump (low pressure) (pressure, delivery quantity)

P008B00

Diagnosis information DME control module

P008B00 Fuel low pressure system pressure too high

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The measured fuel low pressure deviates significantly from the setpoint pressure.

Monitored component or system

♦ Fuel low pressure system

Fault finding notes

♦ Check fuel lines (tightness)
♦ Check fuel filter (soiled/clogged)
♦ Check pressure retaining valve
♦ Check pressure limiting valve
♦ Check activation of electric fuel pump (low pressure)
♦ Check low pressure sensor (in the high pressure pump)
♦ Check electric fuel pump (low pressure) (pressure, delivery quantity)

Diagnosis information DME control module

P009600 Bank 2 intake-manifold temperature exceeded

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- A maximum intake-manifold temperature is specified to protect the component
- The maximum value depends on the compressor pressure ratio

Monitored component or system

♦ Bank 2 intake manifold temperature sensor

Fault finding notes

♦ Check wiring
♦ Check measured values
♦ Bank 1/2 intake-manifold temperature sensor fault
♦ Faulty bank 2 charge air cooler

Function restrictions

♦ Power loss - MIL on

Diagnosis information DME control module

P00AB00 Bank 2 intake-manifold temperature sensor - implausible signal

Diagnostic conditions

- Enabling of master cross-check
- Diagnostics runs once per driving cycle with conditioned vehicle

Fault setting condition(s)

- Temperature cross-check after engine start in the conditioned vehicle state
- Comparison of sensors for intake-manifold temperature

Monitored component or system

♦ Bank 2 intake manifold temperature sensor

Fault finding notes

♦ Check of the temperature sensor compared to the other temperature sensors, ideally after engine cooling phase
♦ If plug and wiring are OK, replace
sensor

Diagnosis information DME control module

P00AC00 Bank 2 intake-air temperature sender 1 - short circuit to ground

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to ground

Monitored component or system

♦ Intake-air temperature sensor in intake pipe

Fault finding notes

♦ Perform line check
♦ Check sender internal resistance
♦ Spray sensor with cooling spray, observe measured value

Diagnosis information DME control module

P00AD00 Bank 2 intake-air temperature sender 1 - short circuit to B+

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to B+ or open circuit

Monitored component or system

♦ Intake-air temperature sensor in intake pipe

Fault finding notes

♦ Perform line check
♦ Check sender internal resistance
♦ Spray sensor with cooling spray, observe measured value

Diagnostic information - DME control unit

P00AE00 Bank 2, intake-air temperature sensor (intake manifold), loose contact

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Monitored component or system

♦ Bank 2 intake-manifold temperature sender

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+/ground/between lines or open circuit in the signal line

Diagnosis information DME control module

P00C700 Sender 1/2 for boost pressure correlation

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Absolute value (measured intake-pipe pressure in bank 1 - measured intake-pipe pressure in bank 2) < 102.031 hPa

Monitored component or system

♦ Boost pressure sensor

Fault finding notes

♦ Perform line check
♦ Check measured values
♦ Check charge air cooler for clogging or leaks

Function restrictions

♦ Power loss - MIL on

Diagnosis information DME control module

P011100 Bank 1 intake-manifold temperature sensor - implausible signal

Diagnostic conditions

- Cold start detected
- No block heater operation detected
- No solar irradiation detected

Fault setting condition(s)

- Temperature cross-check after engine start in the conditioned vehicle state
- Comparison of sensors for intake-manifold temperature

Monitored component or system

♦ Bank 1 intake manifold temperature sensor

Fault finding notes

♦ Check of the temperature sensor compared to the other temperature sensors, ideally after engine cooling phase
♦ If plug and wiring are OK, replace
sensor

Function restrictions

♦ None

Diagnosis information DME control module

P011200 Bank 1 intake-manifold temperature sensor - short circuit to ground

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Monitoring of electrical components for short circuit to ground

Monitored component or system

♦ Bank 1 intake manifold temperature sensor

Fault finding notes

♦ Perform line test
♦ Spray sensor with cooling spray, observe measured value

Diagnosis information DME control module

P011300 Bank 1 intake-manifold temperature sensor - short circuit to B+/open circuit

Diagnostic conditions

- Engine idling
- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of electrical components for short circuit to B+ or open circuit

Monitored component or system

♦ Bank 1 intake manifold temperature sensor

Fault finding notes

♦ Perform line test
♦ Spray sensor with cooling spray, observe measured value

Diagnostic information - DME control unit

P011400 Bank 1, intake-air temperature sensor (intake manifold), loose contact

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Monitored component or system

♦ Bank 1 intake-manifold temperature sender

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+/ground/between lines or open circuit in the signal line

Diagnostic information - DME control unit

P011600 Coolant temperature sender - implausible signal

Diagnostic conditions

- Time after engine starts > 3 sec.
- Diagnostics runs once per driving cycle
- Cold start detected
- No block heater operation detected
- No solar irradiation detected

Fault setting condition(s)

- If no perceptible temperature change is recorded after driving states with low and high cooling power, it is assumed that the sensor is stuck.
- Temperature cross-check after engine start in the conditioned vehicle state
- Comparison of intake-air temperature, engine temperature and ambient temperature

Monitored component or system

♦ Engine cooling system temperature sensor

Fault finding notes

♦ Engine temperature sensor faulty

Functional restrictions

♦ Engine temperature too low or too high

Diagnosis information DME control module

P011700 Coolant temperature sender - signal too low

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Measured engine temperature > 137.3 °C (279.1 °F)
- Voltage drop at the NTC sensor is assigned to a corresponding temperature
- Fault detection when a maximum temperature threshold is exceeded

Monitored component or system

♦ Engine cooling system temperature sensor

Fault finding notes

♦ Measure voltage via sensor
♦ Fault case: if the voltage is near 0 V, the sensor or wiring is faulty

Function restrictions

♦ Engine temperature too high

Diagnosis information DME control module

P011800 Coolant temperature sender - signal too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Measured engine temperature < -44.3 °C (-47.7 °F)
- Voltage drop at the NTC sensor is assigned to a corresponding temperature
- Fault detection when a minimum temperature threshold is exceeded

Monitored component or system

♦ Engine cooling system temperature sensor

Fault finding notes

♦ Measure voltage via sensor
♦ Fault case: if the voltage is near 5 V, the sensor or wiring is faulty

Function restrictions

♦ Engine temperature too low

P011900

Diagnosis information DME control module

P011900 Coolant temperature sender - loose contact

Diagnostic conditions

- Continuously

Fault setting condition(s)

- Difference between raw value and filtered value > 1 V

Monitored component or system

♦ Coolant temperature sender

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Coolant temperature sender faulty

Diagnosis information DME control module

P012100 Throttle valve potentiometer - implausible signal

Diagnostic conditions

- Engine speed > 480 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The angles of throttle valve potentiometers 1 and 2 deviate by more than 6.3 % from each other
- The angle of throttle valve potentiometer 1 and the calculated throttle valve angle deviate by more than 9.0% from each other

Monitored component or system

♦ Throttle valve sensor 1

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve plug when the ignition is on (throttle valve unplugged)

Diagnosis information DME control module

P012200 Throttle valve potentiometer - signal too low

Diagnostic conditions

- Ignition on
- Run-on
- Diagnostics runs continuously

Fault setting condition(s)

- Throttle valve potentiometer voltage of sensor 1 < 0.195 V

Monitored component or system

♦ Throttle valve sensor 1

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve plug when the ignition is on (throttle valve unplugged)

Diagnosis information DME control module

P012300 Throttle valve potentiometer - signal too high

Diagnostic conditions

- Ignition on
- Run-on
- Diagnostics runs continuously

Fault setting condition(s)

- Throttle valve potentiometer voltage of sensor 1 > 4.80 V

Monitored component or system

♦ Throttle valve sensor 1

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve plug when the ignition is on (throttle valve unplugged)

P012700

Diagnosis information DME control module

P012700 Bank 1 intake-manifold temperature exceeded

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Measured intake-manifold temperature in bank 1 > 100 °C (212 °F)

Monitored component or system

♦ Bank 1 intake manifold temperature sensor

Fault finding notes

♦ Perform line test
♦ Check measured values
♦ Check charge air cooler for clogging or leaks

Function restrictions

♦ Power loss - MIL on

Diagnosis information DME control module

P012B00 Sensor for intake-manifold pressure behind throttle valve - signal implausible

Diagnostic conditions

- Diagnostics runs continuously from engine start
- Part-load operation (engine speed < 1,800 rpm)

Fault setting condition(s)

- Comparison of several pressure sensors at start
- Diagnostics runs only if engine was stopped for at least 10 seconds before starting
- Measured pressure behind throttle valve implausible compared to model value
- Comparison of several pressure sensors at partial load
- Compressor control flap open

Monitored component or system

♦ Pressure sensor behind throttle valve

Fault finding notes

♦ Compare pressure signal with stationary engine with values from other vehicles
♦ Compare measured values
♦ Check plug connections and lines
♦ Check intake-manifold pressure sensor ground line
♦ Check intake tract for tightness
♦ Check compressor control flap (short test)
♦ Check throttle valve for deformation/soiling
♦ Visual inspection of air cleaner
♦ Visual inspection of charge air cooler
♦ Replace sensor

Diagnosis information DME control module

P012C00 Sensor for intake-manifold pressure behind throttle valve - short circuit to ground

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of electrical components for short circuit to ground
- Voltage of pressure sensor behind throttle valve < 0.25 V

Monitored component or system

♦ Pressure sensor behind throttle valve

Fault finding notes

♦ Check plug connections and lines
♦ Replace sensor

P012D00

Diagnosis information DME control module

P012D00 Sensor for intake-manifold pressure behind throttle valve - short circuit to B+/open circuit

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of electrical components for short circuit to B+ or open circuit
- Voltage of pressure sensor behind throttle valve > 4.850 V

Monitored component or system

♦ Pressure sensor behind throttle valve

Fault finding notes

♦ Line test
♦ Replace sensor

Function restrictions

♦ None

Diagnosis information DME control module

P013000 Bank 1 sensor 1 - electrical fault in circuit

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Exhaust temperature > 249.998 °C (481.996 °F)
- Heater control active
- Dew point end reached
- Diagnostics runs continuously

Fault setting condition(s)

- Ceramic element temperature < 640.022 °C (1,184.040 °F)
- Internal resistance > 950 Ohm
- Heater fault
- Line open circuit
- A fault entry is made as soon as the ceramic element temperature is implausibly low, the internal resistance of the Nernst cell is implausibly high or a heater fault or a line open circuit is present
- This diagnostic test represents a quick test in order to deactivate lambda control as quickly as possible in the event of a fault. The exact fault cause is stored as the second fault memory entry

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

Diagnosis information DME control module

P013100 Bank 1 sensor 1 - voltage too low

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Virtual ground < 2 V
- Nernst voltage < 1.75 V
- Comparison line < 0.9 V
- Collective fault: Short circuit of the virtual ground to ground, short circuit of the Nernst voltage to ground or short circuit of the comparison line to ground

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

Diagnosis information DME control module

P013200 Bank 1 sensor 1 - voltage too high

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Virtual ground > 3 V
- Nernst voltage > 4 V
- Comparison line > 6 V
- Collective fault: Short circuit of the virtual ground to B+, short circuit of the Nernst voltage to B+ or short circuit of the comparison line to B+

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

Diagnosis information DME control module

P013300 Bank 1 sensor 1 - signal too slow

Monitored component or system

- Oxygen sensor ahead of catalytic converter
- Dynamic response

Fault finding notes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

Diagnosis information DME control module

P013500 Bank 1 sensor 1 heating circuit - electrical fault
P015500 Bank 2 sensor 1 heating circuit - electrical fault

Diagnostic conditions

General:
- Battery positive voltage between 10.7 V and 16.1 V
- No electrical fault of the sensor
- No overrun mode > 3 seconds

Start diagnostics:
- Engine temperature at engine start > -9.8 °C (+14.4 °F)
- Modeled pipe wall temperature at sensor position < 720 °C (1,328 °F)

Permanent diagnostics:
- Modeled exhaust gas temperature at sensor installation position > 350 °C (662 °F)
- Sensor heating active > 50 seconds

Low-temperature diagnostics:
- Modeled exhaust gas temperature at sensor installation position > 250 °C (482 °F)

Fault setting condition(s)

- Start diagnostics: One-time test of heating time after engine start
⇒ Heating time to operating temperature of 720 °C (1,328 °F) > 40 seconds

- Permanent diagnostics: Continuous testing during driving
⇒ Temperature < 720 °C (1,328 °F) and heating control > 90%

- Low-temperature diagnostics:
⇒ Sensor temperature < 640 °C (1,184 °F)

ⓘ Information
The engine control unit converts the internal resistance of the sensor Nernst cell to a ceramic element temperature, which is compared with the respective setpoint.

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Function restrictions

♦ Lambda control deactivated
♦ Higher emissions
♦ Poor engine running

Fault finding notes

♦ Check supply voltage
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 1 sensor 1 faulty

P013700

Diagnosis information DME control module

P013700 Bank 1 sensor 2 - voltage too low

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● At start with cold sensor: The sensor voltage is below the minimum voltage (0.04 V)
● In warm operation: The sensor voltage is below a minimum voltage (0.04 V) and no reaction to closed-loop enrichment

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

Diagnosis information DME control module

P013800 Bank 1 sensor 2 - voltage too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is above the maximum voltage (1.08 V)

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

Diagnosis information DME control module

P013A00 Bank 1 sensor 2 - signal too slow from rich to lean

Diagnostic conditions

- Sensor ready for operation
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- During the change from rich signal to lean signal, several differential gradients of the oxygen-sensor signal are evaluated in a 10-mV grid
- If the largest slope (delta voltage over delta time) is above the limit value, the test is OK

Monitored component or system

♦ Oxygen sensors behind catalytic converter

Fault finding notes

♦ Plug test, electrical fault finding
♦ Check oxygen sensor for soiling
♦ Check tightness of the exhaust system. If it is OK, test the oxygen sensor in a short trip

Diagnosis information DME control module

P013B00 Bank 1 sensor 2 - signal too slow from lean to rich
P013D00 Bank 2 sensor 2 - signal too slow from lean to rich

Diagnostic conditions

- Sensor ready for operation
- Diagnostics runs once per driving cycle

Information
The sensor reaction time (rise time) is measured during defined fuel jumps (change in the supplied fuel quantity).

Fault setting condition(s)

- Rise time from lean to rich > 1 second

Monitored component or system

♦ Oxygen sensors behind catalytic converter

Fault finding notes

♦ Connector test
♦ Electrical fault finding
♦ Check oxygen sensor for soiling
♦ Check tightness of the exhaust system
♦ Test oxygen sensor with a short trip

Fault effects

♦ The driver cannot perceive the reduction in the dynamic response of the sensor
♦ Accuracy loss of lambda control

Diagnosis information DME control module

P013C00 Bank 2 sensor 2 - signal too slow from rich to lean

Diagnostic conditions

- Sensor ready for operation
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- During the change from rich signal to lean signal, several differential gradients of the oxygen-sensor signal are evaluated in a 10-mV grid
- If the largest slope (delta voltage over delta time) is above the limit value, the test is OK

Monitored component or system

♦ Oxygen sensors behind catalytic converter

Fault finding notes

♦ Plug test, electrical fault finding
♦ Check oxygen sensor for soiling
♦ Check tightness of the exhaust system. If it is OK, test the oxygen sensor in a short trip

Diagnosis information DME control module

P013B00 Bank 1 sensor 2 - signal too slow from lean to rich
P013D00 Bank 2 sensor 2 - signal too slow from lean to rich

Diagnostic conditions

- Sensor ready for operation
- Diagnostics runs once per driving cycle

Information
The sensor reaction time (rise time) is measured during defined fuel jumps (change in the supplied fuel quantity).

Fault setting condition(s)

- Rise time from lean to rich > 1 second

Monitored component or system

♦ Oxygen sensors behind catalytic converter

Fault finding notes

♦ Connector test
♦ Electrical fault finding
♦ Check oxygen sensor for soiling
♦ Check tightness of the exhaust system
♦ Test oxygen sensor with a short trip

Fault effects

♦ The driver cannot perceive the reduction in the dynamic response of the sensor
♦ Accuracy loss of lambda control

Diagnosis information DME control module

P013E00 Bank 1 sensor 2 - signal delayed from rich to lean
P013F00 Bank 1 sensor 2 - signal delayed from lean to rich
P014A00 Bank 2 sensor 2 - signal delayed from rich to lean
P014B00 Bank 2 sensor 2 - signal delayed from lean to rich

Diagnostic conditions

- Sensor ready for operation
- Diagnostics runs once per driving cycle

Information
The sensor reaction time (rise time) is measured during defined fuel jumps (change in the supplied fuel quantity).

Fault setting condition(s)

- For lean-out: delay time from rich to lean
- For enrichment: delay time from lean to rich
- Delay time > 0.8 second

Monitored component or system

♦ Oxygen sensors behind catalytic converter

Fault finding notes

♦ Connector test
♦ Electrical fault finding
♦ Check oxygen sensor for soiling
♦ Check tightness of the exhaust system
♦ Test oxygen sensor with a short trip

Fault effects

♦ The driver cannot perceive the reduction in the dynamic response of the sensor
♦ Accuracy loss of lambda control

Diagnosis information DME control module

P013E00 Bank 1 sensor 2 - signal delayed from rich to lean
P013F00 Bank 1 sensor 2 - signal delayed from lean to rich
P014A00 Bank 2 sensor 2 - signal delayed from rich to lean
P014B00 Bank 2 sensor 2 - signal delayed from lean to rich

Diagnostic conditions

- Sensor ready for operation
- Diagnostics runs once per driving cycle

Information
The sensor reaction time (rise time) is measured during defined fuel jumps (change in the supplied fuel quantity).

Fault setting condition(s)

- For lean-out: delay time from rich to lean
- For enrichment: delay time from lean to rich
- Delay time > 0.8 second

Monitored component or system

♦ Oxygen sensors behind catalytic converter

Fault finding notes

♦ Connector test
♦ Electrical fault finding
♦ Check oxygen sensor for soiling
♦ Check tightness of the exhaust system
♦ Test oxygen sensor with a short trip

Fault effects

♦ The driver cannot perceive the reduction in the dynamic response of the sensor
♦ Accuracy loss of lambda control

Diagnosis information DME control module

P014000 Bank 1 sensor 2 - no activity

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● The sensor voltage is in the voltage range or the exhaust gas temperature is higher than the temperature threshold and the internal resistance is higher than the internal-resistance threshold

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

Diagnosis information DME control module

P013E00 Bank 1 sensor 2 - signal delayed from rich to lean
P013F00 Bank 1 sensor 2 - signal delayed from lean to rich
P014A00 Bank 2 sensor 2 - signal delayed from rich to lean
P014B00 Bank 2 sensor 2 - signal delayed from lean to rich

Diagnostic conditions

- Sensor ready for operation
- Diagnostics runs once per driving cycle

Information
The sensor reaction time (rise time) is measured during defined fuel jumps (change in the supplied fuel quantity).

Fault setting condition(s)

- For lean-out: delay time from rich to lean
- For enrichment: delay time from lean to rich
- Delay time > 0.8 second

Monitored component or system

♦ Oxygen sensors behind catalytic converter

Fault finding notes

♦ Connector test
♦ Electrical fault finding
♦ Check oxygen sensor for soiling
♦ Check tightness of the exhaust system
♦ Test oxygen sensor with a short trip

Fault effects

♦ The driver cannot perceive the reduction in the dynamic response of the sensor
♦ Accuracy loss of lambda control

Diagnosis information DME control module

P013E00 Bank 1 sensor 2 - signal delayed from rich to lean
P013F00 Bank 1 sensor 2 - signal delayed from lean to rich
P014A00 Bank 2 sensor 2 - signal delayed from rich to lean
P014B00 Bank 2 sensor 2 - signal delayed from lean to rich

Diagnostic conditions

- Sensor ready for operation
- Diagnostics runs once per driving cycle

Information
The sensor reaction time (rise time) is measured during defined fuel jumps (change in the supplied fuel quantity).

Fault setting condition(s)

- For lean-out: delay time from rich to lean
- For enrichment: delay time from lean to rich
- Delay time > 0.8 second

Monitored component or system

♦ Oxygen sensors behind catalytic converter

Fault finding notes

♦ Connector test
♦ Electrical fault finding
♦ Check oxygen sensor for soiling
♦ Check tightness of the exhaust system
♦ Test oxygen sensor with a short trip

Fault effects

♦ The driver cannot perceive the reduction in the dynamic response of the sensor
♦ Accuracy loss of lambda control

Diagnosis information DME control module

P015000 Bank 2 sensor 1 - electrical fault in circuit

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Exhaust temperature > 249.998 °C (481.996 °F)
- Heater control active
- Dew point end reached
- Diagnostics runs continuously

Fault setting condition(s)

- Ceramic element temperature < 640.022 °C (1,184.040 °F)
- Internal resistance > 950 Ohm
- Heater fault
- Line open circuit
- A fault entry is made as soon as the ceramic element temperature is implausibly low, the internal resistance of the Nernst cell is implausibly high or a heater fault or a line open circuit is present
- This diagnostic test represents a quick test in order to deactivate lambda control as quickly as possible in the event of a fault. The exact fault cause is stored as the second fault memory entry

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

Diagnosis information DME control module

P015100 Bank 2 sensor 1 - voltage too low

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Virtual ground < 2 V
- Nernst voltage < 1.75 V
- Comparison line < 0.9 V
- Collective fault: Short circuit of the virtual ground to ground, short circuit of the Nernst voltage to ground or short circuit of the comparison line to ground

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

Diagnosis information DME control module

P015200 Bank 2 sensor 1 - voltage too high

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Virtual ground > 3 V
- Nernst voltage > 4 V
- Comparison line > 6 V
- Collective fault: Short circuit of the virtual ground to B+, short circuit of the Nernst voltage to B+ or short circuit of the comparison line to B+

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

P015300

Diagnosis information DME control module

P015300 Bank 2 sensor 1 - signal too slow

Monitored component or system

♦ Bank 2 oxygen sensor 1

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

Diagnosis information DME control module

P013500 Bank 1 sensor 1 heating circuit - electrical fault
P015500 Bank 2 sensor 1 heating circuit - electrical fault

Diagnostic conditions

General:
- Battery positive voltage between 10.7 V and 16.1 V
- No electrical fault of the sensor
- No overrun mode > 3 seconds

Start diagnostics:
- Engine temperature at engine start > -9.8 °C (+14.4 °F)
- Modeled pipe wall temperature at sensor position < 720 °C (1,328 °F)

Permanent diagnostics:
- Modeled exhaust gas temperature at sensor installation position > 350 °C (662 °F)
- Sensor heating active > 50 seconds

Low-temperature diagnostics:
- Modeled exhaust gas temperature at sensor installation position > 250 °C (482 °F)

Fault setting condition(s)

- Start diagnostics: One-time test of heating time after engine start
⇒ Heating time to operating temperature of 720 °C (1,328 °F) > 40 seconds

- Permanent diagnostics: Continuous testing during driving
⇒ Temperature < 720 °C (1,328 °F) and heating control > 90%

- Low-temperature diagnostics:
⇒ Sensor temperature < 640 °C (1,184 °F)

ⓘ Information
The engine control unit converts the internal resistance of the sensor Nernst cell to a ceramic element temperature, which is compared with the respective setpoint.

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Function restrictions

♦ Lambda control deactivated
♦ Higher emissions
♦ Poor engine running

Fault finding notes

♦ Check supply voltage
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 1 sensor 1 faulty

Diagnosis information DME control module

P015700 Bank 2 sensor 2 - voltage too low

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● At start with cold sensor: The sensor voltage is below the minimum voltage (0.04 V)
● In warm operation: The sensor voltage is below a minimum voltage (0.04 V) and no reaction to closed-loop enrichment

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 2 sensor 2 faulty

Diagnosis information DME control module

P015800 Bank 2 sensor 2 - voltage too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is above the maximum voltage (1.08 V)

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 2 sensor 2 faulty

Diagnosis information DME control module

P016000 Bank 2 sensor 2 - no activity

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● The sensor voltage is in the voltage range or the exhaust gas temperature is higher than the temperature threshold and the internal resistance is higher than the internal-resistance threshold

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 2 sensor 2 faulty

Diagnosis information DME control module

P016100 Bank 2 sensor 2 heating circuit - electrical fault

Diagnostic conditions

- Intake-air temperature > -48 °C (-54 °F)
- Battery positive voltage 10.7...16.1 V
- Time after engine starts > 30 seconds
- Engine running
- Modeled exhaust-gas temperature at the sensor 300...820 °C (572 ... 1,508 °F)
- Sensor ready for operation
- Valid, current internal resistance of the sensor measured

Information
The internal resistance of the Nernst cell is measured. The resistance is inversely proportional to the ceramic-element temperature. The output capability of the heater is deduced via the resistance.

Fault setting condition(s)

- The measured internal resistance exceeds the threshold (map), which depends on the engine operating point (exhaust gas temperature and exhaust gas mass flow) and the heating output.

Monitored component or system

♦ Oxygen sensor heater behind catalytic converter 2

Fault finding notes

♦ Check power supply of the heater
♦ Check component for continuity (heater)
♦ Check wiring between the control unit and component for open circuit and contact resistance (heater circuit and sensor signal line)

Fault effects

♦ Accuracy loss of lambda control

P017000

Diagnosis information DME control module

P017000 Bank 1 fuel metering system - malfunction

Fault setting condition(s)

- **Lambda controller amplitude > 3%**

Monitored component or system

♦ Mixture adaptation (short trip)

Possible fault causes

♦ **Exhaust system** leaks (Engine ⇒ **Oxygen sensor in front of catalytic converter**)
♦ **Exhaust system** Narrowed / Blocked

♦ **Injection valve** Faulty (Mechanical fault)
♦ Timing incorrectly set
♦ Fault in area Fuel high-pressure, Intake manifold pressure sensor, **Throttle adjusting unit**, **Ambient pressure sensor**, **Intake air temperature sensor**, **Speed sensor**, **Valve lift control**, **Camshaft adjustment**
♦ High fuel content in engine oil

Diagnosis information DME control module

P017100 Bank 1 fuel metering system - system too lean

Fault setting condition(s)

- System too lean
- Adaptive value > 21%

Monitored component or system

♦ Mixture adaptation (short trip)

Possible fault causes

♦ **Exhaust system** leaks (Engine ⇒ **Oxygen sensor in front of catalytic converter**)
♦ **Exhaust system** Narrowed / Blocked

♦ **Injection valve** Faulty (Mechanical fault)
♦ Timing incorrectly set
♦ Fault in area Fuel high-pressure, Intake manifold pressure sensor, **Throttle adjusting unit**, **Ambient pressure sensor**, **Intake air temperature sensor**, **Speed sensor**, **Valve lift control**, **Camshaft adjustment**

P017200

Diagnosis information DME control module

P017200 Bank 1 fuel metering system - system too rich

Fault setting condition(s)

- System too rich
- Adaptive value < 21%

Monitored component or system

♦ Mixture adaptation (short trip)

Possible fault causes

♦ High fuel content in engine oil
♦ **Exhaust system** leaks (Engine ⇒ **Oxygen sensor in front of catalytic converter**)
♦ **Injection valve** Faulty (Mechanical fault)
♦ Timing incorrectly set
♦ Fault in area Fuel high-pressure, Intake manifold pressure sensor, **Throttle adjusting unit**, **Ambient pressure sensor**, **Intake air temperature sensor**, **Speed sensor**, **Valve lift control**, **Camshaft adjustment**

P017300

Diagnosis information DME control module

P017300 Bank 2 fuel metering system - malfunction

Fault setting condition(s)

- **Lambda controller amplitude > 3%**

Monitored component or system

♦ Mixture adaptation (short trip)

Possible fault causes

♦ **Exhaust system** leaks (Engine ⇒ **Oxygen sensor in front of catalytic converter**)
♦ **Exhaust system** Narrowed / Blocked

♦ **Injection valve** Faulty (Mechanical fault)
♦ Timing incorrectly set
♦ Fault in area Fuel high-pressure, Intake manifold pressure sensor, **Throttle adjusting unit**, **Ambient pressure sensor**, **Intake air temperature sensor**, **Speed sensor**, **Valve lift control**, **Camshaft adjustment**
♦ High fuel content in engine oil

P017400

Diagnosis information DME control module

P017400 Bank 2 fuel metering system - system too lean

Fault setting condition(s)

- System too rich
- Adaptive value > 21%

Monitored component or system

♦ Mixture adaptation (short trip)

Possible fault causes

♦ **Exhaust system** leaks (Engine ⇒ **Oxygen sensor in front of catalytic converter**)
♦ **Exhaust system** Narrowed / Blocked

♦ **Injection valve** Faulty (Mechanical fault)
♦ Timing incorrectly set
♦ Fault in area Fuel high-pressure, Intake manifold pressure sensor, **Throttle adjusting unit**, **Ambient pressure sensor**, **Intake air temperature sensor**, **Speed sensor**, **Valve lift control**, **Camshaft adjustment**

P017500

Diagnosis information DME control module

P017500 Bank 2 fuel metering system - system too rich

Fault setting condition(s)

- System too rich
- Adaptive value < 21%

Monitored component or system

♦ Mixture adaptation (short trip)

Possible fault causes

♦ High fuel content in engine oil
♦ **Exhaust system** leaks (Engine ⇒ **Oxygen sensor in front of catalytic converter**)
♦ **Injection valve** Faulty (Mechanical fault)
♦ Timing incorrectly set
♦ Fault in area Fuel high-pressure, Intake manifold pressure sensor, **Throttle adjusting unit**, **Ambient pressure sensor**, **Intake air temperature sensor**, **Speed sensor**, **Valve lift control**, **Camshaft adjustment**

Diagnostic information - DME control unit

P017B00 Cylinder head temperature sender - implausible signal

Diagnostic conditions

● Cold start detected (switch-off time > 8 h)
● Engine was shut off while hot
● Vehicle start with conditioned vehicle
● Diagnostics runs once per driving cycle with conditioned vehicle
● Enabling of "master cross-check" via ambient air temperature signal
● No electrical faults in the engine temperature sensor, no component faults justifying blockage, engine running and no block heater operation

Fault setting condition(s)

● The purpose of the high-stuck check is to detect a stuck sensor in the control range
● Each check is performed once after a correspondingly long engine-off time
● Subsequent temperature cross-check after engine start in the conditioned vehicle state (long off time)
● Comparison of the cylinder head temperature with the engine temperature that has already undergone a plausibility check (checked against intake air temperature and ambient air temperature)
● The measured cylinder head temperature undergoes a plausibility check compared to a modelled cylinder head reference temperature
● If no perceptible temperature change is recorded after driving states with low and high cooling power, it is safe to assume that the sensor is stuck

Monitored component or system

♦ Coolant temperature sensor

Fault finding notes

♦ Test of the temperature sensor with cold engine
♦ Check of the cylinder head temperature compared to the coolant temperature. Ideally, compare the measured values after the engine cooling phase (e.g. 8 hours)
♦ A fault exists if the cylinder head temperature value is 30 °C (86 °F) less than the coolant temperature
♦ If the connectors and wiring are OK, replace the sensor
♦ At low ambient temperatures (Extended fault memory - ambient temperature < 15 °C (59 °F) or driving at low revs) ⇒ Thermostat stuck open

Functional restrictions

- ♦ Engine temperature too high
- ♦ Measured cylinder head temperature too high
- ♦ Measured cylinder head temperature too low
- ♦ In combination with P308100 ⇒ Fan activation

Diagnosis information DME control module

P017C00 Cylinder head temperature sender - short circuit to ground

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The temperature sensor for thermal management input signal falls below the minimum value

Fault finding notes

- ♦ Check for short circuit to ground
- ♦ Check sensor, electrical wiring and the plug
- ♦ If the fault is a sensor fault, a fault will be entered when the sensor is unplugged

Diagnosis information DME control module

P017D00 Cylinder head temperature sender - short circuit to B+

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The temperature sensor for thermal management input signal exceeds the maximum value

Fault finding notes

♦ Check for short circuit to B+/open line
♦ Check sensor, electrical wiring and the plug

Diagnosis information DME control module

P019000 Fuel pressure sender - electrical fault in circuit

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Sensor voltage > 4.8 V
● Monitoring of the electric signal from the pressure sensor for the high pressure/rail pressure fuel system
● The sensor voltage is read into the engine control unit via an AD channel; the voltage value is monitored for minimum and maximum limits

Monitored component or system

♦ Fuel high pressure sensor

Fault finding notes

♦ Check wiring, sensor and the engine control unit

Function restrictions

♦ Possibly power reduction/limp-home mode (with low pressure)

Diagnosis information DME control module

P019100 Fuel pressure sensor - implausible signal

Diagnostic conditions

- Diagnostics runs continuously
- With engine running

Fault setting condition(s)

- By means of an upper and a lower pressure limit, it is possible to define a signal range in which the sensor provides plausible, variable values, but they cannot be identified as plausible because they lie outside the working range
- Voltage difference of the high pressure sensor < 0.0049 V (difference is formed over 4 injections)

Monitored component or system

♦ Fuel high-pressure sensor

Fault finding notes

♦ High pressure sensor faulty (no electrical fault)
♦ Possibly faulty plug on sensor

Function restrictions

♦ Engine shudders, possibly until it stalls at idle
♦ Acute lack of power
♦ Possibly breakdown

Diagnosis information DME control module

P019200 Fuel pressure sender - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Sensor voltage < 0.2 V
- Monitoring of the electric signal from the pressure sensor for the high pressure/rail pressure fuel system
- The sensor voltage is read into the engine control unit via an AD channel
- The voltage value is monitored for minimum and maximum limits

Monitored component or system

♦ Fuel high pressure sensor

Fault finding notes

♦ Check wiring, sensor and the engine control unit

Function restrictions

♦ Possibly power reduction/limp-home mode (with low pressure)

Diagnosis information DME control module

P019600 Oil temperature sender - implausible signal

Diagnostic conditions

- Ignition on
- Diagnostics runs once per driving cycle with conditioned vehicle
- Enabling of "master cross-check" via ambient air temperature signal

Fault setting condition(s)

- Temperature cross-check after engine start in the conditioned vehicle state.
- Comparison of engine oil temperature in the sump with engine temperature or intake-air temperature in the intake pipe

Monitored component or system

♦ Oil temperature signal from oil level/oil temperature sender

Fault finding notes

♦ Check of the temperature sensor compared to the other temperature sensors, ideally after an engine cooling phase
♦ If plug and wiring are OK, replace sensor
♦ The sensor stabilization duration must be observed

Function restrictions

♦ Hybrid driving possibly not possible

P019700

Diagnosis information DME control module

P019700 Oil temperature sender - signal too low

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+

Monitored component or system

♦ Oil level/oil temperature sender

Fault finding notes

♦ Sensor or wiring faulty

P019800

Diagnosis information DME control module

P019800 Oil temperature sender - signal too high

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to ground

Monitored component or system

♦ Oil level/oil temperature sender

Fault finding notes

♦ Sensor or wiring faulty

Diagnosis information DME control module

P01E300 Coolant temperature sender 3 - electrical fault
P01E700 Coolant temperature sender 3 - loose contact

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

P01E300
- Short circuit to ground: sensor voltage > 4.90 V
- Short circuit to B+: sensor voltage < 0.26 V

P01E700
- Difference between raw value and filtered value > 1 V

Monitored component or system

♦ Coolant temperature sensor at radiator outlet

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Coolant temperature sender 3 faulty

Fault effects

♦ Loss of performance capability of the electric machine

P01E400

Diagnosis information DME control module

P01E400 Coolant temperature sender 3 - signal implausible

Diagnostic conditions

DFCC 24184
● Once per driving cycle
● No electrical fault present
● Switch-off time > 7 hours and 47 minutes
● Switch-off time valid
● End of starting completed or E-driving readiness set
● Vehicle speed > 25 km/h (16 mph) for 30 seconds
● No temperature difference between the individual cross-check sensors

DFCC 24186
● Once per driving cycle
● Engine temperature -20.3...39.8 °C (-4.5 ... 103.6 °F)

Fault setting condition(s)

DFCC 24184
● Confirmed cross-check error for the cooling-circuit temperature sensor ● Threshold exceeded (map depending on engine switch-off time)
● No cross-check error of the other temperature sensors

DFCC 24186
● Temperature signal of the hybrid cooling circuit temperature changed by less than 3 °C (5.4 ° F)

Monitored component or system

♦ Coolant temperature sensor at radiator outlet

Fault finding notes

♦ Check of the temperature sensor compared to the other temperature sensors, ideally after engine cooling phase
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Coolant temperature sender 3 faulty

Fault effects

DFCC 24184
♦ Switchover of the sensor temperature to substitute value or substitute model
♦ Possibly restrictions in functions that use the sensor value

DFCC 24186
♦ No temperature specification of the coolant circuit from the radiator outlet to the electric machine
⇒ Switchover to model value
♦ Possibly earlier power reduction
♦ Possibly more frequent operation of the combustion engine

Diagnosis information DME control module

P01E300 Coolant temperature sender 3 - electrical fault
P01E700 Coolant temperature sender 3 - loose contact

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

P01E300
- Short circuit to ground: sensor voltage > 4.90 V
- Short circuit to B+: sensor voltage < 0.26 V

P01E700
- Difference between raw value and filtered value > 1 V

Monitored component or system

♦ Coolant temperature sensor at radiator outlet

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Coolant temperature sender 3 faulty

Fault effects

♦ Loss of performance capability of the electric machine

Diagnosis information DME control module

P020100 Cylinder 1 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 1

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P020200 Cylinder 2 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 2

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P020300 Cylinder 3 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 3

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P020400 Cylinder 4 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 4

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

P020500

Diagnosis information DME control module

P020500 Cylinder 5 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 5

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

P020600

Diagnosis information DME control module

P020600 Cylinder 6 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 6

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P021900 Maximum engine speed exceeded

Fault setting condition(s)

- Engine ran at a speed exceeding the governed speed (6,900 rpm)
- Presumably due to incorrect shifting of manual transmission
- Impossible for automatic transmissions in the field

Monitored component or system

♦ The engine is monitored for overspeed

Fault finding notes

♦ Possible cause in case of mechanical damage

Diagnosis information DME control module

P022100 Angle sender 2 for throttle valve drive - implausible signal

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The angles of throttle valve potentiometers 1 and 2 deviate by more than 6.3% from each other
- The angle of throttle valve potentiometer 2 and the calculated throttle valve angle deviate by more than 9.0% from each other

Monitored component or system

♦ Throttle valve sensor 2

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve plug when the ignition is on (throttle valve unplugged)

Function restrictions

♦ Limp-home mode (engine speed and torque limitation) maximum 110 km/h (68 mph)

Diagnosis information DME control module

P022200 Angle sender 2 for throttle valve drive - signal too low

Diagnostic conditions

- Ignition on, run-on
- Diagnostics runs continuously

Fault setting condition(s)

- Throttle valve potentiometer voltage of throttle valve 1 sensor 2 < 0.195V

Monitored component or system

♦ Throttle valve sensor 2

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve plug when the ignition is on (throttle valve unplugged)

Function restrictions

♦ Limp-home mode (engine speed and torque limitation) maximum 110 km/h (68 mph)

P022300

Diagnosis information DME control module

P022300 Angle sender 2 for throttle valve drive - signal too high

Diagnostic conditions

- Ignition on, run-on
- Diagnostics runs continuously

Fault setting condition(s)

- Throttle valve potentiometer voltage of throttle valve 1 sensor 2 > 4.805 V

Monitored component or system

♦ Throttle valve sensor 2

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve plug when the ignition is on (throttle valve unplugged)

Function restrictions

♦ Limp-home mode (engine speed and torque limitation) maximum 110 km/h (68 mph)

Diagnosis information DME control module

P023600 Boost pressure sender - implausible signal

Diagnostic conditions

● At engine start
● Continuously from engine start
● In partial-load range
● Partial-load operation (engine speed < 1,800 rpm)
and
● Compressor control flap open for 1 second

Fault setting condition(s)

● Diagnostics runs only if engine was stopped for at least 3 seconds before starting
At engine start
● Comparison of several pressure sensors at engine start
● Intake-pipe pressure < mean value from all valid pressures
In partial-load mode
● Comparison of several pressures in partial-load mode
● The intake-pipe sensor 1 value is more than 110 hPa less than or greater than the intake-pipe 2 sensor value and the pressure sensor behind the throttle valve
Continuously from engine start
● Comparison of measured bank 1 intake-pipe pressure implausible compared to model value

Monitored component or system

♦ Intake manifold sensor

Fault finding notes

♦ Compare measured values
♦ Check intake tract for tightness
♦ Check plug connections and lines
♦ Check compressor control flap (short test)
♦ Visual inspection for deformation/soiling of the throttle valve
♦ Visual inspection of charge air cooler
♦ Replace sensor

Function restrictions

♦ None other than bank 2 intake-pipe sensor also faulty, then ban on boost-pressure buildup

P023700

Diagnosis information DME control module

P023700 Boost pressure sender - signal too low

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to ground
- Intake-pipe pressure sensor voltage < 0.25 V

Monitored component or system

♦ Intake manifold sensor

Fault finding notes

♦ Check plug connections and lines
♦ Replace sensor

Function restrictions

♦ None other than bank 2 intake-pipe sensor also faulty, then ban on boost-pressure buildup

Diagnosis information DME control module

P023700 Boost pressure sender - signal too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to B+ or open circuit
- Intake-pipe pressure sensor voltage > 4.75 V

Monitored component or system

♦ Intake manifold sensor

Fault finding notes

♦ Check plug connections and lines
♦ Replace sensor

Function restrictions

♦ None other than bank 2 intake-pipe sensor also faulty, then ban on boost-pressure buildup

Diagnosis information DME control module

P023A00 Coolant pump for charge air cooler - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for line open circuit
- The output stage hardware reports the load decrease fault

Monitored component or system

♦ Auxiliary water pump 2

Fault finding notes

♦ Check plug connections and lines

P023B00

Diagnosis information DME control module

P023B00 Coolant pump for charge air cooler - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to ground
- The output stage hardware reports the short circuit to ground fault

Monitored component or system

♦ Auxiliary water pump 2

Fault finding notes

♦ Check plug connections and lines

Function restrictions

♦ Power limit of the combustion engine
♦ No boost possible
♦ Lower recuperation
♦ Start/stop ban
♦ Electric driving not possible
♦ Shutoff of accessories
♦ Breakdown possible

Diagnosis information DME control module

P023C00 Coolant pump for charge air cooler - short circuit to B+

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to B+
- The output stage hardware reports the short circuit to B+ fault

Monitored component or system

♦ Auxiliary water pump 2

Fault finding notes

♦ Check plug connections and lines

Diagnosis information DME control module

P024000 Bank 2 intake-manifold pressure sensor - implausible signal

Diagnostic conditions

- At engine start
- Continuously from engine start
- In partial-load range
- Partial-load operation at engine speed < 1,800 rpm

and

- Compressor control flap open for 1 second

Fault setting condition(s)

- Diagnostics runs only if engine was stopped for at least 3 seconds before starting

At engine start

- Comparison of several pressure sensors at engine start
- Intake-manifold pressure 2 < mean value from all valid pressures

In partial-load mode

- Comparison of several pressures in partial-load mode
- The intake-manifold sensor 2 value is more than 110 hPa less than or greater than the intake-manifold 1 sensor value and the pressure sensor behind the throttle valve

Continuously from engine start

- Comparison of measured bank 2 intake-manifold pressure implausible compared to model value

Monitored component or system

♦ Bank 2 intake manifold pressure sensor

Fault finding notes

♦ Compare measured values
♦ Check intake tract for tightness
♦ Check plug connections and lines
♦ Check compressor control flap (short test)
♦ Visual inspection for deformation/soiling of the throttle valve
♦ Visual inspection of charge air cooler
♦ Replace sensor

Function restrictions

♦ None other than bank 1 intake-manifold sensor also faulty, then ban on boost-pressure buildup

Diagnosis information DME control module

P024100 Boost pressure sender 2 - signal too low

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to ground
- Intake-pipe pressure sensor voltage < 0.25 V

Monitored component or system

♦ Intake-manifold pressure sensor 2

Fault finding notes

♦ Check plug connections and lines
♦ Replace sensor

Function restrictions

♦ None other than bank 1 intake-pipe sensor also faulty, then ban on boost-pressure buildup

Diagnosis information DME control module

P024200 Boost pressure sender 2 - signal too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to B+ or open circuit
- Intake-pipe pressure sensor voltage > 4.75 V

Monitored component or system

♦ Intake-manifold pressure sensor 2

Fault finding notes

♦ Check plug connections and lines
♦ Replace sensor

Function restrictions

♦ None other than bank 1 intake-pipe sensor also faulty, then ban on boost-pressure buildup

P025A00

Diagnosis information DME control module

P025A00 Fuel pump module activation - electrical fault/open circuit

Diagnostic conditions

- Ignition on
- If the low-side transistor is not conducting
- Diagnostics runs continuously

Fault setting condition(s)

- Voltage between 1.5 V and 2.5 V
- Direct current measurement in the output-stage driver (engine control unit); the output stage is switched off and a status is sent when the threshold is reached

Monitored component or system

♦ Control unit: fuel supply

Fault finding notes

♦ Check electrical connection to the fuel pump unit for open circuit.
♦ Unplug the fuel pump unit and connect signal line to ground
♦ If a short circuit to ground is detected, the fuel pump unit is faulty. Otherwise, the engine control unit is faulty

Function restrictions

♦ Engine failure

Diagnosis information DME control module

P025C00 Fuel pump module activation - short circuit to ground

Diagnostic conditions

- Ignition on
- If the low-side transistor is not conducting
- Diagnostics runs continuously

Fault setting condition(s)

- Voltage < 1.5 V
- Direct current measurement in the output-stage driver (engine control unit); the output stage is switched off and a status is sent when the threshold is reached

Monitored component or system

♦ Control unit: fuel supply

Fault finding notes

♦ Check electrical connection to the fuel pump unit for short circuit to ground
♦ Unplug the fuel pump unit
♦ If an open line is detected, the fuel pump unit is faulty. Otherwise, the engine control unit is faulty

Function restrictions

♦ Engine failure

P025D00

Diagnosis information DME control module

P025D00 Fuel pump module activation - short circuit to B+

Diagnostic conditions

- Ignition on
- If the low-side transistor is conducting
- Diagnostics runs continuously

Fault setting condition(s)

- Current > 1.5 A
- Direct current measurement in the output-stage driver (engine control unit); the output stage is switched off and a status is sent when the threshold is reached

Monitored component or system

♦ Control unit: fuel supply

Fault finding notes

♦ Check electrical connection to the fuel pump unit for short circuit to B+
♦ Unplug the fuel pump unit
♦ If an open line is detected, the fuel pump unit is faulty. Otherwise, the engine control unit is faulty

Function restrictions

♦ Engine failure

Diagnosis information DME control module

P026100 Cylinder 1 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 1

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026200 Cylinder 1 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 1

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026400 Cylinder 2 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 2

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026500 Cylinder 2 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 2

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026700 Cylinder 3 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 3

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026800 Cylinder 3 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 3

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnostic information - DME control unit

P026A00 Charge-air cooler efficiency too low

Diagnostic conditions

- Diagnostics runs several times per driving cycle

Fault setting condition(s)

- Cooling power in low-temperature circuit too low
- The mean intake-air temperature is higher than the calculated intake air temperature

Monitored component or system

♦ Low-temperature cooling circuit

Fault finding notes

♦ Check auxiliary coolant pump for low-temperature circuit and hoses
♦ Auxiliary coolant pump frozen/blocked
⇒ Activation possible via drive link
♦ Charge-air cooler covered (e.g. by snow, leaves)
♦ Cooling system blocked
♦ Check compressor temperature sensors
♦ No supply from auxiliary coolant pump (e.g. pump wheel broken)
♦ Air in cooling system

Fault effects

♦ Message >>Hybrid system fault<< in instrument cluster
♦ Radiator fan emergency operation

P027000

Diagnosis information DME control module

P027000 Cylinder 4 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 4

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P027100 Cylinder 4 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 4

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

P027300

Diagnosis information DME control module

P027300 Cylinder 5 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 5

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P027400 Cylinder 5 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 5

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P027600 Cylinder 6 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 6

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P027700 Cylinder 6 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 6

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

P030000

Diagnosis information DME control module

P030000 Misfiring detected

Fault setting condition(s)

- Catalytic converter faulty
- Misfiring rate > 2.5%...25%

Monitored component or system

♦ Misfire detection, misfiring detected

Fault finding notes

♦ Regularly only together with a single fault
♦ If this fault occurs without an individual-cylinder fault, perform the test procedure (e.g. test drive)

Function restrictions

♦ Loss of power
♦ MIL on

P030100

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder 1 misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030200

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder 1 misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030300

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder 1 misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030400

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder 1 misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030500

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder 1 misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030600

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder 1 misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

Diagnosis information DME control module

P032100 Engine speed sender - implausible signal

Diagnostic conditions

● The intelligent speed sender is permanently supplied with power
● After synchronization via a safe run-out position and reaching the first reference mark (gap on sender wheel)
● No camshaft sender fault present
● No fault in the sensor supply voltage
● Engine stalling detection not active
● Engine start
● Switch ignition off and then on again
● Diagnostics runs continuously
● With engine running

Fault setting condition(s)

● After synchronization via a safe run-out position, a correction of the angle basis is made at the first reference mark (gap on sender wheel). If a certain amount is exceeded in this process, the fault is set
● Disturbed signal from intelligent speed sender detected
● Incorrect shut-off position of the intelligent speed sender detected
● Several edges implausible with respect to each other in time
● Incorrect number of crankshaft gaps and/or crankshaft teeth detected

Monitored component or system

♦ Crankshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply (only with active sensor)
♦ Check sensor signal with engine running (oscilloscope)
♦ Check the wiring for short circuit to B+, short circuit to ground and line open circuit
♦ Check sender wheel
♦ Replace sensor

Function restrictions

♦ Possibly torque limitation through switch-off of the high-pressure pump
♦ Delayed starting process possible

Diagnosis information DME control module

P032200 Engine speed sender - no signal

Diagnostic conditions

- No camshaft sender fault present
- No fault in the sensor supply voltage
- Engine stalling detection not active
- Engine start
- Switch ignition off and then on again
- Diagnostics runs continuously
- With engine running

Fault setting condition(s)

- No edge change of the crankshaft signal detected with camshaft signal present and engine turning

Monitored component or system

♦ Crankshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply (only with active sensor)
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Possibly torque limitation through switch-off of the high-pressure pump

Diagnosis information DME control module

P032700 Knock sensor 1 - signal too low

Diagnostic conditions

- Engine speed > 1,000 rpm
- Cyclical, except if fault or fault healing is suspected, in which case only this line is tested until the suspicion is no longer present
- Performed once per 100-ms grid

Fault setting condition(s)

- Knocking signal < -0.7 V
- Short circuit to ground
- Voltage too low

Monitored component or system

♦ Knock sensor 1

Fault finding notes

♦ Check of the sensor, the line, the connections for correct seating of the sensor

Diagnosis information DME control module

P032800 Knock sensor 1 - signal too high

Diagnostic conditions

● Engine speed > 1,000 rpm
● Cyclical, except if fault or fault healing is suspected, in which case only this line is tested until the suspicion is no longer present
● Performed once per 100-ms grid

Fault setting condition(s)

● Knocking signal > 1.0 V
● Short circuit to B+
● Voltage too high

Monitored component or system

♦ Knock sensor 1

Fault finding notes

♦ Check of the sensor, the line, the connections for correct seating of the sensor

Diagnosis information DME control module

P033200 Knock sensor 2 - signal too low

Diagnostic conditions

● Engine speed > 1,000 rpm
● Cyclical, except if fault or fault healing is suspected, in which case only this line is tested until the suspicion is no longer present
● Performed once per 100-ms grid

Fault setting condition(s)

● Knocking signal < -0.7 V
● Short circuit to ground
● Voltage too low

Monitored component or system

♦ Knock sensor 2

Fault finding notes

♦ Check of the sensor, the line, the connections for correct seating of the sensor

Diagnosis information DME control module

P033300 Knock sensor 2, signal too high

Diagnostic conditions

● Engine speed > 1,000 rpm
● Cyclical, except if fault or fault healing is suspected, in which case only this line is tested until the suspicion is no longer present
● Performed once per 100-ms grid

Fault setting condition(s)

● Knocking signal > 1.0 V
● Short circuit to B+
● Voltage too high

Monitored component or system

♦ Knock sensor 2

Fault finding notes

♦ Check of the sensor, the line, the connections for correct seating of the sensor

Diagnosis information DME control module

P034100 Camshaft position sensor - implausible signal

Diagnostic conditions

- No crankshaft sensor fault present
- No fault in the sensor supply voltage
- Switch ignition off and then on again
- Diagnostics at each start
- With engine running

Fault setting condition(s)

- The number of newly detected camshaft edges is evaluated once per camshaft revolution
- The camshaft signal is monitored for the number of edges actually present, their spacing and the signal level between the edges
- Number of edge changes, the signal level between the edges and the angular spacing of the camshaft sender edges deviate too far from the setpoints

Monitored component or system

♦ Bank 1 intake camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P034200 Camshaft position sensor - signal too low

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- No sensor edge change detected while engine is running
- Sensor signal is continuously at Low level

Monitored component or system

♦ Bank 1 intake camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P034300 Camshaft position sensor - signal too high

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- No sensor edge change detected while engine is running
- Sensor signal continuously at High level

Monitored component or system

♦ Bank 1 intake camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P034600 Bank 2 intake camshaft position sensor - implausible signal

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- Not enough camshaft sender edge changes matching the crankshaft signal detected

Monitored component or system

♦ Bank 2 intake camshaft sensor

Diagnosis information DME control module

P034700 Bank 2 camshaft position sensor - short circuit to ground

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- No sensor edge change detected while engine is running Sensor signal is continuously at Low level

Monitored component or system

♦ Bank 2 intake camshaft sensor

P034800

Diagnosis information DME control module

P034800 Bank 2 camshaft position sensor - short circuit to B+

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- No sensor edge change detected while engine is running Sensor signal continuously at High level

Monitored component or system

♦ Bank 2 intake camshaft sensor

Diagnosis information DME control module

P035100 Cylinder 1 ignition control - malfunction

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- In case of idling, an internal register is set after a filtering time
- A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

P035200

Diagnosis information DME control module

P035200 Cylinder 2 ignition control - malfunction

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- In case of idling, an internal register is set after a filtering time
- A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

P035300

Diagnosis information DME control module

P035300 Cylinder 3 ignition control - malfunction

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- In case of idling, an internal register is set after a filtering time
- A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Diagnosis information DME control module

P035400 Cylinder 4 ignition control - malfunction

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- In case of idling, an internal register is set after a filtering time
- A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

P035500

Diagnosis information DME control module

P035500 Cylinder 5 ignition control - malfunction

Diagnostic conditions

- Engine speed > 680 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- Monitoring of ignition coil activation for line open circuit

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

P035600

Diagnosis information DME control module

P035600 Cylinder 6 ignition control - malfunction

Diagnostic conditions

- Engine speed > 680 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- Monitoring of ignition coil activation for line open circuit

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P041000 Secondary-air system - malfunction

Diagnostic conditions

● Diagnostics runs once per driving cycle

Fault setting condition(s)

● Difference of measured pressure between secondary-air pump and secondary-air valve after secondary-air injection in the offset phase before secondary-air injection

Monitored component or system

♦ Secondary-air system

Fault finding notes

♦ Perform a short test if necessary

Function restrictions

♦ MIL on

Diagnosis information DME control module

P041600 Secondary-air injection valve 2 - open circuit

Diagnostic conditions

- Diagnostics runs continuously
- Secondary-air valve 2 activated
- Engine running

Fault setting condition(s)

- Secondary-air valve output stage line open circuit (low side switch)
- The output stage of the secondary-air valve detects a load drop-off
- Internal voltage is measured at the output 4.8...5.3 V

Monitored component or system

♦ Secondary-air valve

Fault finding notes

♦ Check wiring between engine control unit and component for open circuit
♦ The internal diagnostic voltage (between 3 V and 6 V) per output stage is measured
♦ Check power supply

Function restrictions

♦ Output stage inactive; failure of the secondary-air valve

Diagnosis information DME control module

P041700 Secondary-air injection valve 2 - short circuit

Diagnostic conditions

- Diagnostics runs continuously
- Secondary-air valve 2 activated
- Engine running

Fault setting condition(s)

Short circuit to B+
- Secondary-air valve output stage - short circuit to B+ (low side switch)
- The output stage of the secondary-air valve detects a short circuit to B+
- Signal current 2.2...4.0 A

Short circuit to ground
- Secondary-air valve output stage - short circuit to ground (low side switch)
- The output stage of the secondary-air valve detects a short circuit to ground
- Diagnostic voltage 0...3.25 V is measured at the output

Monitored component or system

♦ Secondary-air valve

Fault finding notes

♦ Check wiring between engine control unit and component for short circuit to B+
♦ If OK, disconnect the component plug and erase the fault memory
♦ If the engine control unit detects an open circuit, the
fault lies in the component

Function restrictions

♦ Output stage inactive; failure of the secondary-air valve

Diagnosis information DME control module

P042000 Bank 1 catalytic converter system - inadequate effect

Diagnostic conditions

- Exhaust gas mass flow < 25 kg/h...140 kg/h
- Modeled catalytic converter temperature in the range 549.998 °C...950 °C (1,021.996 °F... 1,742 °F)
- Mass air flow in the range 15%...68.3%
- Engine speed in the range 1,000 rpm...3,000 rpm
- Number of tests: 4
- Rapid adaptation stabilized
- Oxygen sensor ahead of catalytic converter ready; no fault
- Oxygen sensor behind catalytic converter ready; no fault
- Secondary-air system not active
- No misfiring
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Catalytic converter diagnostics through determination of the oxygen storage capacity

Monitored component or system

♦ Bank 1 catalytic converter

Fault finding notes

♦ The fault of the conversion loss in the catalytic converter cannot be checked in the workshop
♦ Poor fuel quality or misfiring could have caused the fault

Function restrictions

♦ The driver cannot perceive the reduction in the catalytic converter effect

Diagnosis information DME control module

P043000 Bank 2 catalytic converter system - inadequate effect

Diagnostic conditions

- Exhaust gas mass flow < 25 kg/h...140 kg/h
- Modeled catalytic converter temperature in the range 549.998 °C...950 °C (1,021.996 °F... 1,742 °F)
- Mass air flow in the range 15.0%...68.3%
- Engine speed in the range 1,000 rpm...3,000 rpm
- Number of tests: 4
- Rapid adaptation stabilized
- Oxygen sensor ahead of catalytic converter ready; no fault
- Oxygen sensor behind catalytic converter ready; no fault
- Secondary-air system not active
- No misfiring
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Catalytic converter diagnostics through determination of the oxygen storage capacity

Monitored component or system

♦ Bank 2 catalytic converter

Fault finding notes

♦ The fault of the conversion loss in the catalytic converter cannot be checked in the workshop
♦ Poor fuel quality or misfiring could have caused the fault

Function restrictions

♦ The driver cannot perceive the reduction in the catalytic converter effect

P043E00

Diagnostic information - DME control unit

P043E00 Tank vent system leakage diagnostics for reference leak - inadequate flow

Diagnostic conditions

- Tank leakage short test

Then:

- Tank vent valve short test

or

- Engine start with the following conditions:
  - Engine temperature > 4 °C (39 °F)
  - Difference between engine temperature and intake-air temperature < 15 °C (27 °F)
- Drive for longer than 10 minutes
- Tank vent adaptation value < 5.00

then:

- Engine and ignition off for longer than 15 minutes

at:

- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
- Ambient temperature 4 ... 35 °C (39 ... 95 °F)
- Vehicle standstill
- Constant supply voltage (change < 1 V)
- Constant current draw of the tank leak diagnostic module - DMTL (fluctuation < 1 mA)

ⓘ The previous sequence is used to perform the tank leak test as a prerequisite for the actual diagnosis during the next trip.

then:

- Drive under the following conditions:
  - Engine start temperature < 60 °C (140 °F)
  - Vehicle speed 20..125 km/h (13...77 mph)
  - Change in vehicle speed < 30 km/h (18 mph)
  - No gear changes
  - No overrun fuel cut-off
  - Engine in partial-load mode
  - Intake manifold pressure at least 40 hPa less than ambient pressure
  - Current fuel consumption < 5 ml/s
  - Total tank ventilation quantity since engine start > 2.0 g
  - DMTL pump activated

Diagnostics run if the tank vent valve is open for

- > 15 seconds and is closed for > 5 seconds under these conditions.

Fault setting condition(s)

- The pump current during the reference-leak measurement is too high

● Pump current in the reference phase > 40.0 mA

Monitored component or system

♦ Leakage diagnostic pump

Fault finding notes

♦ Vent line from DMTL clogged
♦ Vent line to DMTL clogged
♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL
♦ DMTL power supply faulty
♦ **Tank leak diagnostic module** - DMTL faulty

Functional restrictions

♦ MIL comes on

P043F00

Diagnosis information DME control module

P043F00 Tank vent system - leakage diagnostics for reference leak - excessive flow

Diagnostic conditions

● Tank leakage short test
then:
● Tank vent valve short test

or

● Drive for longer than 10 minutes
● Tank vent adaptation value < 5.00
then:
● Engine and ignition off for longer than 15 minutes
at:
● Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
● **Ambient temperature** 4 ... 35 °C (39 ... 95 °F)
● Vehicle standstill
● Constant supply voltage (change < 1 V)
● Constant current draw of the tank leak diagnostic module - DMTL (fluctuation < 1 mA)
then:
● Engine start with the following conditions:
● **Engine temperature** > 4 °C (39 °F)
● Difference between engine compartment temperature and intake-air temperature < 15 °C (27 °F)

Fault setting condition(s)

● The pump current during the reference-leak measurement is too low
● Pump current in the reference phase < 15.0 mA

Monitored component or system

♦ Leakage diagnostic pump

Fault finding notes

♦ Vent line from DMTL clogged
♦ Vent line to DMTL clogged
♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up
♦ Tank implodes

Diagnosis information DME control module

P044100 Tank vent system - incorrect throughput

Diagnostic conditions

● Tank leakage short test
then:
● Tank vent valve short test

or

● Engine start under the following conditions:
● Tank leak test performed after most recent engine run
● Engine compartment temperature < 60 °C (140 °F)
then:
● Drive under the following conditions:
● Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
● **Ambient temperature** 4 ... 35 °C (39 ... 95 °F)
● **Time since engine start** > 10 minute(s)
● Lambda control ahead of catalytic converter ready
● Engine running > idle speed
● Vehicle speed 20 ... 125 **km/h** (12 ... 78 mph); with speed change < 30 **km/h** (19 mph)
● No overrun fuel cut-off
● No gear changes
● Fuel flow rate from tank < 5.00 ml/sec.
here:
● Tank vent valve NOT activated > 5 seconds
and
● Tank vent valve activated > 5 seconds

Fault setting condition(s)

ⓘ The **tank leak diagnostic module - DMTL -** is activated during the drive. The **tank vent valve** is opened or closed at the same time.
♦ **Tank vent valve** does not close (completely):
● Current-draw difference of the **DMTL** is significantly higher than in the last tank leak test.
♦ **Tank vent valve** does not open:
● Constant current draw of the **DMTL** when the tank vent valve is opened .
● If tank leakage diagnostics via leakage diagnostic pump (el. pump connected to the fresh-air side of the carbon canister, which applies approx. 30 hPa overpressure to the tank in control unit run-on) is installed, diagnostics of the tank vent valve is also performed via the DMTL. The pump current draw serves as a measure of the pressure increase in the tank. For this purpose, diagnostics initially determines a reference current by the pump pumping against a reference leak measuring 0.5 mm in diameter. After switchover of an internal solenoid valve, pumping

takes place into the tank with the tank vent valve closed. In this process, the idle current is measured first, and the reference current change compared to the idle current is compared with the current change from the last leakage diagnostics in control unit run-on. If the current change is too high, the tank vent valve is stuck open and evacuates the tank. If the current change is OK, the tank will continue to be pumped up. If the relative current increase exceeds a threshold in the further process, the tank vent valve will be opened. The pump current must now have decreased by an applicable value within a specified time, otherwise the tank vent valve is stuck closed.

Monitored component or system

♦ Tank vent valve

Fault finding notes

♦ If the tank vent valve drive link test is not OK, then replace the tank vent valve
♦ If the tank vent valve drive link test is OK, then perform short trip tank vent valve test
♦ Check lines from the carbon canister to the tank vent valve and from the tank vent valve to the intake manifold for leaks, kinks, joined connections and clogging
♦ Replace tank vent valve
ⓘ For information about the DMTL function, refer to the document **Function description**.

Function restrictions

♦ The tank vent valve does not open
♦ The carbon canister is not flushed
♦ Fuel vapors can emerge at the fresh air filter in the rear left wheel housing
♦ MIL on

P044200

Diagnostic information - DME control unit

P044200 Tank vent system, fine leak detected

Diagnostic conditions

● Tank leakage diagnosis short test
then:
  ● Tank vent valve short test

or

● Engine start with the following conditions:
  ● Engine temperature > 4 °C (39 °F)
  ● Difference between engine temperature and intake-air temperature < 15 °C (59 °F)
● Drive for longer than 10 minutes
● Tank vent adaptation value < 5.00
then:
  ● Engine and ignition off for longer than 15 minutes
  at:
    ● Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
    ● Ambient temperature 4 ... 35 °C (39 … 95 °F)
    ● Vehicle standstill
    ● Constant supply voltage (change < 1 V)
    ● Constant current draw of the tank leakage diagnosis module - DMTL (fluctuation < 1 mA)

Fault setting condition(s)

● Test of the tank system for leaks with an equivalent diameter > 1.0 mm (0.04 in.)
ⓘ There may be several small leaks, which correspond in total to the leak determined here.

Monitored component or system

♦ Tank system minor leak

Fault finding notes

♦ Check the tank cap for correct closing and intact seals
♦ Check tank vent valve
♦ Check plug on the leakage diagnostic pump for correct seating
♦ Check tank system (with hoses) for tightness
♦ **Check tank leakage diagnosis module** - DMTL (leaks/faulty)
ⓘ For information about the DMTL function, see also the document **Function description**.

Functional restrictions

- ♦ Stronger smell of fuel
- ♦ Tank cap warning light comes on
- ♦ MIL on

Diagnosis information DME control module

P044400 Tank vent valve - open circuit

Diagnostic conditions

● Perform tank vent valve short test

or:

● **Time since engine start** > 10 second(s)
● Tank vent valve activated

Fault setting condition(s)

● The output stage of the tank vent valve detects a load decrease; the internal voltage is measured at the output > 4.8 V...5.3 V
● Tank vent valve output stage line open circuit (low side switch)

Monitored component or system

♦ Tank vent valve

Fault finding notes

♦ Check wiring between the DME control unit and component for open circuit. Depending on the output stage, the internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check power supply

Function restrictions

♦ Output stage inactive, failure of the tank vent valve

P044700

Diagnosis information DME control module

P044700 Tank vent system venting activation - open circuit

Diagnostic conditions

- Tank leakage short test

or

- **Power supply voltage** 9 V ... 16 V
- For detection of open circuit or short circuit to ground:
  - Ignition on
- For detection of short circuit to B+:
  - Tank leak test

Fault setting condition(s)

♦ Short circuit to open circuit in the line ▶ Activation line to DMTL solenoid valve
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Monitored component or system

♦ DMTL solenoid valve output stage

Fault finding notes

♦ Line test
♦ Replace module

Function restrictions

♦ MIL lights up

Diagnosis information DME control module

P044800 Tank vent system venting activation - short circuit

Diagnostic conditions

- Tank leakage short test

or

- **Power supply voltage** 9 V ... 16 V
- For detection of open circuit or short circuit to ground:
  - Ignition on
- For detection of short circuit to B+:
  - Tank leak test

Fault setting condition(s)

- DMTL solenoid switchover valve output stage short circuit to B+
- DMTL solenoid switchover valve output stage short circuit to ground

Monitored component or system

♦ DMTL solenoid valve output stage

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL solenoid valve
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ Tank implodes
♦ MIL lights up

P044900

Diagnostic information - DME control unit

P044900 Pressure tank, fuel tank isolation valve, electrical fault

Diagnostic conditions

- Fuel tank isolation valve (FTIV) activated

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Loose contact or corrosion on connectors or lines

Functional restrictions

♦ No pressure control in fuel tank
♦ MIL on
♦ Longer waiting time before opening of filler flap
♦ Tank pressurized when tank cap is opened
♦ Refueling not possible
♦ Fuel odor from carbon canister

1. Short circuit to B+ or open circuit in line
⇒ No tank pressurization
2. Short circuit to ground
⇒ No tank pressure reduction

Diagnostic information - DME control unit

P045000 Pressure tank, pressure sensor, signal implausible

Diagnostic conditions

- Once per driving cycle after cold start, max. 10 attempts for a successful test.
- Change in ambient pressure < 3 hPa
- Ambient pressure > 680 hPa
- Ambient temperature 3.75...35.25 °C (38.75...95.45 °F)
- No refueling requested
- Fuel level < 80 l (21.1 gallons)

Fault setting condition(s)

- Tank pressure sensor offset: Differential pressure > 20 hPa

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ Check function of fuel tank isolation valve (FTIV) ⇒ Tank leak test: This activates the FTIV. (Provided the tank leakage diagnostic module (DMTL) is available)
♦ Pressure sensor faulty
♦ Tank vent line trapped/clogged

Functional restrictions

♦ MIL on
♦ Extended waiting time before filler flap opens
♦ Smell of fuel from carbon canister

Diagnostic information - DME control unit

P045100 Pressure tank, pressure sensor, signal implausible

Diagnostic conditions

- Several times per driving cycle if conditions are met
- Vehicle speed 5 ... 80 km/h (3 ... 50 mph)
- Ambient pressure >= 746 hPa
- Ambient temperature >= 0 °C (32 °F)

Fault setting condition(s)

DFCC 14522
- Filtered tank pressure for diagnostics > 400 hPa (signal too high)

DFCC 14523
- Filtered tank pressure for diagnostics < -200 hPa (signal too low)

DFCC 14524
- Change in the tank pressure signal < 0.2 hPa (depending on the vehicle speed)

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ Tank cap open
♦ Loose contact or corrosion on connectors or lines
♦ Pressure sensor faulty

Functional restrictions

♦ Pressure signal shows no changes
♦ No pressure control in tank
♦ Extended waiting time before filler flap opens
♦ Smell of fuel from carbon canister

Diagnostic information - DME control unit

P045600 Tank vent system, micro leak detected

Diagnostic conditions

● Tank leakage short test
Then:
  ● Tank vent valve short test

or

● Engine start with the following conditions:
  ● Engine temperature > 4 °C (39 °F)
  ● Difference between engine temperature and intake-air temperature < 15 °C (27 °F)
● Drive for longer than 10 minutes
● Tank vent adaptation value < 5.00
then:
  ● Engine and ignition off for longer than 15 minutes
  at:
    ● Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
    ● Ambient temperature 4 ... 35 °C (39 ... 95 °C)
    ● Vehicle standstill
    ● Constant supply voltage (change < 1 V)
    ● Constant current draw of the tank leak diagnostic module - DMTL (fluctuation < 1 mA)

Fault setting condition(s)

● Test of the tank system for leaks with an equivalent diameter of 0.5 ... 1.0 mm (0.02 ... 0.04 in.)
ⓘ There may be several small leaks which correspond in total to the leak determined here.

Monitored component or system

♦ Tank system micro leak

Fault finding notes

♦ Check the tank cap for correct closing and intact seals
♦ Check tank vent valve
♦ Check plug on the leakage diagnostic pump for correct seating
♦ Check tank system (with hoses) for tightness
♦ Check **tank leakage diagnostic module** - DMTL (leaks/faulty)

ⓘ For information about the DMTL function, refer to the document **Function description**.

Functional restrictions

- More pronounced fuel odor
- MIL on

P045700

Diagnosis information DME control module

P045700 Tank vent system - major leak

Diagnostic conditions

- Engine control unit run-on longer than 3 s
- MIL not on
- Elevation above sea level < 2,700 m (8,858 ft.)
- Engine start temperature 3.8 °C...35.3 °C (38.8 °F....95.5 °F)
- Diagnostics runs once per start cycle in control unit run-on

Fault setting condition(s)

- Test of the tank system for missing tank cap with purely informative diagnostics (no OBD II output); diagnostics controls a separate tank cap warning lamp

Monitored component or system

♦ Tank system major leak (tank cap open test during driving)

Fault finding notes

♦ A major leak was detected after a refueling operation; the customer may have forgotten to close the tank cap
♦ Check tank cap

Function restrictions

♦ Tank cap warning light illuminates
♦ More pronounced fuel odor

Diagnosis information DME control module

P045800 Tank vent valve - short circuit to ground

Diagnostic conditions

● Perform tank vent valve short test

or:

● **Time since engine start** > 10 second(s)
● **Leakage diagnostic pump not** activated

Fault setting condition(s)

● The output stage of the tank vent valve detects a short circuit to ground; the diagnostic voltage is measured at the output < 0 V...3.25 V
● Tank vent valve output stage short circuit to ground (low side switch)

Monitored component or system

♦ Tank vent valve

Fault finding notes

♦ Check wiring between the DME control unit and component for short circuit to ground. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the tank vent valve

P045900

Diagnosis information DME control module

P045900 Tank vent valve - short circuit to B+

Diagnostic conditions

- Perform tank vent valve short test

or:

- **Time since engine start** > 10 second(s)
- Tank vent valve activated

Fault setting condition(s)

- The output stage of the tank vent valve detects a short circuit to B+
- Signal current > 2.2 A...4.0 A
- Tank vent valve output stage short circuit to ground (low side switch)

Monitored component or system

♦ Tank vent valve

Fault finding notes

♦ Check wiring between the DME control unit and component for short circuit to B+. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive, failure of the tank vent valve

P046100

Diagnosis information DME control module

P046100 Fuel level sender - signal implausible
P206600 Fuel level sender 2 - physical value range exceeded
P25D800 Fuel level sender 3 - physical value range exceeded

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

P046100
- Fuel level sender, signal > 110 l (liters)
- Resistance of sensor 1 > 1,100 Ohm

P206600
- Resistance of sensor 2 > 1,100 Ohm

P25D800
- Resistance of sensor 3 > 550 Ohm

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Fuel level sender stuck
♦ Fault finding via instrument cluster

P046200

Diagnosis information DME control module

P046200 Fuel level sender, signal too low
P046300 Fuel level sender, signal too high
P206700 Fuel level indicator sender 2 - short circuit to ground
P206800 Fuel level indicator sender 2 - short circuit to B+

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The fault is detected by the instrument cluster and transferred to the DME control unit, where the fault memory entry is made

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Check instrument cluster fault memory content

Fault effects

♦ MIL on

P046300

Diagnosis information DME control module

P046200 Fuel level sender, signal too low
P046300 Fuel level sender, signal too high
P206700 Fuel level indicator sender 2 - short circuit to ground
P206800 Fuel level indicator sender 2 - short circuit to B+

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The fault is detected by the instrument cluster and transferred to the DME control unit, where the fault memory entry is made

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Check instrument cluster fault memory content

Fault effects

♦ MIL on

Diagnosis information DME control module

P048000 Radiator fan activation 1 - electrical fault

Diagnostic conditions

- Switch ignition on; fault is entered immediately
- Effect: Last revs are maintained; limp-home mode occurs after 10 s

Fault setting condition(s)

- Open circuit in signal line to fan control unit 1

Monitored component or system

♦ Activation line to the first fan output stage

Fault finding notes

♦ Line from DME control unit to fan control unit 1 is interrupted
♦ Continuity test from DME control unit to the radiator fan output stage
♦ In case of open circuit, it is possible to measure battery positive voltage at the fan control unit and ground at the DME control unit

Function restrictions

♦ Emergency operation of the fan means that the requirements for charging balance, acoustics and closed-circuit current are not met
♦ An empty battery is the possible result

Diagnostic information - DME control unit

P049100 Bank 1 secondary-air system - inadequate flow

Diagnostic conditions

● Diagnostics runs once during cold start

Fault setting condition(s)

● Leak or blockage detected in secondary-air line

Monitored component or system

♦ Secondary-air system

Fault finding notes

If the fault occurs in connection with the fault symptom (P code P049200), the fault in question is a fault in the overall system:
♦ Blockage between secondary-air pump and junction at which the secondary-air system separates into the two banks
♦ Leak between secondary-air pump and a secondary-air valve
♦ Inadequate secondary-air pump delivery quantity

If the fault occurs by itself:
♦ Blockage on bank 1
♦ Leak behind the valve

Generally:
♦ Check the secondary-air hoses
♦ Check that the secondary-air valves are activated (drive link)
♦ Visual inspection of the air admission into the cylinder head (contamination)
► See cleaning instructions in the PIWIS information system (Workshop Manual 266029)

♦ Check secondary-air system, bank 1 short test
♦ Check secondary-air system, bank 2 short test
The short tests can only be carried out once per driving cycle.

Functional restrictions

♦ No secondary-air supply in catalytic converter hot start
♦ Catalytic converter heats too slowly

♦ MIL on

P049200

Diagnostic information - DME control unit

P049200 Bank 2 secondary-air system - malfunction

Diagnostic conditions

● Diagnostics runs once during cold start

Fault setting condition(s)

● Leak or blockage detected in secondary-air line

Monitored component or system

♦ Secondary-air system

Fault finding notes

If the fault occurs in connection with the fault symptom (P code P049100), the fault in question is a fault in the overall system:
♦ Blockage between secondary-air pump and junction at which the secondary-air system separates into the two banks
♦ Leak between secondary-air pump and a secondary-air valve
♦ Inadequate secondary-air pump delivery quantity

If the fault occurs by itself:
♦ Blockage on bank 2
♦ Leak behind the valve

Generally:
♦ Check the secondary-air hoses
♦ Check that the secondary-air valves are activated (drive link)
♦ Visual inspection of the air admission into the cylinder head (contamination)
► See cleaning instructions in the PIWIS information system (Workshop Manual 266029)

♦ Check secondary-air system, bank 1 short test
♦ Check secondary-air system, bank 2 short test
The short tests can only be carried out once per driving cycle.

Functional restrictions

♦ No secondary-air supply in catalytic converter hot start
♦ Catalytic converter heats too slowly

♦ MIL on

P049600

Diagnostic information - DME control unit

P049600 Tank vent valve open

ⓘ Information
If tank leakage diagnostics via tank leakage diagnosis module (an electric pump connected to the fresh-air side of the carbon canister, which applies approx. 30 hPa overpressure to the tank in control unit run-on mode) is installed, diagnostics of the tank vent valve is also performed via the tank leakage diagnosis module. The pump's current draw serves as a measure of the pressure increase in the tank.

Diagnostic conditions

- Once per driving cycle
- Valid reference-current measurement from leakage diagnostics available
- Lambda control active/sensor operational readiness upstream of catalytic converter
- Tank ventilation enabled (e.g. no overrun switch-on)
- Battery voltage 11.0...16.1 V
- Ambient temperature 3.8 ... 35.3 °C (39 … 95.5 °F)
- Engine start temperature < 60 °C (140 °F)
- Vehicle speed 20 ... 125 km/h (13 … 77 mph)
- Difference between intake manifold pressure and ambient pressure > 40 hPa

Fault setting condition(s)

- Diagnostics initially determines a reference current by getting the pump to pump against a reference leak measuring 0.5 mm in diameter. After switchover of an internal solenoid valve, pumping takes place into the tank with the tank vent valve closed. In this process, the idle current is measured first, and the reference current change compared to the idle current is compared with the current change from the last leakage diagnostics in control unit run-on. If the current change is too high, the tank vent valve is stuck open, thereby evacuating the tank, and the fault is set.

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ If tank leakage diagnosis module is available ⇒ Maintenance/repairs ⇒ Tank leakage diagnostics
⇒ Leaks can be caused by a tank vent valve that is stuck open
♦ Drive link/Tank vent valve short test
♦ Check lines from the carbon canister to the tank vent valve and from the tank vent valve to the

intake manifold for leaks, kinks, joined connections and clogging
♦ Tank vent valve faulty

Fault effects

♦ No mixture adaptation or charge comparison can be performed
♦ Combustion engine no longer stops
♦ No ignition misfire adaptation can be performed
♦ The tank vent valve is permanently stuck open, and the carbon canister is continuously flushed. An excessive load of the carbon canister can lead to rough idling and to ignition misfiring, because an excessively rich mixture is fed into the combustion chamber.
♦ MIL comes on

Diagnostic information - DME control unit

P04ED00 Tank vent system, fresh-air side, major leak detected

Diagnostic conditions

- Once per driving cycle in control unit run-on
- Vehicle electrical system voltage 11...16 V
- Elevation <= 2,700 m (8,858 ft.)
- Engine start temperature => 3.75 °C (38.75 °F)
- Ambient temperature 3.75...35.25 °C (38.75...95.45 °F)
- DME control unit run-on longer than 3 s
- No tank leakage faults

Fault setting condition(s)

- Calculated tank overpressure < 11 hPa
- Pressure change < 0.05 hPa within 15 s after a minimum diagnostic time of 180 s
- Diagnostic time > 249 s

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ The fault is entered together with P044200 or P045600 and provides an indication of the leak location
♦ The tank up to the pressure tank isolation valve and tank cap is tight.
♦ Check low-pressure area

Functional restrictions

♦ MIL on
♦ More pronounced fuel odor

P04EE00

Diagnostic information - DME control unit

P04EE00 Tank vent system, fuel supply side, very fine leak detected

Diagnostic conditions

● Tank leakage diagnostic module (DMTL), major-leak test completed

Fault setting condition(s)

● 10 tank leakage diagnostic tests in sequence (approx. 30 cold starts) with open fuel tank isolation valve (FTIV)

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ This fault is for information purposes; it is not a repair measure
♦ Lack of vehicle ambient conditions for a natural vacuum in the pressure tank.
♦ The fault can be entered due to a very small leak in the tank.

Diagnostic information - DME control unit

P04EF00 Tank vent system, fresh-air side, very fine leak detected

Diagnostic conditions

- Once per driving cycle in control unit run-on
- Vehicle electrical system voltage 11...16 V
- Elevation <= 2,700 m (8,858 ft.)
- Engine start temperature => 3.75 °C (38.75 °F)
- Ambient temperature 3.75...35.25 °C (38.75...95.45 °F)
- DME control unit run-on longer than 3 s
- No tank leakage faults

Fault setting condition(s)

- Estimated leak surface area > 0.14 mm² (0.00022 sq. in.)

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ The fault is entered together with P044200 or P045600 and provides an indication of the leak location
♦ The tank up to the pressure tank isolation valve and tank cap is tight.
♦ Check low-pressure area

Functional restrictions

♦ MIL on
♦ More pronounced fuel odor

P050600

Diagnostic information - DME control unit

P050600 Idle control - speed below setpoint

Diagnostic conditions

- Vehicle speed = 0 km/h (0 mph)
- Vehicle speed signal OK
- Engine temperature > 20.3 °C (68.5 °F)
- Intake air temperature > -48.0 °C (-54 °F)
- No throttle potentiometer fault (banks 1+2)
- No safety fuel shutoff
- Emergency air driving not active
- No rpm sender limp-home mode
- Diagnostics runs continuously

Fault setting condition(s)

- Idle speed deviation > 100.0 rpm

Monitored component or system

♦ Idle speed control

Possible fault causes

♦ Fuel quality insufficient
♦ Air cleaner blocked/frozen
♦ Air guide ahead of **throttle valve** blocked
♦ Ancillary units sluggish
♦ Exhaust system blocked
♦ **Throttle valve adjusting unit** faulty

P050700

Diagnosis information DME control module

P050700 Idle control - speed above setpoint

Diagnostic conditions

- Vehicle speed = 0 km/h / mph
- Vehicle speed signal OK
- Engine temperature > 20.3 °C (68.5 °F)
- Intake-air temperature > -48.0°C (-54 °F)
- No throttle potentiometer fault (banks 1+2)
- No safety fuel shutoff
- Emergency air driving not active
- No rpm sensor limp-home mode
- Diagnostics runs continuously

Fault setting condition(s)

- Idle speed deviation < -100.0 rpm

Monitored component or system

♦ Idle control

Possible fault causes

♦ **Intake pipe** leaks
♦ **Positive crankcase ventilation** leaks
♦ **Throttle adjusting unit** Faulty

P050A00

Diagnostic information - DME control unit

P050A00 Idle control, malfunction during cold start

Diagnostic conditions

- Vehicle speed = 0 km/h (0 mph)
- No throttle potentiometer fault (banks 1+2)
- Catalytic converter heating active
- Diagnostics runs continuously (during catalytic converter heating for cold start)

Fault setting condition(s)

- Engine speed deviation with respect to stationary setpoint engine speed < -100.0 rpm or > 200.0 rpm
- Idle speed monitoring; maximum threshold or minimum threshold exceeded

Monitored component or system

♦ Idle speed control (overspeed or underspeed)

Fault finding notes

♦ Fuel quality insufficient
♦ Air cleaner blocked/frozen
♦ Air guide ahead of **throttle valve** blocked
♦ Ancillary units sluggish
♦ Exhaust system blocked

Functional restrictions

♦ Higher revs in the instrument cluster
♦ Noise due to higher engine speed
♦ Rough-running engine

P050B00

Diagnosis information DME control module

P050B00 Ignition timing adjustment - malfunction during cold start

Diagnostic conditions

- Diagnostics runs only during catalytic converter heating

Fault setting condition(s)

- Monitoring of ignition angle for advancing (via engine efficiency) during idling

Monitored component or system

♦ Ignition angle

Fault finding notes

♦ Inform the product support department (possibly fuel quality)

P052A00

Diagnostic information - DME control unit

P052A00 Bank 1 intake camshaft adjustment - setpoint not reached during cold start

Diagnostic conditions

- Camshaft adjustment enable issued
- Catalytic converter heating active (cold start)
- Diagnostics runs once per driving cycle (cold start)

Fault setting condition(s)

- The fault is set if the camshaft adjuster cannot follow the specified setpoint quickly enough.

Monitored component or system

♦ Intake camshaft, bank 1

Possible fault causes

♦ **Engine oil pressure** too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or **oil pump** sluggish/stuck)
♦ Loose contact on solenoid valve plug connection
♦ **Solenoid valve** dirty/blocked
♦ **Solenoid valve** sluggish/stuck
♦ **Camshaft adjustment** sluggish/stuck
♦ Wiring for camshaft adjusters interchanged
♦ **Intake camshaft** sluggish/stuck
♦ Camshaft position sender/sender wheel loose

Fault effects

♦ The camshaft is moved to the reference position if possible.
♦ Engine speed limited
♦ Message >>Reduced engine power<< in instrument cluster

P052C00

Diagnostic information - DME control unit

P052C00 Bank 2 intake camshaft adjustment - setpoint not reached during cold start

Diagnostic conditions

- Camshaft adjustment enable issued
- Catalytic converter heating active (cold start)
- Diagnostics runs once per driving cycle (cold start)

Fault setting condition(s)

- The fault is set if the camshaft adjuster cannot follow the specified setpoint quickly enough.

Monitored component or system

♦ Intake camshaft, bank 2

Possible fault causes

♦ **Engine oil pressure** too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or **oil pump** sluggish/stuck)
♦ Loose contact on solenoid valve plug connection
♦ **Solenoid valve** dirty/blocked
♦ **Solenoid valve** sluggish/stuck
♦ **Camshaft adjustment** sluggish/stuck
♦ Wiring for camshaft adjusters interchanged
♦ **Intake camshaft** sluggish/stuck
♦ Camshaft position sender/sender wheel loose

Fault effects

♦ The camshaft is moved to the reference position if possible.
♦ Engine speed limited
♦ Message >>Reduced engine power<< in instrument cluster

P053F00

Diagnosis information DME control module

P053F00 Fuel pressure during cold start - pressure too low

Diagnostic conditions

- Engine start longer than debouncing time (5 sec)
- Catalytic converter heating active
- Diagnostics running only during catalytic converter heating

Fault setting condition(s)

- The control-difference signal is smoothed via a low-pass filter with a time constant and compared with two threshold values

Monitored component or system

♦ Fuel rail/system pressure during catalytic converter heating

Fault finding notes

♦ High-pressure sensor faulty
♦ Metering valve faulty
♦ Low-pressure system faulty
♦ Leaks in the rail
♦ Pressure limiting valve faulty

Function restrictions

♦ Misfiring detected (less power)
♦ Engine stalls

Diagnosis information DME control module

P055500 Brake booster pressure sender - electrical fault

Diagnostic conditions

- Diagnostics running continuously from ignition on

Fault setting condition(s)

- Brake booster vacuum sensor overvoltage or an open signal line detected

Monitored component or system

♦ Pressure sensor for brake booster

Fault finding notes

♦ Unplug pressure sensor and jumper signal line to ground
♦ If the raw sensor voltage in the measured-value block is approx. 0 V, the sensor is faulty. If the raw sensor voltage in the measured value block > 0 V, check the line to the DME control unit
♦ If the line to the DME control unit is OK, the DME control unit is faulty

Function restrictions

♦ Start/stop may not be available
♦ Electric mode might not be available
♦ On vehicles with electrical vacuum pump, it is activated as long as the fault as present. The electrical vacuum pump could be damaged as a result

P055600

Diagnosis information DME control module

P055600 Brake booster pressure sensor - vacuum

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- This detects a faulty electric brake booster vacuum pump
- This detects a brake booster vacuum that is too high, too low or implausible

Monitored component or system

♦ Electric brake booster vacuum pump
♦ Pressure sensor for brake booster

Fault finding notes

♦ Check brake pedal sensor adjustment
♦ Check whether vacuum is physically OK (leakage, etc.)
♦ Check wiring harness
♦ Check relay for vacuum pump
♦ Replace vacuum sensor
♦ Check DME control unit for correct program/data version
♦ Replace DME control unit

Function restrictions

♦ Start/stop may not be available
♦ Electric mode might not be available
♦ On vehicles with electrical vacuum pump, it is activated as long as the fault as present. The electrical vacuum pump could be damaged as a result

P055700

Diagnosis information DME control module

P055700 Brake booster pressure sender - short circuit to ground
P191300 Brake booster pressure sender - short circuit to ground

Diagnostic conditions

- Diagnostics always running continuously from ignition on

Fault setting condition(s)

- This detects insufficient voltage of the brake booster vacuum sensor

Monitored component or system

♦ Pressure sensor for brake booster

Fault finding notes

♦ Unplug pressure sensor
♦ If the raw sensor voltage in the measured value block is the reference voltage (5 V), the sensor is faulty. If not, check the line to the DME control unit
♦ If the line to the DME control unit is OK, the DME control unit is faulty

Function restrictions

♦ Start/stop might not be available
♦ Electric mode might not be available
♦ On vehicles with electric vacuum pump, it is activated as long as the fault as present. The electric vacuum pump could be damaged as a result

P056000

Diagnosis information DME control module

P056000 Power supply - implausible signal

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Battery positive voltage signal implausible

Monitored component or system

♦ Battery positive voltage

Fault finding notes

♦ Check terminal 87 behind main relay for battery positive voltage
♦ Check of the line, fuse and main relay

Function restrictions

♦ Engine off

P056200

Diagnosis information DME control module

P056200 Power supply - voltage too low

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Battery positive voltage below minimum value (vehicle electrical system)
- If the battery positive voltage < 9.04 V (but not below the absolute minimum limit below which fault memory entries are no longer possible)

Monitored component or system

♦ Battery positive voltage

Fault finding notes

♦ Check terminal 87 behind main relay for battery positive voltage
♦ Check of the line, fuse and main relay

Function restrictions

♦ Engine off

P056300

Diagnosis information DME control module

P056300 Power supply - voltage too high

Diagnostic conditions

- Time after engine starts > 180 s
- Main relay activated
- Diagnostics runs continuously

Fault setting condition(s)

- Battery positive voltage above maximum value (vehicle electrical system)
- If the battery positive voltage > 16.01 V

Monitored component or system

♦ Battery positive voltage

Fault finding notes

♦ Check terminal 87 behind main relay for battery positive voltage
♦ Check of the line, fuse and main relay (main relay possibly stuck)

Diagnosis information DME control module

P056800 Cruise control switch - implausible signal

Diagnostic conditions

- DME control unit coded for cruise control/adaptive cruise control (ACC)
- Corresponding operating lever installed
- Cruise control selected
- Release of diagnostic function from ignition on
- Diagnostics running continuously from ignition on

Fault setting condition(s)

- CAN signal of the cruise control/adaptive cruise control (ACC) main switch differs from the hardware line of the main switch
- Fault of the cruise control/adaptive cruise control (ACC) main switch

Monitored component or system

♦ Cruise control/adaptive cruise control (ACC) operating lever

Fault finding notes

♦ Is the cruise control operating lever installed correctly (check coding)?
♦ Is the hardware line to the DME control unit connected correctly in addition to the CAN connection?
♦ Check component line

Function restrictions

♦ No cruise control/adaptive cruise control (ACC) operation possible in the current ignition cycle

Diagnosis information DME control module

P057100 Brake light switch - implausible signal

Diagnostic conditions

- No component fault on brake pedal sensor
- Ignition on
- Frequency count saved over driving cycle
- Diagnostics runs continuously

Fault setting condition(s)

- Plausibility check, brake pedal sensor short circuit to ground

Monitored component or system

♦ Brake light sensor

Fault finding notes

♦ Check plug connection for open circuit (corrosion, soiling, pin out of place)
♦ Check line for short circuit to ground
♦ Check signal line for open circuit
♦ Check power supply of the brake light sensor
♦ No fault found; replace the brake light sensor
♦ If the fault memory entry is entered again after replacement of the brake light sensor, the DME control unit must be replaced

Function restrictions

♦ Rejection of adaptive cruise control (ACC) /cruise control

P057B00

Diagnosis information DME control module

P057B00 Brake-pedal travel sender - implausible signal

Diagnostic conditions

- Brake not applied
- Ignition on
- Constant driving without foot on brake pedal

Fault setting condition(s)

- The learned offset is checked for implausibility
- The learned offset measured value is > 90% or < 55%
- The period of the PWM signal is too short
- The duty cycle of the PWM signal is too high
- The duty cycle of the PWM signal is too low

Monitored component or system

♦ Brake pedal travel sensor

Fault finding notes

♦ Observe installation calibration of the brake pedal travel sender according to the installation specification
♦ Check installation position or adjustment of the sensor and adjust if necessary
♦ Perform a line test
♦ Replace sensor

Function restrictions

♦ Different braking feel with larger pedal free play

Diagnostic information - DME control unit

P05A000 Radiator shutter, servo motor turns freely/mechanically blocked

Diagnostic conditions
- Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- Radiator shutter was turned manually while the ignition was off
- Radiator shutter iced up
- Radiator shutter dirty
- Radiator shutter, vanes scrape/stick (incorrectly installed, positioned)
- Radiator shutter, mechanism broken
- Servo motor faulty

Fault setting conditions
- Increased current draw during movement
- No increased current draw when the learned limit stops are reached

Fault effects
- New initialization
- When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

P05A200

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- ♦ Short circuit to B+/ground/between lines or open circuit in the signal line
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the shutter as far as possible

P05A300

Diagnostic information - DME control unit

P05A300 Radiator shutter, signal implausible

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Implausible request from DME control unit, e.g. during reprogramming
- ♦ Servo motor signal line ◄► Open circuit in DME control unit
- ♦ Servo motor power supply or ground supply faulty
- ♦ Servo motor faulty

Fault setting conditions
- No signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the shutter as far as possible

P05A400

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- ♦ Short circuit to B+/ground/between lines or open circuit in the signal line
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the shutter as far as possible

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the signal line
- Loose contact or corrosion on connectors or lines
- Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the shutter as far as possible

Diagnostic information - DME control unit

P05C000 Radiator shutter unit, overtemperature

Diagnostic conditions
- Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- Ambient temperature too high
- Servo motor overloaded
- Servo motor faulty

Fault setting conditions
- Temperature in servo motor too high

Fault effects
- New initialization
- When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

P060600

Diagnostic information - DME control unit

P060600 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The DME control unit detects an internal fault

Monitored component or system

♦ DME control unit

ⓘ **INFORMATION**
As of model year 2014 (E):
- See Technical Information 96/13.
- If other faults are entered, correct these first.

Fault finding notes

♦ If further fault memory entries are present in the DME control unit, they must be corrected first
♦ Then erase the fault memory and establish the diagnostic conditions
♦ If fault code P060600 is then entered again:
♦ Replace DME control unit

Functional restrictions

♦ Functional restrictions depend on which components are served by which output stage
♦ Diagnostics of the sender supply non-functional

P060A00

Diagnosis information DME control module

P060A00 Control unit - internal processor monitoring

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the applied addresses

Monitored component or system

♦ Control unit

Function restrictions

♦ No function of the OBD radar

Diagnosis information DME control module

P060D00 Accelerator pedal module fault

Diagnostic conditions

- Diagnostics runs continuously
- Ignition on
- No fault in the 12V supply
- No fault in the 5 V supply

Fault setting condition(s)

- The accelerator pedal module sends a corresponding fault message over the data bus.
- The actual position of the actuator does not correspond to the setpoint position.

Monitored component or system

♦ Pedal value encoders 1 and 2

Fault finding notes

♦ Perform drive link test for the accelerator pedal module. Pay attention to the correct function of the actuator.
♦ Check power supply of the accelerator pedal module.
♦ Check data bus between the engine control unit and accelerator pedal module.

Function restrictions

♦ The adjuster for the additional pressure point in E-operation might no longer retract or extend at the right time.

P062B00

Diagnosis information DME control module

P062B00 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs several times per driving cycle

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics

Monitored component or system

♦ Fuel injector communication

Fault finding notes

♦ Control unit faulty

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P063400 Control unit - temperature switch-off

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage for fan control unit 1 in the DME control unit has detected an overtemperature. The temperature exceeds an applied threshold
- Direct temperature measurement in the output stage driver: when the threshold (150 °C/302 ° F) is reached, the output stage is switched off and a status is reported
- The output stage hardware reports the overtemperature fault

Monitored component or system

- Activation line to the first fan output stage
- DME control unit pre-delivery pump output stage
- Coolant bypass valve output stage for electric machine
- Generator
- Main water pump valve
- Auxiliary water pump
- Water pump supply shutoff valve
- Switch for electric driving
- Engine control unit output stage: Switching valve for control oil pump

Fault finding notes

- Switch engine off, switch ignition off and allow DME control unit to cool down
- Internal fault of the DME control unit; replace the DME control unit

Function restrictions

- Emergency operation of the fan means that the requirements for charging balance, acoustics and closed-circuit current are not met
- An empty battery is a possible result
- Output stage inactive, resulting in failure of the pre-delivery pump and engine failure
- Restricted power of the passenger compartment heating
- No boost possible
- Electric driving not possible

♦ Start/stop ban
♦ Shutoff of accessories possible
♦ Breakdown possible
♦ Oil pressure pump switch no longer operates, and the high oil pressure always sets in

Diagnostic information - DME control unit

P064100 Sender reference voltage A - open circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Direct voltage-measurement monitoring in the chip of the output stage. A status is reported when a minimum or maximum threshold is reached

Monitored component or system

♦ Sender reference voltage 5 V

Fault finding notes

♦ Check the electrical connection of the components connected to the shared power supply
♦ Check components
♦ Control unit:
  ♦ Connector [A], contact 26
  or
  ♦ Connector [A], contact 28
  or
  ♦ Connector [B], contact 63
  or
  ♦ Connector [B], contact 80

Function restrictions

♦ Limp-home mode

Diagnostic information - DME control unit

P065100 Sender reference voltage B - open circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Direct voltage-measurement monitoring in the chip of the output stage. A status is reported when a minimum or maximum threshold is reached

Monitored component or system

♦ Sender reference voltage 5 V

Fault finding notes

♦ Check the electrical connection of the components connected to the shared power supply
♦ Check components
♦ Control unit:
  ♦ Connector [A], contact 37
  or
  ♦ Connector [B], contact 19
  or
  ♦ Connector [B], contact 58

Function restrictions

♦ Limp-home mode

Diagnosis information DME control module

P068600 Main relay - short circuit to ground

Diagnostic conditions

- Main relay not activated
- Diagnostics runs several times

Fault setting condition(s)

- Signal voltage in the range 2.6V...3.7V
- Short circuit to ground of the main relay

Monitored component or system

♦ Main relay

Fault finding notes

♦ Check electrical connection to the main relay or replace main relay

P068800

Diagnosis information DME control module

P068800 Main relay - load circuit open circuit

Diagnostic conditions

- Main relay activated

Fault setting condition(s)

- Signal error - line open circuit, vehicle electrical system voltage via main relay

Monitored component or system

♦ Main relay

Fault finding notes

♦ Check electrical connection to the main relay or replace main relay

Diagnosis information DME control module

P068B00 Main relay opens too late

Diagnostic conditions

- Started driving cycle
- Diagnostics runs continuously

Fault setting condition(s)

- Sticking main relay

Monitored component or system

♦ Main relay

Fault finding notes

♦ Check electrical connection to the main relay or replace main relay

Function restrictions

♦ Battery discharge possible because the DME control unit does not switch off

Diagnosis information DME control module

P069100 Radiator fan activation 1 - short circuit to ground

Diagnostic conditions

- Ignition on; fault is entered immediately
- Last revs are maintained; limp-home mode occurs after 10 s

Fault setting condition(s)

- Short circuit to ground in PWM line to fan control unit 1

Monitored component or system

♦ Activation line to the first fan output stage

Fault finding notes

♦ Check of whether the control unit is short circuited to ground
♦ The instrument indicates nearly 0 V in a voltage measurement on the control line
♦ A current measurement on the control line with a clamp-on ammeter displays, if OK, a square-wave signal

Function restrictions

♦ Emergency operation of the fan means that the requirements for charging balance, acoustics and closed-circuit current are not met
♦ Battery discharging possible

Diagnosis information DME control module

P069200 Radiator fan activation 1 - short circuit to B+

Diagnostic conditions

- Ignition on; fault is entered immediately
- Last revs are maintained; limp-home mode occurs after 10 s

Fault setting condition(s)

- Short circuit to B+ in PWM line to fan control unit 1

Monitored component or system

♦ Activation line to the first fan output stage

Fault finding notes

♦ Check of whether the control unit is short circuited to B+
♦ In a voltage measurement on the control line, the measuring instrument indicates a value close to battery positive voltage
♦ A valid pulse/duty ratio lies between 10% and 90%
♦ A current measurement with a clamp-on ammeter displays, if OK, a square-wave signal

Function restrictions

♦ Emergency operation of the fan means that the requirements for charging balance, acoustics and closed-circuit current are not met
♦ Battery discharging possible

P069700

Diagnostic information - DME control unit

P069700 Sender reference voltage C - open circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Direct voltage-measurement monitoring in the chip of the output stage. A status is reported when a minimum or maximum threshold is reached

Monitored component or system

♦ Sender reference voltage 5 V

Fault finding notes

♦ Check the electrical connection of the components connected to the shared power supply
♦ Check components
♦ Control unit:
  ♦ Connector [A], contact 50
  or
  ♦ Connector [B], contact 36

Function restrictions

♦ In the most unfavorable case: engine off

P06D100

Diagnosis information DME control module

P06D100 Control unit faulty

Diagnostic conditions

● Initialization is performed at the start of the driving cycle when the ignition is switched on

Fault setting condition(s)

● If the ignition driver cannot be initialized within a certain number of attempts, an initialization error is triggered
● The initialization sends all parameters required for operation to the ignition driver
● Initialization takes place with the aid of an automatic state function in three steps : 1. Initialization procedure 2. Verification 3. Completion

Monitored component or system

♦ Ignition coil component driver

Fault finding notes

♦ Internal fault in the DME control unit

Function restrictions

♦ Breakdown

Diagnosis information DME control module

P070100 Brake light switch - electrical fault in circuit

Diagnostic conditions

- No undervoltage or overvoltage in the vehicle electrical system
- Diagnostics runs continuously

Fault setting condition(s)

- Raw signal from the brake pedal sensor is higher or lower than the applied threshold

Monitored component or system

♦ Brake pedal sensor

Fault finding notes

♦ Check of the signal line and the sensor for short circuit to B+
♦ Check of the signal line and the sensor for short circuit to ground
♦ Brake light switch faulty

Function restrictions

♦ Rejection of adaptive cruise control (ACC) /cruise control

P071600

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

P085000 Start inhibit P/N signal - short circuit to B+/open circuit

Diagnostic conditions

- Diagnostics runs continuously during ignition on

Fault setting condition(s)

- P or N CAN signal from transmission control unit is present; hardware signal is neither P nor N

Monitored component or system

♦ P/N hardware signal is compared with the CAN message from the transmission

Fault finding notes

♦ Suspect list: P/N switch, wiring, CAN communication, transmission control unit

Function restrictions

♦ Automatic transmission vehicle cannot be started

Diagnosis information DME control module

P085100 Start inhibit P/N signal - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously during ignition on

Fault setting condition(s)

- Neither P nor N CAN signal from transmission control unit; hardware signal P or N

Monitored component or system

♦ P/N hardware signal is compared with the CAN message from the transmission

Fault finding notes

♦ Suspect list: P/N switch, wiring of the switch, CAN communication, transmission control unit

Function restrictions

♦ Automatic transmission vehicle cannot be started

P091900

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

P109300

Diagnosis information DME control module

P109300 Bank 1 fuel metering system 2 - malfunction

Diagnostic conditions

- Engine speed > 1,200 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Error in the plausibility check of the predicted air flow (torque monitoring function)
- Error in the plausibility check of the mixture correction factors
- The lambda setpoint does not match the current operating mode
- Error in the plausibility check between injection time and fuel mass
- Error in the plausibility check of the relative fuel mass

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Processing of all faults relating to the air and fuel system (see fault memory). If there are no more faults, the DME control unit is faulty
♦ The fault might lie in the fuel metering system or intake system, otherwise the DME control unit must be replaced

Function restrictions

♦ A reset can be performed when the fault occurs once
♦ If the fault is still present, the injection quantity will be limited (no more injections will be permitted above 1,500 rpm)

Diagnosis information DME control module

P10A000 Drive of control flap for intake air - electrical fault

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Line open circuit

Monitored component or system

♦ Compressor control flap output stage

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Control flap control unit faulty

Diagnosis information DME control module

P10A400 Drive of control flap for intake air - mechanical malfunction

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Duty cycle > 79.9%

Monitored component or system

♦ Compressor control flap

P10A500

Diagnosis information DME control module

P10A500 Potentiometer of control flap for intake air - signal too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Sensor signal > 4.82 V

Monitored component or system

♦ Compressor control flap position sensor

P10A600

Diagnosis information DME control module

P10A600 Potentiometer of control flap for intake air - signal too low

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Sensor signal < 0.2979 V

Monitored component or system

♦ Compressor control flap position sensor

P10A700

Diagnosis information DME control module

P10A700 Adaptation - control flap for intake air soiled

Monitored component or system

♦ Compressor control flap offset adaptation

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Control flap control unit faulty

P10A800

Diagnosis information DME control module

P10A800 Adaptation - control flap lower limit not reached

Monitored component or system

♦ Compressor control flap offset adaptation

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Control flap control unit faulty

Diagnosis information DME control module

P111400 Bank 1 sensor 2 - internal resistance too high

Diagnostic conditions

- Filtered exhaust gas temperature 299.991 °C…819.998 °C (571.984 °F ...1,507.996 °F)
- Switch-off time > 630 sec
- Intake-air temperature > -48 °C (-54 °F)
- Overrun mode not active
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- The internal resistance is compared with its setpoint (728.0...16,632.0 Ohm). If the resistance is higher, the fault is set after debouncing

Monitored component or system

♦ Bank 1 oxygen sensor 2 heating

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

Diagnosis information DME control module

P114000 Bank 2 sensor 2 - internal resistance too high

Diagnostic conditions

- Filtered exhaust gas temperature 299.991 °C…819.998 °C (571.984 °F ...1,507.996 °F)
- Switch-off time > 630 sec
- Intake-air temperature > -48 °C (-54 °F)
- Overrun mode not active
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- The internal resistance is compared with its setpoint (728.0...16,632.0 Ohm). If the resistance is higher, the fault is set after debouncing

Monitored component or system

♦ Bank 2 oxygen sensor 2 heating

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater behind cat. conv., bank 2 sensor 2 faulty

P119A00

Diagnosis information DME control module

P119A00 Fuel pressure sender - malfunction

Diagnostic conditions

- Diagnostics runs continuously

Monitored component or system

♦ Fuel pressure sensor

Fault finding notes

♦ High-pressure sensor faulty

Function restrictions

♦ Acute lack of power; vehicle possibly stalls at idle
♦ Engine off

Diagnosis information DME control module

P125000 Fuel level too low

Fault setting condition(s)

- Set along with another fault entry, if Reserve lamp of the tank is active

Monitored component or system

♦ Tank-empty information (this is set only together with another fault memory entry)

P130A00

Diagnosis information DME control module

P130A00 Cylinder shutoff

Fault setting condition(s)

- Misfiring rate damaging to catalytic converter

Monitored component or system

♦ Misfire detection, misfiring detected

Fault finding notes

♦ Fault occurs after misfiring faults

Function restrictions

♦ MIL on
♦ Power restriction
♦ Poor throttle response at high speeds
♦ Breakdown

P133500

Diagnosis information DME control module

P133500 Engine torque monitoring 2 - control limit exceeded

Fault setting condition(s)

● A fault in the torque comparison is entered if the filtered permissible torque plus offset is higher than the actual torque

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ Engine speed limitation to 1,500 rpm

P133600

Diagnosis information DME control module

P133600 Engine torque monitoring 2 - control limit exceeded

Fault setting condition(s)

- Level 1 torque monitoring limits continuously (longer than 600 sec)

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ Incorrect torque in DME control unit is limited
♦ Possibly increased idle speed
♦ Vehicle follows driver's command, possibly with post-acceleration

P138600

Diagnosis information DME control module

P138600 Control unit faulty

Diagnostic conditions

- Ignition on
- Engine speed > 80 rpm
- Diagnostics runs continuously

Monitored component or system

♦ Knock control/signal evaluation

Diagnosis information DME control module

P138700 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs several times/continuously
- Pressure sensor ahead of throttle valve ready, no fault

Fault setting condition(s)

- Electrical maximum fault: signal voltage > 4.902V
- Electrical minimum fault: signal voltage < 0.2002 V
- Check of whether the ambient pressure lies within a range that can be approached by a vehicle
- The signal is plausible if it has changed only slightly since the last driving cycle. Comparison is made with the ambient pressure limit model

Monitored component or system

♦ Ambient pressure sensor, electrical

Fault finding notes

♦ Replace DME control unit (ambient pressure sensor is installed in the control unit)

P138800

Diagnosis information DME control module

P138800 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs every 10 ms
- Engine running

Fault setting condition(s)

- Test fault occurred during monitoring of the analog-to-digital converter
- Error in the plausibility check of the accelerator pedal voltage
- The difference between the rpm value calculated in level 2 and the level 1 value exceeds a maximum permissible threshold
- The engine speed exceeds a maximum threshold in case of a level 1 injection quantity limit
- Error in the plausibility check of the ignition angle voltage

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ Severe juddering if it is attempted to set engine speeds higher than 1,500 rpm using the accelerator pedal potentiometer
♦ Engine speed limitation to 1,500 rpm
♦ Electrical driving no longer possible; restart possible

Diagnosis information DME control module

P13EA00 Control unit faulty

Diagnostic conditions

- Diagnostics runs only during catalytic converter heating

Fault setting condition(s)

- Monitoring of ignition angle for advancing (via engine efficiency) during partial load

Monitored component or system

♦ Ignition angle

Fault finding notes

♦ Inform the product support department (possibly fuel quality)

Diagnosis information DME control module

P142100 Secondary-air injection valve - short circuit to ground

Diagnostic conditions

- Secondary-air valve output stage activated
- Engine speed > 40 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Secondary-air valve output stage - short circuit to ground (low side switch)
- The output stage of the secondary-air valve detects a short circuit to ground
- Diagnostic voltage < 0...3.25 V is measured at the output

Monitored component or system

♦ Secondary-air valve

Fault finding notes

♦ Check wiring between DME control unit and component for short circuit to ground
♦ If OK, remove plug from component and erase fault memory
♦ If the DME control unit detects open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive -> failure of the secondary-air valve

Diagnosis information DME control module

P142200 Secondary-air injection valve - short circuit to B+

Diagnostic conditions

- Secondary-air valve output stage activated
- Engine speed > 40 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Secondary-air valve output stage - short circuit to B+ (low side switch)
- The output stage of the secondary-air valve detects a short circuit to B+
- Signal current > 2.2...4.0 A

Monitored component or system

♦ Secondary-air valve

Fault finding notes

♦ Check wiring between DME control unit and component for short circuit to B+
♦ If OK, remove plug from component and erase fault memory
♦ If the DME control unit detects open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive -> failure of the secondary-air valve

Diagnosis information DME control module

P142700 Brake vacuum pump activation - short circuit to B+

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Brake booster pump output stage short circuit to B+ (DME control unit switches relay to ground)
- Signal current > 2.2 A (output-stage diagnostics)

Monitored component or system

♦ Vacuum pump control for brake

Fault finding notes

♦ Check wiring between DME control unit and relay for short circuit to B+
♦ Check relay carrier for short circuits that jumper the relays
♦ If OK, check the DME control unit

Function restrictions

♦ Relay drops out, vacuum pump is not activated
♦ Higher pedal pressure may be required

Diagnosis information DME control module

P142800 Brake vacuum pump activation - short circuit to ground

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Brake booster pump output stage short circuit to ground (DME control unit switches relay to ground)
- Diagnostic voltage < 2.15 V

Monitored component or system

♦ Vacuum pump control for brake

Fault finding notes

♦ Check wiring between DME control unit and relay for short circuit to ground
♦ Check relay power supply
♦ Check ground on DME control unit

Function restrictions

♦ Pump is in continuous operation

Diagnosis information DME control module

P142900 Brake vacuum pump activation - open circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Brake booster pump output stage line open circuit (DME control unit switches relay to ground)
- Diagnostic voltage > 4.4 ...5.6 V

Monitored component or system

♦ Vacuum pump control for brake

Fault finding notes

♦ Check wiring between DME control unit and relay for open circuit
♦ Check relay carrier/relay for open circuit
♦ If OK, check the DME control unit

Function restrictions

♦ Relay drops out, vacuum pump is not activated
♦ Higher pedal pressure may be required

Diagnosis information DME control module

P143200 Secondary-air injection valve - open circuit

Diagnostic conditions

- Secondary-air valve output stage activated
- Engine speed > 40 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Secondary-air valve output stage line open circuit (low side switch)
- The output stage of the secondary-air valve detects a load drop-off
- Internal voltage is measured at the output > 4.8...5.3 V

Monitored component or system

♦ Secondary-air valve

Fault finding notes

♦ Check wiring between DME control unit and component for open circuit
♦ The internal diagnostic voltage (between 3 V and 6 V) per output stage is measured
♦ Check power supply

Function restrictions

♦ Output stage inactive -> failure of the secondary-air valve

Diagnosis information DME control module

P143300 Relay for secondary-air pump - open circuit

Diagnostic conditions

- Secondary-air valve output stage activated
- Engine speed > 40 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Secondary-air pump output stage line open circuit (low side switch)
- The output stage of the secondary-air pump detects a load drop-off
- Internal voltage is measured at the output > 4.8...5.3 V

Monitored component or system

♦ Secondary-air pump output stage

Fault finding notes

♦ Check 12 V power supply
♦ Check component for continuity
♦ Alternatively, unplug the component and short-circuit pin to ground. Then evaluate the fault memory to determine whether the short circuit to ground is detected
♦ If the DME control unit detects open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive -> failure of the secondary-air valve

Diagnosis information DME control module

P143400 Relay for secondary-air pump - short circuit to B+

Diagnostic conditions

- Secondary-air valve output stage activated
- Engine speed > 40 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Secondary-air pump output stage short circuit to battery positive voltage (low side switch)
- The output stage of the secondary-air pump detects a short circuit to B+
- Signal current > 2.2...4.0 A

Monitored component or system

♦ Secondary-air pump output stage

Fault finding notes

♦ Check wiring between DME control unit and component for short circuit to B+
♦ If OK, remove plug from component and erase fault memory
♦ If the DME control unit detects open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive -> failure of the secondary-air valve

Diagnosis information DME control module

P143500 Relay for secondary-air pump - short circuit to ground

Diagnostic conditions

- Engine speed > 40 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage of the secondary-air pump detects a short circuit to ground
- Diagnostic voltage < 0...3.25 V is measured at the input

Monitored component or system

♦ Secondary-air pump output stage

Fault finding notes

♦ Check 12 V power supply
♦ Check wiring between control unit and component for short circuit to B+
Check ground
♦ If OK, remove plug from component and erase fault memory
♦ If the DME control unit detects open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive; failure of the secondary-air valve
♦ Pump runs continuously (pump damage possible)

P147900

Diagnosis information DME control module

P147900 Brake vacuum system - mechanical fault

Monitored component or system

♦ Vacuum pump for brake

Diagnosis information DME control module

P148D00 Tank vent system diagnostic pump for tank leakage - implausible frequency

Diagnostic conditions

- Engine control unit run-on longer than 3 s
- MIL not on
- Elevation above sea level < 2,700 m (8,858 ft.)
- Engine start temperature 3.8 °C...35.3 °C (38.8 °F....95.5 °F)
- Diagnostics runs once per driving cycle in control unit run-on

Fault setting condition(s)

- The filling level-independent algorithm of tank leakage diagnostics via the tank leakage diagnostic module uses the pump frequency during the reference measurement to estimate the pumped volume flow rate. This, in turn, is used as the basis for calculating the evaluation values of tank pressure and volume flow rate during the diagnostic phases for major and fine leaks. The plausibility check of the filtered pump frequency at the end of the reference measurement indicates a sticking pump or stray electromagnetic interference that can falsify the frequency signal.
- Filtered pump frequency during the reference measurement > 120 1/s or < 60 1/s

Monitored component or system

♦ Fuel tank ventilation system

Fault finding notes

♦ If this fault occurs together with a leakage or tank leakage diagnostic module component fault, the tank leakage diagnostic module must be replaced. Otherwise, stray electromagnetic interference into the wiring harness could be the cause for this fault entry. If a workshop test for fine-leak diagnosis produces an OK result, this fault can be ignored.

Function restrictions

♦ None; the assumption of an incorrect pump frequency can lead to an incorrect tank leakage diagnostics result under unfavorable circumstances. MIL may be on.

Diagnosis information DME control module

P150A00 Ignition-off time period signal - implausible

Diagnostic conditions

- Ignition on
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Plausibility check of the Off time, which is calculated from the standstill time information from the instrument cluster, compared with the run-on counter of the control unit.

Monitored component or system

♦ Off-time counter in the instrument cluster

Fault finding notes

- If fault P308100 is entered
  ► Remedy this fault first

♦ Check **instrument cluster power supply**
♦ Check drive CAN
♦ Check **infotainment CAN**
♦ Clear fault memory and observe
♦ Off-time counter in the instrument cluster faulty

Function restrictions

♦ Off-time wrong
♦ In the event of a fault, a change is made to the substitute-value model. Function restrictions of the receiving functions can occur as a result

Diagnosis information DME control module

P068B00 Main relay opens too late

Diagnostic conditions

- Started driving cycle
- Diagnostics runs continuously

Fault setting condition(s)

- Sticking main relay

Monitored component or system

♦ Main relay

Fault finding notes

♦ Check electrical connection to the main relay or replace main relay

Function restrictions

♦ Battery discharge possible because the DME control unit does not switch off

P151B00

Diagnosis information DME control module

P151B00 Acceleration monitoring - control limit exceeded

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Tampering with terminal 15 on any control unit in the system by connecting it with terminal 30 leads to the main contactors closing and thus to activation of the high-voltage system. Diagnostics detects the implausibility of terminal 15 against the CAN signal of the front-end electronics and prevents the main contactors from closing

Monitored component or system

♦ Control unit: voltage monitoring

Fault finding notes

♦ Check terminal 15 signal on the DME control unit pin
♦ Terminal 15 on the DME control unit must change together with the terminal change at the ignition lock
♦ CAN bus faulty
♦ Fault in area of the **front-end electronics**

Function restrictions

♦ Starting not possible

P152300

Diagnosis information DME control module

P152300 Crash signal from airbag control unit - implausible signal

Fault setting condition(s)

- Range error or failure of PWM signal from airbag control unit

Monitored component or system

♦ Crash switch-off

Fault finding notes

♦ Via airbag control unit drive link test

P154500

Diagnosis information DME control module

P154500 Throttle valve control - malfunction

Diagnostic conditions

- No throttle valve fault active
- Diagnostics runs continuously
- No output stage fault

Fault setting condition(s)

- Difference between measured and calculated throttle valve angles > 4.0009%...50.0008%
- Duty cycle > 80%

Monitored component or system

♦ Throttle valve adjusting unit control range

P155800

Diagnosis information DME control module

P155800 Throttle valve drive - electrical fault in circuit

Diagnostic conditions

- Ignition on and run-on during adaptation
- Diagnostics runs during adaptation

Fault setting condition(s)

- The fault is present if closing of the throttle valve over the reference point takes longer than 0.56 sec

Monitored component or system

♦ Throttle valve adjuster spring test; throttle valve does not open
♦ Throttle valve adjuster output stage, basic test after ignition on

P155900

Diagnosis information DME control module

P155900 Throttle valve control unit - basic setting fault

Diagnostic conditions

- Adaptation
- Diagnostics runs during adaptation

Monitored component or system

♦ Throttle valve adjuster fault during test of the emergency-air position

P155D00

Diagnosis information DME control module

P155D00 Bank 2 turbocharger/compressor boost pressure too high - mechanical

Diagnostic conditions

- Diagnostics runs continuously

Monitored component or system

♦ Bank 2 intake manifold pressure sensor

Fault finding notes

♦ Check wiring
♦ Check measured values: bank 1/2 intake-manifold pressure
♦ Mechanically check compressor module

Function restrictions

♦ Loss of power
♦ MIL on

Diagnosis information DME control module

P156400 Throttle valve control unit - undervoltage at basic setting

Diagnostic conditions

- Ignition on or run-on before and during adaptation
- Adaptation

Fault setting condition(s)

♦ Battery positive voltage < 10.0 V

Monitored component or system

♦ Throttle valve adjuster - adaptation cancellation due to environmental condition

P156500

Diagnosis information DME control module

P156500 Throttle valve control unit - lower limit not reached

Diagnostic conditions

- Adaptation active
- Diagnostics runs several times

Monitored component or system

♦ Throttle valve adjuster, basic setting

P157000

Diagnosis information DME control module

P157000 DME control unit blocked

Diagnostic conditions

- Ignition on or engine speed threshold exceeded
- Diagnostics once after ignition on

Fault setting condition(s)

- Check of the immobilizer communication
- Wrong application

Monitored component or system

♦ Immobilizer in DME control unit, P-class

Fault finding notes

♦ Check CAN communication in the vehicle
♦ Check gateway if present
♦ Check front-end electronics
♦ Check immobilizer vehicle system adaptation
♦ Read out of the "DME control unit immobilizer overall status"
♦ Check data record for P-class

Function restrictions

♦ No engine start

P157900

Diagnosis information DME control module

P157900 Throttle valve control unit - adaptation not started

Diagnostic conditions

- Ignition on or run-on before and during adaptation
- Adaptation

Monitored component or system

♦ Throttle valve adjuster - adaptation cancellation due to environmental condition

P159D00

Diagnosis information DME control module

P159D00 Oil level/temperature sender - implausible signal

Fault setting condition(s)

- Oil temperature/time implausible

Monitored component or system

♦ Oil level/oil temperature sender

Diagnosis information DME control module

P160300 Control unit faulty

Fault setting condition(s)

● Incorrect question/answer communication between monitoring module and function processor
● Control unit, component or incoming line fault leading to transmission of incorrect answers to the monitoring module

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ Restart no longer possible

P160900

Diagnosis information DME control module

P160900 Crash shutoff was triggered

Fault setting condition(s)

- Crash intensity is greater than/equal to 4

Monitored component or system

♦ Crash signal from airbag control unit

Fault finding notes

♦ Via airbag control unit drive link test

P160A00

Diagnosis information DME control module

P160A00 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Control unit internal diagnostics
- Control unit reset

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced
♦ Flash DME control unit again

Function restrictions

♦ Engine does not start or only with difficulty
♦ Fault is not entered and is thus also not noticed

P161200

Diagnosis information DME control module

P161200 DME control unit coded incorrectly

Diagnostic conditions

- Ignition on
- Only in the initialization phase

Fault setting condition(s)

- If neither the coding word in the EEPROM nor the value of the associated first initialization value represents a valid coding word

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Read out fault memory and coding word and re-code the DME control unit. OK if the coding is accepted. Otherwise replace the DME control unit

P162400

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

P163E00

Diagnosis information DME control module

P163E00 Control unit faulty

Diagnostic conditions

- Diagnostics runs once per driving cycle

Fault setting condition(s)

- CAN controller RAM monitoring

Monitored component or system

♦ CAN communication: CAN controller

Fault finding notes

♦ Replace DME control unit

Function restrictions

♦ DME control unit faulty

P164000

Diagnosis information DME control module

P164000 Control unit faulty

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- If deletion cannot be performed or was not performed successfully
- If at least three blocks cannot be read
- If a block cannot be written after more than three attempts

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ DME control unit performs a reset

Diagnosis information DME control module

P164700 Check coding/variants of the control units in the drive train

Diagnostic conditions

● Release of diagnostic function takes place from ignition on

Fault setting condition(s)

● The DME control unit is not coded for a cruise control or adaptive cruise control (ACC) although the corresponding operating lever is installed

Monitored component or system

♦ Steering column switch module, DME control unit

Fault finding notes

♦ Check whether the DME control unit is correctly coded with regard to cruise control/adaptive cruise control

Function restrictions

♦ No cruise control/adaptive cruise control (ACC) operation possible in the current ignition cycle

Diagnosis information DME control module

P164A00 Oil pressure switch - implausible signal

Diagnostic conditions

- Ignition on
- Oil temperature > 0 °C (32 °F)

Fault setting condition(s)

- High pressure level switch implausible

Monitored component or system

♦ Oil pressure switch for high pressure detection

Fault finding notes

♦ Check engine oil level
♦ Check of the electrical wiring
♦ Plug and function of the oil pressure switch

P164B00

Diagnosis information DME control module

P164B00 Oil pressure switch - malfunction

Diagnostic conditions

- Engine running

Fault setting condition(s)

- Engine speed 2,500 ... 4,000 rpm
- Oil high pressure switch open > open 3 seconds

Monitored component or system

♦ Oil pressure switch for high pressure detection

Fault finding notes

♦ Check engine oil level
♦ Check electrical wiring
♦ Plug and function of the oil pressure switch

Function restrictions

♦ Rpm limitation

Diagnosis information DME control module

P164C00 Oil pressure switch for reduced oil pressure - implausible signal

Diagnostic conditions

- Ignition on
- Engine off

Fault setting condition(s)

- Oil low pressure switch closed
- Low pressure level switch implausible

Monitored component or system

♦ Oil pressure switch for low pressure detection

Fault finding notes

♦ Check of the electrical wiring and the functionality of the oil pressure switch

P164D00

Diagnosis information DME control module

P164D00 Oil pressure switch for reduced oil pressure - malfunction

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Low pressure level not reached

Monitored component or system

♦ Oil pressure switch for low pressure detection

Fault finding notes

♦ Check whether there is sufficient oil/oil pressure to operate the switch
♦ Check of the electrical wiring, plug and the functionality of the oil pressure switch

Diagnosis information DME control module

P164E00 Oil pressure control valve - electrical fault

Diagnostic conditions

- Ignition on and low-side switch not connected through
- Ignition on and low-side switch connected through (valve is activated)
- Diagnostics runs continuously

Fault setting condition(s)

- Direct voltage measurement at the output stage driver: when a threshold is reached, the output stage is switched off and an output-stage status is reported

Monitored component or system

♦ Switching valve for control oil pump

Fault finding notes

♦ Check wiring between the DME control unit and oil pressure control switch for open circuit
♦ Check switching valve for open circuit
♦ If OK, check/replace the DME control unit

Function restrictions

♦ Oil pressure pump switch no longer operates, and the high oil pressure always sets in
♦ Higher consumption

Diagnosis information DME control module

P165F00 Oil pressure control valve - short circuit to ground

Diagnostic conditions

- Ignition on and low-side switch not connected through
- Diagnostics runs continuously

Fault setting condition(s)

- Direct voltage measurement at the output stage driver: when a threshold is reached, the output stage is switched off and an output-stage status is reported

Monitored component or system

♦ Switching valve for control oil pump

Fault finding notes

♦ Check wiring between the DME control unit and oil pressure control switch for short circuit
♦ Check switching valve for short circuit
♦ If OK, check/replace the DME control unit

Function restrictions

♦ Oil pressure pump switch switches continuously, and the low oil pressure always sets in
♦ Rpm limitation to prevent engine damage

P168200

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

P169800

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

P169A00 Loading mode active

Fault setting condition(s)

● The following conditions must be met at the same time: Current operating state: Control unit run-on; vehicle speed is less than 5 km/h (3 mph); engine speed is 0 rpm
● E-machine is switched off and its speed is 0 rpm
● The maximum distance of 100 km (62 miles) since vehicle commissioning has not been exceeded; production mode is locally deactivated
● The control unit run-on mode is active for a certain time period after the state has been changed from ignition on to ignition off. The transport mode can be activated/deactivated only when the DME control unit is in run-on mode. Furthermore, all fault setting conditions must be met. Transport mode remains activated/deactivated beyond the ignition change. Transport mode is deactivated by a locally active production mode

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Transport mode set

Function restrictions

♦ MIL/warning message in instrument cluster "engine control fault" on
♦ Rev limitation, speed limitation, torque limitation
♦ Suppression of catalytic converter heating
♦ Suppression of electric motor operation including boosting

P172400

Diagnosis information DME control module

P172400 Start inhibit signal - short circuit to ground

Diagnostic conditions

- Diagnostics running continuously during ignition on

Fault setting condition(s)

- Clutch switch not actuated, interlock switch actuated
- Cruise control switch not actuated

Monitored component or system

♦ Interlock switch, clutch switch

Fault finding notes

♦ Interlock switch or clutch switch faulty
♦ Test via DME control unit actual values

Function restrictions

♦ No automatic start possible

Diagnosis information DME control module

P190E00 Coolant pump for charge air cooler diagnostic keying

Diagnostic conditions

- Diagnostics takes place only when the component is activated.

Fault setting condition(s)

- **DME control module** did not receive any valid information from the coolant pump

ⓘ Information
The coolant pump cyclically sends status information to the engine control unit by connecting the line to the engine control unit to ground for a defined duration.

Monitored component or system

♦ Coolant pump

Fault finding notes

♦ **Supply voltage** Check
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Coolant pump** Faulty

Function restrictions

♦ The power of the combustion engine or the electric machine can be restricted.

P191300

Diagnosis information DME control module

P055700 Brake booster pressure sender - short circuit to ground
P191300 Brake booster pressure sender - short circuit to ground

Diagnostic conditions

- Diagnostics always running continuously from ignition on

Fault setting condition(s)

- This detects insufficient voltage of the brake booster vacuum sensor

Monitored component or system

♦ Pressure sensor for brake booster

Fault finding notes

♦ Unplug pressure sensor
♦ If the raw sensor voltage in the measured value block is the reference voltage (5 V), the sensor is faulty. If not, check the line to the DME control unit
♦ If the line to the DME control unit is OK, the DME control unit is faulty

Function restrictions

♦ Start/stop might not be available
♦ Electric mode might not be available
♦ On vehicles with electric vacuum pump, it is activated as long as the fault as present. The electric vacuum pump could be damaged as a result

P191B00

Diagnosis information DME control module

P191B00 Radiator fan control unit - implausible signal

Diagnostic conditions

● Diagnostics runs only when the DME control unit has been flashed again or coded
● The learning values are then deleted, and the request is re-sent after a terminal 87 reset (end of control unit run-on)

Fault setting condition(s)

● Plausibility check of the sent short-circuit times in the DME control unit
● Communication error with fan output stage 1

Monitored component or system

♦ Radiator fan on first output stage

Fault finding notes

♦ A faulty fan control unit might not be able to report back any variant when requested to do so. An incorrect or old fan module might not be able to report back any variant. The signal for flashing was sent during variant feedback, but flashing is cancelled for inexplicable reasons

Function restrictions

♦ No function restrictions, only the acoustics and control quality are impaired

P192A00

Diagnostic information - DME control unit

P192A00 Auxiliary coolant pump in high-temperature circuit - dry run

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Auxiliary water pump detects dry running and limits revs
- Pump reports fault by ground keying

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Check whether air is present in the vehicle's heating branch
♦ Replace pump
- **ONLY Panamera - SY 2911**
  ▶ see PIWIS Information System ▶ 970 ▶ 2012-2013 ▶ 970130 or 970131 ▶ Workshop Manual ▶ 08-Symptoms ▶ 0850IN
  ⇒ 247025 Eliminating symptoms in body interior: Reprogramming DME control unit (fluctuating heat output and reduced driving performance in hybrid or E-power mode/SY2911)

Function restrictions

♦ In rare cases, reduction in the electric driving power

P192B00

Diagnosis information DME control module

P192B00 Auxiliary coolant pump in high-temperature circuit - mechanical fault

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Auxiliary water pump switched off due to excess current
- Pump reports fault by ground keying

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Check of the electric water pump for sluggishness or blocking
♦ Replace pump
- **ONLY Panamera:**
  ► Pay attention to the documents: SY 2911

Function restrictions

♦ Reduced heating power when the combustion engine is at low revs
♦ In rare cases, reduction in the electric driving power

Diagnosis information DME control module

P192C00 Auxiliary coolant pump in high-temperature circuit - overtemperature

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Auxiliary water pump switched off due to overtemperature
- Pump reports fault by ground keying

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Check of the pump for great external heating influence (>160 °C/320 °F)
♦ Replace pump
- **ONLY Panamera:**
  ► Pay attention to the documents: SY 2911

Function restrictions

♦ Reduced heating power when the combustion engine is at low revs
♦ Reduction in the electrical driving power possible

P192D00

Diagnosis information DME control module

P192D00 Auxiliary coolant pump in the high temperature circuit - dry run

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Auxiliary water pump detects dry running and limits revs
- Pump reports fault by ground keying

Monitored component or system

♦ Pump 1 for charge air cooler

Fault finding notes

♦ Check of whether there is air in the vehicle's low-temperature circuit. Bleed if necessary
♦ Replace pump

Function restrictions

♦ Reduction in the electric driving power up to stop ban by the power electronics
♦ Reduced engine power due to high charge-air temperatures

P192E00

Diagnosis information DME control module

P192E00 Auxiliary coolant pump in the low-temperature circuit - mechanical fault

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Auxiliary water pump switched off due to excess current
- Auxiliary water pump detects excessive power draw and limits the revs
- Pump reports fault by ground keying

Monitored component or system

♦ Pump 1 for charge air cooler

Fault finding notes

♦ Check of the electric water pump for sluggishness or blocking
♦ Replace pump if necessary

Function restrictions

♦ Reduction in the electric driving power up to stop ban by the power electronics
♦ Reduced engine power due to high charge-air temperatures

Diagnosis information DME control module

P192F00 Auxiliary coolant pump in the low-temperature circuit - overtemperature

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Auxiliary water pump switched off due to overtemperature
- Pump reports fault by ground keying

Monitored component or system

♦ Pump 1 for charge air cooler

Fault finding notes

♦ Check of the pump for great external heating influence (>160 °C/320 °F)
♦ Replace pump

Function restrictions

♦ Reduction in the electric driving power up to stop ban by the power electronics
♦ Reduced engine power due to high charge-air temperatures

Diagnosis information DME control module

P194400 Control unit 1 for radiator fans - overtemperature

Diagnostic conditions

● Switch ignition on and wait 6 min., then fault entry. Effect: fan decreases power or switches off. Procedure: drive link test, test according to specification. Signal every 2 sec., for 1 sec. to ground
● The fan must be activated with 10% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● The radiator fan output stage reduces the power from 110 °C (230 °F) and switches off above 130 °C (266 °F). When the temperature falls below 125 °C (257 °F) again, then heat-loss-reduced operation is in effect

Monitored component or system

♦ Radiator fan output stage 1

Fault finding notes

♦ Drive link test
♦ Visual inspection of whether the fan module is in the original condition

Function restrictions

♦ No or reduced fan power of the two possible fans on the first output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "hot" light

P194500

Diagnosis information DME control module

P194500 Control unit for radiator fans - short circuit

Diagnostic conditions

- Ignition on
- The fan must be activated with 10% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

- Plausibility check of the sent short-circuit times in the DME control unit

Monitored component or system

♦ Radiator fans

Fault finding notes

♦ Perform fan output stage_1 drive link diagnostics. The fan should accelerate to maximum speed in approx. 10 sec.

Function restrictions

♦ No fan power of the first fan at the first radiator fan output stage
♦ The system can overheat in extreme situations (trailer operation/hot country/Vmax)
♦ A/C function rejection and "hot" light are indications of this.

Diagnosis information DME control module

P194600 Control unit 1 for radiator fans - faulty/power supply open circuit

Diagnostic conditions

● Switch ignition on and wait 6 min., then fault entry. Effect: electronics fault or power supply interrupted. Procedure: Signal every 2 sec., for 4 sec. to ground
● The fan must be activated with 10% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● Electronics fault or power supply to the fan control unit interrupted

Monitored component or system

♦ Radiator fan output stage 1

Fault finding notes

♦ Drive link test
♦ Check power supply fuse
♦ Check of the supply line from the power supply to the fan
♦ Fan control unit faulty

Function restrictions

♦ No or reduced fan power of the two possible fans on the first output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "hot" light

Diagnosis information DME control module

P195000 Coolant fan - sluggish/stalled

Diagnostic conditions

● Switch the ignition on and either drive the engine warm, or check via a measured value whether the air conditioner demands the correct number of fans. The measured value indicates the activation of the output stages
● The fan must be activated with 15% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● Soiling by leaves or ice, corrosion-related stalling due to the effects of road salt, accident damage or similar

Monitored component or system

♦ Radiator fan 1 on first output stage

Fault finding notes

♦ Fan output stage 1 drive link diagnostics
♦ The fan should accelerate to maximum speed in approx. 10 sec.

Function restrictions

♦ No fan power of the first fan on the first radiator fan output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "hot" light

P197C00

Diagnosis information DME control module

P197C00 Secondary-air injection, bank 1 and bank 2 interchanged

Diagnostic conditions

- Diagnostics runs only at end of assembly line

Monitored component or system

♦ Secondary-air system (combination valves)

Fault finding notes

♦ Secondary-air system test
♦ Short trip, bank 1
♦ Secondary-air system test
♦ Short trip, bank 2

Diagnosis information DME control module

P200400 Bank 1 intake-manifold flap for air flow control - stuck open

Diagnostic conditions

- Diagnostics runs during adaptation

Monitored component or system

♦ Charge movement flap

Fault finding notes

♦ Perform basic setting. If OK, check low-pressure activation
♦ Perform adjustment by hand to check the operating smoothness of the module and check whether the vacuum cell deflection lever linkage is firmly engaged
♦ Perform electrical test on sensor wiring harness
♦ Visual check whether limit stops of the charge movement flap are damaged
♦ Visual inspection of sensor holder on intake manifold
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

P200500

Diagnosis information DME control module

P200500 Intake pipe flap for bank 2 air flow control - stuck open

Diagnostic conditions

- Engine running
- Diagnostics runs during adaptation

Fault setting condition(s)

(Deviation between setpoint and actual for bank 2) < 100%

Monitored component or system

♦ Charge movement flap 2

Fault finding notes

♦ Perform basic setting. If OK, check low-pressure activation
♦ Perform adjustment by hand to check smoothness of operation of the module
♦ Perform electrical test on sensor wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Visual check whether limit stops of the charge movement flap are damaged
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

Diagnosis information DME control module

P200600 Intake pipe flap for bank 1 air flow control - stuck closed

Diagnostic conditions

- Engine running
- Diagnostics runs during adaptation
- Diagnostics runs continuously

Fault setting condition(s)

- Flap cannot reach the fail-safe position
- (Deviation between setpoint and actual) > 0%

Monitored component or system

♦ Charge movement flap

Fault finding notes

♦ Perform basic setting. If OK, check low-pressure activation
♦ Perform adjustment by hand to check smoothness of operation of the module
♦ Check whether vacuum cell/deflection lever linkage is firmly engaged
♦ Perform electrical test on sensor wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Visual check whether limit stops of the charge movement flap are damaged
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

P200700

Diagnosis information DME control module

P200700 Intake pipe flap for bank 2 air flow control - stuck closed

Diagnostic conditions

- Engine running
- Diagnostics runs during adaptation
- Diagnostics runs continuously

Fault setting condition(s)

- (Deviation between setpoint and actual for bank 2) > 0%

Monitored component or system

♦ Charge movement flap

Fault finding notes

♦ Perform basic setting. If OK, check low-pressure activation
♦ Perform adjustment by hand to check smoothness of operation of the module
♦ Check whether vacuum cell/deflection lever linkage is firmly engaged
♦ Perform electrical test on sensor wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Visual check whether limit stops of the charge movement flap are damaged
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

Diagnosis information DME control module

P200800 Intake pipe flap for air flow control - electrical fault

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Charge movement flap output stage signal error (low side switch)
- Signal voltage 4.5 V ... 5.5 V

Monitored component or system

♦ Charge movement flap

Fault finding notes

♦ Check wiring between DME control unit and component for open circuit
♦ The internal diagnostic voltage (between 3 V and 6 V) per output stage is measured
♦ Check power supply

Function restrictions

♦ Output stage inactive
♦ Failure of the charge movement flap

Diagnosis information DME control module

P200900 Intake pipe flap for air flow control - short circuit to ground

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Min. charge movement flap output stage signal error (low side switch)
- Signal voltage < 3.01 V

Monitored component or system

♦ Charge movement flap

Fault finding notes

♦ Check wiring between DME control unit and component for short circuit to ground
♦ If OK, remove plug from component and erase fault memory
♦ If the DME control unit detects open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive
♦ Failure of the charge movement flap

Diagnosis information DME control module

P201000 Intake pipe flap for air flow control - short circuit to B+

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Max. charge movement flap output stage signal error (low side switch)
- Signal current 2.2 A ... 4.0 A

Monitored component or system

♦ Charge movement flap

Fault finding notes

♦ Check wiring between DME control unit and component for short circuit to B+
♦ If OK, remove plug from component and erase fault memory
♦ If the DME control unit detects open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive
♦ Failure of the charge movement flap

Diagnosis information DME control module

P201400 Intake pipe flap position sender - electr. fault in circuit

Diagnostic conditions

- Ignition on
- Engine running
- Control unit run-on
- Diagnostics runs continuously

Fault setting condition(s)

- signal voltage < 0.2002 V

Monitored component or system

♦ Charge movement flap potentiometer

Fault finding notes

♦ Perform basic setting
♦ If not OK, check firm seating of the sensor plug and the DME control unit plug
♦ Visual inspection for soiling in the sensor plug or corrosion on all contacts and cable lugs
♦ Visual inspection of the sensor lines for damage or crushing, possibly crimping of the cable lugs
♦ Perform electrical test on wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

P201500

Diagnosis information DME control module

P201500 Intake pipe flap position sender/air flow control - implausible signal

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Deviation between setpoint and actual > 40%

Monitored component or system

♦ Charge movement flap

Fault finding notes

♦ Perform basic setting. If OK, check low-pressure activation
♦ Perform adjustment by hand to check smoothness of operation of the module
♦ Check whether vacuum cell/deflection lever linkage is firmly engaged
♦ Perform electrical test on sensor wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Visual check whether limit stops of the charge movement flap are damaged
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

Diagnosis information DME control module

P201700 Intake pipe flap position sender/air flow control - short circuit to B+

Diagnostic conditions

- Ignition on
- Engine running
- Control unit run-on
- Diagnostics runs continuously

Fault setting condition(s)

- signal voltage > 4.877 V

Monitored component or system

♦ Charge movement flap potentiometer

Fault finding notes

♦ Perform basic setting
♦ If not OK, check firm seating of the sensor plug and the DME control unit plug
♦ Visual inspection for soiling in the sensor plug or corrosion on all contacts and cable lugs
♦ Visual inspection of the sensor lines for damage or crushing, possibly crimping of the cable lugs
♦ Perform electrical test on wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

Diagnosis information DME control module

P201900 Intake pipe flap 2 position sender - electr. fault in circuit

Diagnostic conditions

- Ignition on
- Engine running
- Control unit run-on
- Diagnostics runs continuously

Fault setting condition(s)

- signal voltage < 0.2002 V

Monitored component or system

♦ Charge movement flap potentiometer

Fault finding notes

♦ Perform basic setting
♦ If not OK, check firm seating of the sensor plug and the DME control unit plug
♦ Visual inspection for soiling in the sensor plug or corrosion on all contacts and cable lugs
♦ Visual inspection of the sensor lines for damage or crushing, possibly crimping of the cable lugs
♦ Perform electrical test on wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

Diagnosis information DME control module

P202000 Intake pipe flap 2 position sender - implausible signal

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Deviation between setpoint and actual for bank 2 > 40%

Monitored component or system

♦ Charge movement flap

Fault finding notes

♦ Perform basic setting. If OK, check low-pressure activation
♦ Perform adjustment by hand to check smoothness of operation of the module
♦ Check whether vacuum cell/deflection lever linkage is firmly engaged
♦ Perform electrical test on sensor wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Visual check whether limit stops of the charge movement flap are damaged
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

Diagnosis information DME control module

P202200 Intake pipe flap 2 position sender - short circuit to B+

Diagnostic conditions

- Ignition on
- Engine running
- Control unit run-on
- Diagnostics runs continuously

Fault setting condition(s)

- signal voltage > 4.877 V

Monitored component or system

♦ Charge movement flap potentiometer

Fault finding notes

♦ Perform basic setting
♦ If not OK, check firm seating of the sensor plug and the DME control unit plug
♦ Visual inspection for soiling in the sensor plug or corrosion on all contacts and cable lugs
♦ Visual inspection of the sensor lines for damage or crushing, possibly crimping of the cable lugs
♦ Perform electrical test on wiring harness
♦ Visual inspection of sensor holder on intake pipe
♦ Removal of the sensor for visual check whether the holder is worn or broken

Function restrictions

♦ Juddering possible and/or full power may not be available

P202500

Diagnosis information DME control module

P202500 Tank leakage detection sender in carbon canister - signal implausible

Diagnostic conditions

- Carbon canister load factor < 35 for 10 seconds
- Engine start temperature < 45 °C (113 °F)
- Vehicle speed > 10 km/h (6 mph) for 10 seconds
- Ambient temperature < 45 °C (113 °F)

Fault setting condition(s)

- Measured temperature at the sensor < ambient temperature - 30 °C (54 °F)
- Measured temperature at the sensor > ambient temperature + 40 °C (72 °F)
- Temperature difference between min. and max. < 0.06 °C (0.11 °F)

Monitored component or system

♦ Temperature sensor

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Temperature sensor faulty

Fault effects

♦ Combustion engine might run more frequently because the carbon canister load cannot be determined exactly.

Diagnosis information DME control module

P202600 Tank leakage detection sender in carbon canister - voltage too low
P202700 Tank leakage detection sender in carbon canister - voltage too high

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

P202600:
- Sensor voltage of the temperature sensor < 0.1 V

P202700:
- Sensor voltage of the temperature sensor > 4.5 V

Monitored component or system

♦ Temperature sensor

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Temperature sensor faulty

Fault effects

♦ Combustion engine might run more frequently because the carbon canister load cannot be determined exactly.

Diagnosis information DME control module

P202600 Tank leakage detection sender in carbon canister - voltage too low
P202700 Tank leakage detection sender in carbon canister - voltage too high

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

P202600:
- Sensor voltage of the temperature sensor < 0.1 V

P202700:
- Sensor voltage of the temperature sensor > 4.5 V

Monitored component or system

♦ Temperature sensor

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Temperature sensor faulty

Fault effects

♦ Combustion engine might run more frequently because the carbon canister load cannot be determined exactly.

P206600

Diagnosis information DME control module

P046100 Fuel level sender - signal implausible
P206600 Fuel level sender 2 - physical value range exceeded
P25D800 Fuel level sender 3 - physical value range exceeded

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

P046100
- Fuel level sender, signal > 110 l (liters)
- Resistance of sensor 1 > 1,100 Ohm

P206600
- Resistance of sensor 2 > 1,100 Ohm

P25D800
- Resistance of sensor 3 > 550 Ohm

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Fuel level sender stuck
♦ Fault finding via instrument cluster

P206700

Diagnosis information DME control module

P046200 Fuel level sender, signal too low
P046300 Fuel level sender, signal too high
P206700 Fuel level indicator sender 2 - short circuit to ground
P206800 Fuel level indicator sender 2 - short circuit to B+

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The fault is detected by the instrument cluster and transferred to the DME control unit, where the fault memory entry is made

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Check instrument cluster fault memory content

Fault effects

♦ MIL on

P206800

Diagnosis information DME control module

P046200 Fuel level sender, signal too low
P046300 Fuel level sender, signal too high
P206700 Fuel level indicator sender 2 - short circuit to ground
P206800 Fuel level indicator sender 2 - short circuit to B+

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The fault is detected by the instrument cluster and transferred to the DME control unit, where the fault memory entry is made

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Check instrument cluster fault memory content

Fault effects

♦ MIL on

P208800

Diagnosis information DME control module

P208800 Bank 1 camshaft adjustment - short circuit to ground

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Activation voltage less than diagnostic threshold 2.14...3.26 V

Monitored component or system

♦ Bank 1 intake camshaft adjuster output stage

Diagnosis information DME control module

P208900 Bank 1 camshaft adjustment - short circuit to B+

Diagnostic conditions

- Ignition on
- With engine running

Fault setting condition(s)

- Typically: I > 2.2...4.0 A, depending on which output stage type is used
- Output stage diagnostics, short circuit to B+

Monitored component or system

♦ Actuator for camshaft adjustment (intake, bank 1) output stage

Function restrictions

♦ Power restriction

P209200

Diagnosis information DME control module

P209200 Bank 2 camshaft adjustment - short circuit to ground

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Activation voltage less than diagnostic threshold 2.14...3.26 V

Monitored component or system

♦ Bank 2 intake camshaft adjuster output stage

P209300

Diagnosis information DME control module

P209300 Bank 2 camshaft adjustment - short circuit to B+

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Typically: I > 2.2...4.0 A, depending on which output stage type is used
- Output stage diagnostics, short circuit to B+

Monitored component or system

♦ Camshaft adjuster actuator (intake, bank 2) output stage

Function restrictions

♦ Power restriction

P209600

Diagnosis information DME control module

P209600 Bank 1 lambda correction behind catalytic converter - lean control limit exceeded

Fault setting condition(s)

- Delta of the sensor offset of setpoint control < -3% > -7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

P209700

Diagnosis information DME control module

P209700 Bank 1 lambda correction behind catalytic converter - rich control limit exceeded

Fault setting condition(s)

- Delta of the sensor offset of setpoint control > 3% < 7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor, bank 1

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

P209800

Diagnosis information DME control module

P209800 Bank 2 lambda correction behind catalytic converter - lean control limit exceeded

Fault setting condition(s)

- Delta of the sensor offset of setpoint control < -3% > -7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 2 sensor 2 faulty

P209900

Diagnosis information DME control module

P209900 Bank 2 lambda correction behind catalytic converter - rich control limit exceeded

Fault setting condition(s)

- Delta of the sensor offset of setpoint control > 3% < 7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 2 sensor 2 faulty

Diagnosis information DME control module

P210600 Throttle valve control unit - limited power due to system fault

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit in the DV-E output stage : I > 8.0...18.0 A
- DV-E output stage is overheated or carries excessive current: I > 5.5...7.7 A or T > 150 °C/302 °F (current limitation) or T> 175 °C/347 °F (overtemperature shutoff)
- SPI or signal error in the DV-E output stage : Maximum pulse/duty ratio > 80%
- Open-load fault in the DV-E output stage; output voltage 1 > 2 V and output voltage 2 < 0.8 V

Monitored component or system

♦ Throttle valve adjuster output stage

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve plug when the ignition is on (throttle valve unplugged)

Diagnosis information DME control module

P211900 Throttle valve control unit - fault in basic setting

Diagnostic conditions

- Ignition on
- Diagnostics runs during adaptation
- Speed 0 km/h / mph
- Engine speed < 300 rpm
- Intake-air temperature > 5.5 °C (41.9 °F)

Monitored component or system

♦ Throttle valve adjuster adaptation error

Diagnosis information DME control module

P212200 Accelerator pedal position sender - signal too low

Diagnostic conditions

- No fault in the 5 V supply

Fault setting condition(s)

- Electrical test of the pedal value encoder: signal too low

Monitored component or system

♦ Pedal sensor 1

Fault finding notes

♦ Electrical test of the plug connections and cables for short circuit to ground

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

P212300

Diagnosis information DME control module

P212300 Accelerator pedal position sender - signal too high

Diagnostic conditions

- No fault in the 5 V supply

Fault setting condition(s)

- Electrical test of the pedal value encoder: signal too high

Monitored component or system

♦ Pedal sensor 1

Fault finding notes

♦ Electrical test of the plug connections and cables for short circuit to B+

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

P212700

Diagnosis information DME control module

P212700 Accelerator pedal position sender 2 - signal too low

Diagnostic conditions

- No fault in the 5 V supply

Fault setting condition(s)

- Electrical test of the pedal value encoder: signal too low

Monitored component or system

♦ Pedal sensor 2

Fault finding notes

♦ Electrical test of the plug connections and cables for short circuit to ground

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

P212800

Diagnosis information DME control module

P212800 Accelerator pedal position sender 2 - signal too high

Diagnostic conditions

- No fault in the 5 V supply

Fault setting condition(s)

- Electrical test of the pedal value encoder: signal too high

Monitored component or system

♦ Pedal sensor 2

Fault finding notes

♦ Electrical test of the plug connections and cables for short circuit to B+

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

Diagnosis information DME control module

P213800 Accelerator pedal position sender 1/2 - implausible signal

Diagnostic conditions

- Diagnostics running continuously from ignition on
- No fault in the 5 V supply
- Control unit run-on

Fault setting condition(s)

- The difference of the two input signals exceeds the permissible maximum
- The two signal voltages of the pedal encoder are tested for synchronism
- The two pedal encoder signal voltages are observed in run-on for pedal encoder drift detection. A fault is present if one signal voltage lies within and one signal voltage lies outside the idle range
- When the idle range of the first channel is left, the voltage value of the second channel is stored. When the first channel exceeds a voltage threshold but the second one does not, a fault is detected
- A fault is also detected when the second channel falls below the voltage threshold before the first channel when reaching the idle range again from above

Monitored component or system

♦ Pedal encoder

Fault finding notes

♦ Electrical test of the plug connections, cables and components
♦ Test of the contact resistance values on sensors 1 and 2
♦ It might be necessary to replace the sensors

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

P214600

Diagnosis information DME control module

P214600 Supply for fuel injector(s) A - open circuit

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit of the high pressure fuel injector (high side) to battery positive voltage/ground
- Winding short circuit of the high pressure fuel injector (high side)

Monitored component or system

♦ High pressure fuel injector, high side, cylinder 1/2

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ Suppression of the high pressure fuel injectors with data

Diagnosis information DME control module

P214900 Supply for fuel injector(s) B - open circuit

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit of the high pressure fuel injector (high side) to battery positive voltage/ground
- Winding short circuit of the high pressure fuel injector (high side)

Monitored component or system

♦ High pressure fuel injector, high side, cylinder 3/4

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ Suppression of the high pressure fuel injectors with data

P215200

Diagnosis information DME control module

P215200 Supply for fuel injector(s) C - electrical fault

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit of the high pressure fuel injector (high side) to battery positive voltage/ground
- Winding short circuit of the high pressure fuel injector (high side)

Monitored component or system

♦ High pressure fuel injector, high side, cylinder 5/6

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ Suppression of the high pressure fuel injectors with data

P217700

Diagnostic information - DME control unit

P217700 Bank 1 fuel metering system - system too lean from idling speed

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Diagnostics via adaptation values: Mixture adaptation learns systematic deviations of the lambda controller. The deviations are compensated as an offset or factor depending on the operating point.
- Multiplicative lambda adaptation value > 1.30

Monitored component or system

♦ Fuel system

Fault finding notes

♦ Check fuel tank level (fuel tank empty)
♦ Oil cap open
♦ Fuel quality (fuels with a higher ethanol content result in enrichment, for example)
♦ Visual inspection of intake duct: Air cleaner dirty; kinked or loose hoses
♦ Leaks in intake duct
♦ Leaks in brake booster
♦ Tank vent valve stuck/faulty
♦ Throttle valve adaptation
♦ Mass air flow sensor
♦ Check intake manifold pressure sensor(s)
♦ Intake manifold flap short test
♦ Camshafts short test
♦ Secondary-air valves drive link/short test
♦ Check oxygen sensors
♦ Oil thinning (does the engine oil contain too much gasoline?)
♦ Check low-pressure and high-pressure fuel system
♦ Fuel filter dirty/blocked
♦ Check fuel injectors

P217800

Diagnostic information - DME control unit

P217800 Bank 1 fuel metering system - system too rich from idling speed

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Diagnostics via adaptation values: Mixture adaptation learns systematic deviations of the lambda controller. The deviations are compensated as an offset or factor depending on the operating point.
- Multiplicative lambda adaptation value < 0.70

Monitored component or system

♦ Fuel system

Fault finding notes

♦ Leak in exhaust system (**engine** ⇒ **oxygen sensor upstream of catalytic converter**)
♦ Exhaust system constricted/blocked
♦ **Fuel injector** faulty (mechanical fault)
♦ Timing set incorrectly
♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, **throttle valve adjusting unit**, **ambient pressure sensor**, **intake air temperature sensor**, **rpm sensor**, **camshaft adjustment**
♦ Tank vent valve faulty (Tank vent valve short test)
♦ High fuel content in engine oil

P217900

Diagnostic information - DME control unit

P217900 Bank 2 fuel metering system - system too lean from idling speed

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Diagnostics via adaptation values: Mixture adaptation learns systematic deviations of the lambda controller. The deviations are compensated as an offset or factor depending on the operating point.
- Multiplicative lambda adaptation value, bank 2 > 1.30

Monitored component or system

♦ Fuel system

Fault finding notes

♦ Check fuel tank level (fuel tank empty)
♦ Oil cap open
♦ Fuel quality (fuels with a higher ethanol content result in enrichment, for example)
♦ Visual inspection of intake duct: Air cleaner dirty; kinked or loose hoses
♦ Leaks in intake duct
♦ Leaks in brake booster
♦ Tank vent valve stuck/faulty
♦ Throttle valve adaptation
♦ Mass air flow sensor
♦ Check intake manifold pressure sensor(s)
♦ Intake manifold flap short test
♦ Camshafts short test
♦ Secondary-air valves drive link/short test
♦ Check oxygen sensors
♦ Oil thinning (does the engine oil contain too much gasoline?)
♦ Check low-pressure and high-pressure fuel system
♦ Fuel filter dirty/blocked
♦ Check fuel injectors

Diagnostic information - DME control unit

P218000 Bank 2 fuel metering system - system too rich from idling speed

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Diagnostics via adaptation values: Mixture adaptation learns systematic deviations of the lambda controller. The deviations are compensated as an offset or factor depending on the operating point.
- Multiplicative lambda adaptation value, bank 2 < 0.700

Monitored component or system

♦ Fuel system

Fault finding notes

♦ Leak in exhaust system (**engine** ⇒ **oxygen sensor upstream of catalytic converter**)
♦ Exhaust system constricted/blocked
♦ **Fuel injector** faulty (mechanical fault)
♦ Timing set incorrectly
♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, **throttle valve adjusting unit**, **ambient pressure sensor**, **intake air temperature sensor**, **rpm sensor**, **camshaft adjustment**
♦ Tank vent valve faulty (Tank vent valve short test)
♦ High fuel content in engine oil

Diagnostic information - DME control unit

P218100 Fault in cooling system

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine start temperature -10 ... +60 °C (14 ... 140 °F)
  - Engine speed > 1,000 rpm

Fault setting condition(s)

- Difference between coolant temperature (sensor) and coolant temperature at radiator outlet (sensor) < 20.3 K for longer than 30...120 sec.

Monitored component or system

♦ Coolant temperature system, performance capacity

Fault finding notes

♦ Affected by block heater
♦ 3/2-way valve faulty if auxiliary heater is installed
♦ Seal in thermostat housing faulty
♦ Thermostat housing faulty
♦ Thermostat faulty
♦ Engine coolant temperature sensor faulty, loose contact or corrosion on connectors or lines

Fault effects

If radiator shutter is installed:
♦ Radiator shutter is opened
♦ Radiator shutter remains open until the fault has been healed or deleted from the fault memory

Functional restrictions

♦ If the thermostat is stuck open, the cooling system and engine heat up too slowly after a cold start or the engine temperature remains continuously too low.

Diagnosis information DME control module

P218300 Coolant temperature sender 2 - signal implausible

Diagnostic conditions

DFCC 24183
- Once per driving cycle
- No electrical fault present
- Switch-off time > 7 hours and 47 minutes
- Switch-off time valid
- End of starting completed or E-driving readiness set
- Vehicle speed > 25 km/h (16 mph) for 30 seconds
- No temperature difference between the individual cross-check sensors

DFCC 23633
- Once per driving cycle
- No electrical fault of the engine temperature sensor or radiator outlet temperature sensor
- Ambient temperature > -7.5 °C (+19 °F)
- Engine starting temperature at first start < 84 °C (183 °F)
- Engine temperature > 45 °C (113 °F)
- Vehicle speed 5...70 km/h (3 ... 44 mph)
- Engine speed >1,200 rpm
- Mass air flow for the period 15...200 seconds > 40 kg/h

Fault setting condition(s)

DFCC 24183
- Confirmed cross-check error for the cooling-circuit temperature sensor ● Threshold exceeded (map depending on engine switch-off time)
- No cross-check error of the other temperature sensors

DFCC 23633
- Temperature signal of engine cooling circuit temperature changed by less than 1.5 °C (2.7 ° F) in the range 4...45 °C (39 ... 113 °F)

Monitored component or system

♦ Coolant temperature sensor at radiator outlet

Fault finding notes

♦ Check of the temperature sensor compared to the other temperature sensors, ideally after engine cooling phase

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Coolant temperature sender 3 faulty

Fault effects

DFCC 24183
♦ Switchover of the sensor temperature to substitute value or substitute model
♦ Possibly restrictions in functions that use the sensor value

DFCC 23633
♦ Switchover of the sensor temperature to substitute value or substitute model

Diagnostic information - DME control unit

P218400 Coolant temperature sender 2 - signal below limit
P218500 Coolant temperature sender 2 - signal above limit
P218600 Coolant temperature sender 2 - loose contact

Diagnostic conditions

- Diagnostics always starts as soon as ignition is switched on
- Diagnostics runs continuously

Fault setting condition(s)

- The measured sensor signal voltage is below/above the limit value
- Pull-up connection; the sensor is passive and has a reference voltage of 3.3 V

Monitored component or system

♦ Coolant temperature sensor behind exhaust gas recirculation cooler

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ If P017B00 and P308100 are entered and radiator fan was activated fully ⇒ Consequential fault at low ambient temperatures < 0°C (32 °F)
♦ **Coolant temperature sender 2** faulty

Functional restrictions

♦ Radiator fans are activated

Diagnostic information - DME control unit

P218400 Coolant temperature sender 2 - signal below limit
P218500 Coolant temperature sender 2 - signal above limit
P218600 Coolant temperature sender 2 - loose contact

Diagnostic conditions

- Diagnostics always starts as soon as ignition is switched on
- Diagnostics runs continuously

Fault setting condition(s)

- The measured sensor signal voltage is below/above the limit value
- Pull-up connection; the sensor is passive and has a reference voltage of 3.3 V

Monitored component or system

♦ Coolant temperature sensor behind exhaust gas recirculation cooler

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ If P017B00 and P308100 are entered and radiator fan was activated fully ⇒ Consequential fault at low ambient temperatures < 0°C (32 °F)
♦ **Coolant temperature sender 2** faulty

Functional restrictions

♦ Radiator fans are activated

Diagnostic information - DME control unit

P218400 Coolant temperature sender 2 - signal below limit
P218500 Coolant temperature sender 2 - signal above limit
P218600 Coolant temperature sender 2 - loose contact

Diagnostic conditions

- Diagnostics always starts as soon as ignition is switched on
- Diagnostics runs continuously

Fault setting condition(s)

- The measured sensor signal voltage is below/above the limit value
- Pull-up connection; the sensor is passive and has a reference voltage of 3.3 V

Monitored component or system

♦ Coolant temperature sensor behind exhaust gas recirculation cooler

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ If P017B00 and P308100 are entered and radiator fan was activated fully ⇒ Consequential fault at low ambient temperatures < 0°C (32 °F)
♦ **Coolant temperature sender 2** faulty

Functional restrictions

♦ Radiator fans are activated

P218700

Diagnostic information - DME control unit

P218700 Bank 1 fuel metering system - system too lean at idling speed

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Diagnostics via adaptation values: Mixture adaptation learns systematic deviations of the lambda controller. The deviations are compensated as an offset or factor depending on the operating point.
- Additive lambda adaptation value < -6.0%

Monitored component or system

♦ Fuel system

Fault finding notes

♦ Check fuel tank level (fuel tank empty)
♦ Oil cap open
♦ Fuel quality (fuels with a higher ethanol content result in enrichment, for example)
♦ Visual inspection of intake duct: Air cleaner dirty; kinked or loose hoses
♦ Leaks in intake duct
♦ Leaks in brake booster
♦ Tank vent valve stuck/faulty
♦ Throttle valve adaptation
♦ Mass air flow sensor
♦ Check intake manifold pressure sensor(s)
♦ Intake manifold flap short test
♦ Camshafts short test
♦ Secondary-air valves drive link/short test
♦ Check oxygen sensors
♦ Oil thinning (does the engine oil contain too much gasoline?)
♦ Check low-pressure and high-pressure fuel system
♦ Fuel filter dirty/blocked
♦ Check fuel injectors

P218800

Diagnostic information - DME control unit

P218800 Bank 1 fuel metering system - system too rich at idling speed

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Diagnostics via adaptation values: Mixture adaptation learns systematic deviations of the lambda controller. The deviations are compensated as an offset or factor depending on the operating point.
- Additive lambda adaptation value > 6.0%

Monitored component or system

♦ Fuel system

Fault finding notes

♦ Leak in exhaust system (**engine** ⇒ **oxygen sensor upstream of catalytic converter**)
♦ Exhaust system constricted/blocked
♦ **Fuel injector** faulty (mechanical fault)
♦ Timing set incorrectly
♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, **throttle valve adjusting unit**, **ambient pressure sensor**, **intake air temperature sensor**, **rpm sensor**, **camshaft adjustment**
♦ Tank vent valve faulty (Tank vent valve short test)
♦ High fuel content in engine oil

Diagnostic information - DME control unit

P218900 Bank 2 fuel metering system - system too lean at idling speed

Diagnostic conditions

- Engine running > 10 s
- Coolant temperature > 45 °C (113 °F)
- Engine speed 720 ... 1,440 rpm
- Engine load 6 ... 11%
- Diagnostics runs continuously

Fault setting condition(s)

- Diagnostics via adaptation values: Mixture adaptation learns systematic deviations of the lambda controller. The deviations are compensated as an offset or factor depending on the operating point.
- Additive lambda adaptation value, bank 2 > 6.0%

Monitored component or system

♦ Fuel system

Fault finding notes

♦ Check fuel tank level (fuel tank empty)
♦ Oil cap open
♦ Fuel quality (fuels with a higher ethanol content result in enrichment, for example)
♦ Visual inspection of intake duct: Air cleaner dirty; kinked or loose hoses
♦ Leaks in intake duct
♦ Leaks in brake booster
♦ Tank vent valve stuck/faulty
♦ Throttle valve adaptation
♦ Mass air flow sensor
♦ Check intake manifold pressure sensor(s)
♦ Intake manifold flap short test
♦ Camshafts short test
♦ Secondary-air valves drive link/short test
♦ Check oxygen sensors
♦ Oil thinning (does the engine oil contain too much gasoline?)
♦ Check low-pressure and high-pressure fuel system
♦ Fuel filter dirty/blocked
♦ Check fuel injectors

P219000

Diagnostic information - DME control unit

P219000 Bank 2 fuel metering system - system too rich at idle speed

Diagnostic conditions

- Engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Diagnostics via adaptation values: Mixture adaptation learns systematic deviations of the lambda controller. The deviations are compensated as an offset or factor depending on the operating point.
- Additive lambda adaptation value < 6.0%

Monitored component or system

♦ Fuel system

Fault finding notes

♦ Leak in exhaust system (**engine** ⇒ **oxygen sensor upstream of catalytic converter**)
♦ Exhaust system constricted/blocked
♦ **Fuel injector** faulty (mechanical fault)
♦ Timing set incorrectly
♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, **throttle valve adjusting unit**, **ambient pressure sensor**, **intake air temperature sensor**, **rpm sensor**, **camshaft adjustment**
♦ Tank vent valve faulty (Tank vent valve short test)
♦ High fuel content in engine oil

P219500

Diagnosis information DME control module

P219500 Bank 1 oxygen sensor 1 - signal too lean

Fault setting condition(s)

- Delta of the sensor offset of setpoint control > 7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

P219600

Diagnosis information DME control module

P219600 Bank 1 oxygen sensor 1 - signal too rich

Fault setting condition(s)

- Delta of the sensor offset of setpoint control < -7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

P219700

Diagnosis information DME control module

P219700 Bank 2 oxygen sensor 1 - signal too lean

Fault setting condition(s)

- Delta of the sensor offset of setpoint control > 7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

P219800

Diagnosis information DME control module

P219800 Bank 2 oxygen sensor 1 - signal too rich

Fault setting condition(s)

- Delta of the sensor offset of setpoint control < -7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

P219900

Diagnosis information DME control module

P219900 Intake-air temperature sender - 1<>2 deviation

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Absolute value (measured intake-pipe temperature of bank 1 - measured intake-pipe temperature of bank 2) > 10.022 °C (50.040 °F)

Monitored component or system

♦ Boost pressure sensor

Fault finding notes

♦ Check sensor wiring
♦ Check charge air cooler for blockage

Function restrictions

♦ Loss of power
♦ MIL on

P219A00

Diagnostic information - DME control unit

P219A00 Bank 1 fuel/air mixture, unbalanced
P219B00 Bank 2 fuel/air mixture, unbalanced

Diagnostic conditions

Information
Diagnostics evaluates the signal of the oxygen sensor ahead of the catalytic converter at defined times and uses the signal to calculate the individual lambda value for each cylinder. The information about the individual cylinder mixture (fuel/air mixture) is used to equalize the cylinders through adaptation of the injection quantity. This fault is set if the correction factors exceed the fault threshold.

- Once per driving cycle
- Engine speed 1,320…2,280 rpm
- Relative fresh-air charge (load) 39.8… 75%
- Engine temperature > 45 °C (113 °F)

Enabling of individual cylinder lambda calculation with the following sub-conditions:
♦ Lambda control ahead of catalytic converter active
♦ Lambda setpoint is approximately 1
♦ Short tests for oxygen sensor dynamic response upstream of catalytic converter performed

The following conditions must be met for the time > 1 s:
♦ Oxygen sensor upstream of catalytic converter is ready for operation
♦ No fault during intake camshaft adjustment
♦ No misfire detection fault
♦ Crankshaft/intake camshaft adaptation completed
♦ Secondary-air system not active

Fault setting condition(s)

Bank 1
Clear fault code in the extended fault memory or vehicle analysis log 14703
♦ Control factor > 1.18 (enrichment)
Clear fault code in the extended fault memory or vehicle analysis log 14704
♦ Control factor <= 0.82 (leaning)

Bank 2
Clear fault code in the extended fault memory or vehicle analysis log 14705
♦ Control factor > 1.18 (enrichment)
Clear fault code in the extended fault memory or vehicle analysis log 14706
♦ Control factor <= 0.82 (leaning)

Monitored component or system

♦ Fuel injectors

Fault finding notes

♦ Leak in intake system
♦ Fuel supply system
♦ High-pressure fuel injectors of the conspicuous cylinder bank faulty

Functional restrictions

♦ Not perceptible
♦ Rough-running engine
♦ Perceptible misfiring
♦ Stop ban

P219B00

Diagnostic information - DME control unit

P219A00 Bank 1 fuel/air mixture, unbalanced
P219B00 Bank 2 fuel/air mixture, unbalanced

Diagnostic conditions

ⓘ Information
Diagnostics evaluates the signal of the oxygen sensor ahead of the catalytic converter at defined times and uses the signal to calculate the individual lambda value for each cylinder. The information about the individual cylinder mixture (fuel/air mixture) is used to equalize the cylinders through adaptation of the injection quantity. This fault is set if the correction factors exceed the fault threshold.

- Once per driving cycle
- Engine speed 1,320…2,280 rpm
- Relative fresh-air charge (load) 39.8… 75%
- Engine temperature > 45 °C (113 °F)

Enabling of individual cylinder lambda calculation with the following sub-conditions:
♦ Lambda control ahead of catalytic converter active
♦ Lambda setpoint is approximately 1
♦ Short tests for oxygen sensor dynamic response upstream of catalytic converter performed

The following conditions must be met for the time > 1 s:
♦ Oxygen sensor upstream of catalytic converter is ready for operation
♦ No fault during intake camshaft adjustment
♦ No misfire detection fault
♦ Crankshaft/intake camshaft adaptation completed
♦ Secondary-air system not active

Fault setting condition(s)

Bank 1
Clear fault code in the extended fault memory or vehicle analysis log 14703
♦ Control factor > 1.18 (enrichment)
Clear fault code in the extended fault memory or vehicle analysis log 14704
♦ Control factor <= 0.82 (leaning)

Bank 2
Clear fault code in the extended fault memory or vehicle analysis log 14705
♦ Control factor > 1.18 (enrichment)
Clear fault code in the extended fault memory or vehicle analysis log 14706
♦ Control factor <= 0.82 (leaning)

Monitored component or system

♦ Fuel injectors

Fault finding notes

♦ Leak in intake system
♦ Fuel supply system
♦ High-pressure fuel injectors of the conspicuous cylinder bank faulty

Functional restrictions

♦ Not perceptible
♦ Rough-running engine
♦ Perceptible misfiring
♦ Stop ban

Diagnosis information DME control module

P223700 Bank 1 oxygen sensor 1 - pump current open circuit

Diagnostic conditions

- Heater control active
- Lambda control active
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is in a voltage band, and the gradient of lambda control factor is higher than the maximum value

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

P224000

Diagnosis information DME control module

P224000 Bank 2 oxygen sensor 1 - pump current open circuit

Diagnostic conditions

- Heater control active
- Lambda control active
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is in a voltage band, and the gradient of lambda control factor is higher than the maximum value

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

P224300

Diagnosis information DME control module

P224300 Bank 1 oxygen sensor 1 - reference voltage open circuit

Diagnostic conditions

- Heater control active
- Dew point end reached
- 3-kHz measuring frequency of the internal resistance not active for 2 sec
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is either greater than the maximum voltage or less than the minimum voltage, and the internal resistance is implausibly high

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

Diagnosis information DME control module

P224700 Bank 2 oxygen sensor 1 - reference voltage open circuit

Diagnostic conditions

- Heater control active
- Dew point end reached
- 3-kHz measuring frequency of the internal resistance not active for 2 sec
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is either greater than the maximum voltage or less than the minimum voltage, and the internal resistance is implausibly high

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

P225100

Diagnosis information DME control module

P225100 Bank 1 oxygen sensor 1 - ground line open circuit

Diagnostic conditions

- Dew point end reached
- With oxygen sensor 4.9 heater control active for > 5 sec
- Overrun mode not active for > 35 sec
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is in the voltage band, and the internal resistance is higher than the maximum resistance

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

P225400

Diagnosis information DME control module

P225400 Bank 2 oxygen sensor 1 - ground line open circuit

Diagnostic conditions

- Dew point end reached
- With oxygen sensor 4.9 heater control active for > 5 sec
- Overrun mode not active for > 35 sec
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is in the voltage band, and the internal resistance is higher than the maximum resistance

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

P226200

Diagnosis information DME control module

P226200 Turbocharger/compressor - no pressure - mechanical

Diagnostic conditions

- Boost pressure control active
- Compressor control flap closed
- Diagnostics runs several times

Fault setting condition(s)

- If the compressor pressure ratio falls below a minimum threshold at full load, it is assumed that one of the components is faulty.

Monitored component or system

♦ Boost pressure control

Fault finding notes

♦ Check sensor wiring
♦ Check charge air cooler for blockage/leakage
♦ Sensor faulty

Function restrictions

♦ Loss of power
♦ MIL on

P226300

Diagnosis information DME control module

P226300 Turbocharger/compressor system - no power/malfunction

Diagnostic conditions

- Full load plus in a defined rpm and elevation range
- Diagnostics runs several times

Fault setting condition(s)

- If the actual pressure does not reach the setpoint pressure despite full deflection of the I share of the boost pressure controller, it is assumed that one of the components is faulty.

Monitored component or system

♦ Boost pressure control

Fault finding notes

♦ Check sensor wiring
♦ Check charge air cooler for blockage/leakage
♦ Sensor faulty

Function restrictions

♦ Loss of power
♦ MIL on

P226B00

Diagnosis information DME control module

P226B00 Turbocharger/compressor - boost pressure too high - mechanical

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- A maximum intake-pipe pressure is specified to protect the component
- The maximum value depends on the engine speed

Monitored component or system

♦ Boost pressure sensor

Fault finding notes

♦ Check sensor wiring
♦ Check measured values: bank 1/2 boost pressure sensor
♦ Mechanically check compressor module

Function restrictions

♦ Loss of power
♦ MIL on

P227000

Diagnosis information DME control module

P227000 Bank 1 oxygen sensor 2 - signal too lean

Diagnostic conditions

- Engine speed > 25 rpm
- Lambda adjustment for diagnostics ended
- P-share of control behind catalytic converter active
- All fuel injectors active
- Diagnostics runs several times in the driving cycle

Fault setting condition(s)

- Oxygen sensor voltage behind catalytic converter < 0.659 V
- Vibration test

Monitored component or system

♦ Bank 1 oxygen sensor 2

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

P227100

Diagnosis information DME control module

P227100 Bank 1 oxygen sensor 2 - signal too rich

Diagnostic conditions

- Sensor ready for operation
- Engine speed > 25 rpm
- Lambda adjustment for diagnostics ended
- P-share of control behind catalytic converter active
- All fuel injectors active
- Diagnostics runs several times in the driving cycle

Fault setting condition(s)

- Oxygen sensor voltage behind catalytic converter > 0.659 V
- Vibration test

Monitored component or system

♦ Bank 1 oxygen sensor 2

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 1 sensor 2 faulty

P227200

Diagnosis information DME control module

P227200 Bank 2 oxygen sensor 2 - signal too lean

Diagnostic conditions

- Engine speed > 25 rpm
- Lambda adjustment for diagnostics ended
- P-share of control behind catalytic converter active
- All fuel injectors active
- Diagnostics runs several times in the driving cycle

Fault setting condition(s)

- Oxygen sensor voltage behind catalytic converter < 0.659 V
- Vibration test

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 2 sensor 2 faulty

P227300

Diagnosis information DME control module

P227300 Bank 2 oxygen sensor 2 - signal too rich

Diagnostic conditions

- Engine speed > 25 rpm
- Lambda adjustment for diagnostics ended
- P-share of control behind catalytic converter active
- All fuel injectors active
- Diagnostics runs several times in the driving cycle

Fault setting condition(s)

- Oxygen sensor voltage behind catalytic converter > 0.659 V
- Vibration test

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor behind cat. conv., bank 2 sensor 2 faulty

P227900

Diagnosis information DME control module

P227900 Leakage air in intake system

Diagnostic conditions

- Setpoint air mass in the range 0.0 kg/h ... 37.5 kg/h
- Exhaust gas recirculation not active
- Engine at operating temperature
- Tank vent closed
- Fuel shutoff not active
- Diagnostics runs continuously

Fault setting condition(s)

- Offset value > 15 kg/h

Monitored component or system

♦ Intake pipe leakage

P229400

Diagnosis information DME control module

P229400 Fuel pressure control valve - open circuit

Diagnostic conditions

- Ignition on
- Valve not activated
- Diagnostics runs continuously

Fault setting condition(s)

- Quantity control valve output stage load reduction

Monitored component or system

♦ High pressure quantity control valve

Fault finding notes

♦ Check line connection
♦ Cable break or output stage faulty

P229500

Diagnosis information DME control module

P229500 Fuel pressure control valve - short circuit to ground

Diagnostic conditions

- Valve not activated
- Diagnostics runs continuously

Fault setting condition(s)

- Quantity control valve short circuit to ground, low side

Monitored component or system

♦ High pressure quantity control valve

Fault finding notes

♦ Pull plug off quantity control valve and read out the fault memory again. If there is an additional fault, replace the quantity control valve
♦ Check the line connection between the quantity control valve and DME control unit. If it is OK, then replace the DME control unit

P229600

Diagnosis information DME control module

P229600 Fuel pressure control valve - short circuit to B+

Diagnostic conditions

- Valve activated
- Diagnostics runs continuously

Fault setting condition(s)

- Quantity control valve short circuit to battery positive voltage, low side

Monitored component or system

♦ High pressure quantity control valve

Fault finding notes

♦ Pull plug off quantity control valve and read out the fault memory again. If there is an additional fault, replace the quantity control valve
♦ Check the line connection between the quantity control valve and DME control unit. If it is OK, then replace the DME control unit

Diagnosis information DME control module

P230000 Ignition coil 1 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230100 Ignition coil 1 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230300 Ignition coil 2 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230400 Ignition coil 2 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230600 Ignition coil 3 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

P230700

Diagnosis information DME control module

P230700 Ignition coil 3 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230900 Ignition coil 4 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231000 Ignition coil 4 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231200 Ignition coil 5 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231300 Ignition coil 5 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231500 Ignition coil 6 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231600 Ignition coil 6 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

P233600

Diagnosis information DME control module

P233600 Cylinder 1 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 1)

Diagnosis information DME control module

P233700 Cylinder 2 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 2)

P233800

Diagnosis information DME control module

P233800 Cylinder 3 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 3)

P233900

Diagnosis information DME control module

P233900 Cylinder 4 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 4)

Diagnosis information DME control module

P234000 Cylinder 5 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 5)

P234100

Diagnosis information DME control module

P234100 Cylinder 6 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 6)

Diagnosis information DME control module

P240000 Tank vent system, tank leak diagnostic pump activation - electrical fault/open circuit

Diagnostic conditions

- Tank leakage short test

or

- **Power supply voltage** 9 V ... 16 V
- For detection of open circuit or short circuit to ground:
  - Ignition on
- For detection of short circuit to B+:
  - Tank leak test

Fault setting condition(s)

- The output stage of the leakage diagnostic pump detects a load decrease

Monitored component or system

♦ Tank leakage diagnostic module pump motor

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL pump
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up

Diagnosis information DME control module

P240100 Tank vent system, tank leak diagnostic pump activation - short circuit to ground

Diagnostic conditions

- Tank leakage short test

or

- **Power supply voltage** 9 V ... 16 V
- For detection of open circuit or short circuit to ground:
  - Ignition on
- For detection of short circuit to B+:
  - Tank leak test

Fault setting condition(s)

- The output stage of the leakage diagnostic pump detects a short circuit to ground

Monitored component or system

♦ Tank leakage diagnostic module pump motor

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL pump
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up

Diagnosis information DME control module

P240200 Tank vent system, tank leak diagnostic pump activation - short circuit to B+

Diagnostic conditions

- Tank leakage short test

or

- **Power supply voltage** 9 V ... 16 V
- For detection of open circuit or short circuit to ground:
  - Ignition on
- For detection of short circuit to B+:
  - Tank leak test

Fault setting condition(s)

- The output stage of the leakage diagnostic pump detects a short circuit to B+

Monitored component or system

♦ Tank leakage diagnostic module pump motor

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL pump
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up

P240700

Diagnosis information DME control module

P240700 Tank vent system leakage diagnostics - pump current fluctuating

Diagnostic conditions

● Tank leakage short test
then:
● Tank vent valve short test

or

● Drive for longer than 10 minutes
● Tank vent adaptation value < 5.00
then:
● Engine and ignition off for longer than 15 minutes
at:
● Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
● **Ambient temperature** 4 ... 35 °C (39 ... 95 °F)
● Vehicle standstill
● Constant supply voltage (change < 1 V)
● Constant current draw of the tank leak diagnostic module - DMTL (fluctuation < 1 mA)
then:
● Engine start with the following conditions:
● **Engine temperature** > 4 °C (39 °F)
● Difference between engine compartment temperature and intake-air temperature < 15 °C (27 °F)

Fault setting condition(s)

● Difference between the maximum and the minimum current during the reference measurement in the run-on phase with engine running < 1.001 mA

Monitored component or system

♦ Tank leakage diagnostic module

Fault finding notes

♦ Vent line from DMTL clogged
♦ Vent line to DMTL clogged
♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL
♦ DMTL power supply faulty

♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up

Diagnosis information DME control module

P240A00 Tank vent system leakage diagnostics pump heater activation - open circuit

Diagnostic conditions

- Tank leakage short test

or

- **Power supply voltage** 9 V ... 16 V
- For detection of open circuit or short circuit to ground:
  - Ignition on
- For detection of short circuit to B+:
  - Tank leak test

Fault setting condition(s)

- The output stage of the leakage diagnostic pump detects a line open circuit

Monitored component or system

♦ Tank leakage diagnostic module heater output stage

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL heater
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up

Diagnosis information DME control module

P240B00 Tank vent system leakage diagnostics pump heater activation - short circuit to ground

Diagnostic conditions

- Tank leakage short test

or

- **Power supply voltage** 9 V ... 16 V
- For detection of open circuit or short circuit to ground:
  - Ignition on
- For detection of short circuit to B+:
  - Tank leakage test

Fault setting condition(s)

- The output stage of the leakage diagnostic pump detects a short circuit to ground

Monitored component or system

♦ Tank leakage diagnostic module heater output stage

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL heater
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up

Diagnosis information DME control module

P240C00 Tank vent system leakage diagnostics pump heater activation - short circuit to B+

Diagnostic conditions

- Tank leakage short test

or

- **Power supply voltage** 9 V ... 16 V
- For detection of open circuit or short circuit to ground:
  - Ignition on
- For detection of short circuit to B+:
  - Tank leak test

Fault setting condition(s)

- The output stage of the leakage diagnostic pump detects a short circuit to B+

Monitored component or system

♦ Tank leakage diagnostic module heater output stage

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL heater
♦ DMTL power supply faulty
♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up

P241400

Diagnosis information DME control module

P241400 Bank 1 sensor 1 - voltage too low/leakage air

Fault setting condition(s)

- Signal voltage > 2.5 V...3.2 V

Monitored component or system

♦ Oxygen sensor in air

Possible fault causes

♦ **Injection valve** Mechanical fault / blocked
(e.g. due to chip in the fuel rail)
♦ **Oxygen sensor in front of catalytic converter** Bank 1 not installed (only electrically connected)
♦ **Oxygen sensor in front of catalytic converter** Bank 1 Sensor 1 Faulty

P241500

Diagnosis information DME control module

P241500 Bank 2 sensor 1 - voltage too low/leakage air

Fault setting condition(s)

- Signal voltage > 2.5 V...3.2 V

Monitored component or system

♦ Oxygen sensor in air

Possible fault causes

♦ **Injection valve** Mechanical fault / blocked
(e.g. due to chip in the fuel rail)
♦ **Oxygen sensor in front of catalytic converter** Bank 1 not installed (only electrically connected)
♦ **Oxygen sensor in front of catalytic converter** Bank 2 Sensor 1 Faulty

Diagnostic information - DME control unit

P242100 Pressure tank, fuel tank isolation valve, permanently open

Diagnostic conditions

- Once per driving cycle after cold start, max. 10 attempts for a successful test.
- Change in ambient pressure < 3 hPa
- Ambient pressure > 680 hPa
- Ambient temperature 3.75...35.25 °C (38.75...95.45 °F)
- No refueling requested
- Fuel level < 80 l (21.1 gallons)

Fault setting condition(s)

- Diagnostic time >= 5 s
- Current gradient of DMTL test < 2 mA

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ Check function of fuel tank isolation valve (FTIV) ⇒ Tank leak test: the FTIV is activated here.
♦ Check line from pressure tank to fuel tank isolation valve (FTIV)
♦ Remove fuel tank isolation valve (FTIV) connector, plug it onto dummy valve and check for function

Functional restrictions

♦ MIL on
♦ Extended waiting time before opening of filler flap
♦ Fuel odor from carbon canister

Diagnostic information - DME control unit

P242200 Pressure tank, fuel tank isolation valve, permanently closed

Diagnostic conditions

- Once per driving cycle after cold start, max. 10 attempts for a successful test.
- Change in ambient pressure < 3 hPa
- Ambient pressure > 680 hPa
- Ambient temperature 3.75...35.25 °C (38.75...95.45 °F)
- No refueling requested
- Fuel level < 80 l (21.1 gallons)

Fault setting condition(s)

- Diagnostic time >= 5 s
- Current gradient of DMTL test > 1 mA

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ Check function of fuel tank isolation valve (FTIV) ⇒ Tank leak test: the FTIV is activated here.
♦ Check line from pressure tank to fuel tank isolation valve (FTIV)
♦ Remove fuel tank isolation valve (FTIV) connector, plug it onto dummy valve and check for function

Functional restrictions

♦ MIL on
♦ Extended waiting time before opening of filler flap
♦ Fuel odor from carbon canister

Diagnostic information - DME control unit

P243100 Bank 1 secondary-air injection system flow/pressure sensor - implausible signal

Diagnostic conditions

- Ambient-pressure signal valid
- No repeat start
- Secondary-air injection ended
- Diagnostics runs once per driving cycle after active secondary air

Fault setting condition(s)

- The plausibility of the secondary-air pressure sensor is checked by comparing it with the ambient pressure sensor
- The deviation from the ambient pressure signal is too high in the initialization phase of the DME control unit

Monitored component or system

♦ Pressure sensor in the secondary-air supply line

Fault finding notes

♦ Compare secondary-air pressure sensor against ambient pressure sensor and tester with >> engine off, ignition on<<
♦ Check power supply for pressure sensor
♦ Secondary-air pressure sensor faulty

Valid for **Panamera/Cayenne S e-Hybrid**:
♦ Compare S040 (pressure sensor) with A340, A360 (ambient pressure)

P243200

Diagnosis information DME control module

P243200 Bank 1 secondary-air injection system - short circuit to ground

Diagnostic conditions

- Ambient-pressure signal valid
- No repeat start
- Secondary-air injection ended
- Diagnostics runs continuously after active secondary air

Fault setting condition(s)

- Voltage at the secondary-air pressure sensor < 0.498 V

Monitored component or system

♦ Secondary-air system, pressure sensor

Fault finding notes

♦ Check plug on pressure sensor
♦ Check pressure-sensor wiring for short circuits
♦ Remove plug from sensor. Delete fault memory entry. If a short circuit to B+ is detected, the component power supply is not OK or the component is faulty
♦ If a short circuit to ground is detected again, check the wiring to the DME control unit

Diagnosis information DME control module

P243300 Bank 1 secondary-air injection system - short circuit to B+

Diagnostic conditions

- Ambient-pressure signal valid
- No repeat start
- Secondary-air injection ended
- Diagnostics runs continuously after active secondary air

Fault setting condition(s)

- Voltage at the secondary-air pressure sensor > 4.502 V

Monitored component or system

♦ Secondary-air system, pressure sensor

Fault finding notes

♦ Check plug on pressure sensor
♦ Check pressure-sensor wiring for short circuits
♦ Remove plug from sensor and measure reference voltage (5 V) at the signal line
♦ If 12 V is present: short circuit to B+
♦ If 0 V is present: open circuit
♦ If 5 V is present, then check for short circuit of the 5 V supply line
♦ If OK, the component is faulty

P244000

Diagnosis information DME control module

P244000 Bank 1 secondary-air injection system - switching valve stuck open

Diagnostic conditions

- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Excessive pressure fluctuations in the offset phase with the valve closed

Monitored component or system

♦ Secondary-air system

Fault finding notes

♦ Bank 1 secondary valve stuck open
♦ If the fault occurs in combination with fault system (fault code P2442), it is leakage from the secondary-air valves
♦ Perform bank 1 and bank 2 short trip

Function restrictions

♦ Untreated exhaust gas can escape into the environment from the open secondary-air valve. The car smells like exhaust gas; the secondary-air pressure sensor and the air supply can be thermally affected by the hot exhaust gas
♦ MIL lights up

P244200

Diagnosis information DME control module

P244200 Bank 2 secondary-air injection system - switching valve stuck open

Diagnostic conditions

- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Excessive pressure fluctuations in the offset phase with the valve closed

Monitored component or system

♦ Secondary-air system

Fault finding notes

♦ Bank 1 secondary valve stuck open
♦ If the fault occurs in combination with fault system (fault code P2440), it is leakage from the secondary-air valves
♦ Perform bank 1 and bank 2 short trip

Function restrictions

♦ Untreated exhaust gas can escape into the environment from the open secondary-air valve. The car smells like exhaust gas; the secondary-air pressure sensor and the air supply can be thermally affected by the hot exhaust gas
♦ MIL lights up

P245000

Diagnosis information DME control module

P245000 Tank vent system switchover valve stuck open

Diagnostic conditions

● Tank leakage short test
then:
● Tank vent valve short test

or

● Drive for longer than 10 minutes
● Tank vent adaptation value < 5.00
then:
● Engine and ignition off for longer than 15 minutes
at:
● Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
● **Ambient temperature** 4 ... 35 °C (39 ... 95 °F)
● Vehicle standstill
● Constant supply voltage (change < 1 V)
● Constant current draw of the tank leak diagnostic module - DMTL (fluctuation < 1 mA)
then:
● Engine start with the following conditions:
● **Engine temperature** > 4 °C (39 °F)
● Difference between engine compartment temperature and intake-air temperature < 15 °C (27 °F)

Fault setting condition(s)

● Difference between reference current and idle current < 3.9001 mA

Monitored component or system

♦ Tank leakage diagnostic module

Fault finding notes

♦ Vent line from DMTL clogged
♦ Vent line to DMTL clogged
♦ Short circuit to B+/ground or open circuit in the line ▶ Activation line to DMTL
♦ DMTL power supply faulty

♦ **Tank leakage diagnostic module** - DMTL faulty

Function restrictions

♦ MIL lights up

Diagnosis information DME control module

P253300 Ignition starter switch circuit - short circuit to ground/open circuit
P253500 Ignition starter switch circuit - short circuit to B+

Diagnostic conditions

● During starting process

Fault setting condition(s)

● Comparison of terminal 50 component signal with terminal 50 CAN signal from the front-end electronics control unit
● If valid terminal 50 CAN information is available, it is used to check the cable information

Monitored component or system

♦ Terminal 50 component signal

Fault finding notes

♦ Check the electric line to the front-end electronics control unit
♦ Check front-end electronics control unit fault memory

Function restrictions

♦ Manual start with delay (delay due to CAN delay)

Diagnosis information DME control module

P253300 Ignition starter switch circuit - short circuit to ground/open circuit
P253500 Ignition starter switch circuit - short circuit to B+

Diagnostic conditions

● During starting process

Fault setting condition(s)

● Comparison of terminal 50 component signal with terminal 50 CAN signal from the front-end electronics control unit
● If valid terminal 50 CAN information is available, it is used to check the cable information

Monitored component or system

♦ Terminal 50 component signal

Fault finding notes

♦ Check the electric line to the front-end electronics control unit
♦ Check front-end electronics control unit fault memory

Function restrictions

♦ Manual start with delay (delay due to CAN delay)

Diagnosis information DME control module

P253900 Fuel low pressure sensor - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Analogue value measurement detects that a maximum value was exceeded (4.8047 V)
- Monitoring of the electrical signal of the pressure sensor for the demand-controlled fuel system (low pressure) for minimum and maximum limits
- The sensor voltage is read into the DME control unit via an analogue/digital channel

Monitored component or system

♦ Fuel low-pressure sensor

Fault finding notes

♦ Check wiring, sensor and the engine control unit

Diagnosis information DME control module

P254100 Fuel low pressure sensor - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Analogue value measurement detects that a value fell below the minimum value (0.2002 V)
- Monitoring of the electrical signal of the pressure sensor for the demand-controlled fuel system (low pressure) for minimum and maximum limits
- The sensor voltage is read into the DME control unit via an analogue/digital channel

Monitored component or system

♦ Fuel low-pressure sensor

Fault finding notes

♦ Check wiring, sensor and the engine control unit

Diagnosis information DME control module

P254F00 Contact switch for hood - electrical fault

Fault setting condition(s)

- The fault is reported as soon as an open hood is detected above an applicable vehicle speed

Monitored component or system

♦ Debounced hood switch signal

Fault finding notes

♦ Check hood and hood switch

Function restrictions

♦ Prevention of electric driving operation and stop mode

Diagnosis information - DME control module

P25C500 Temperature sensor Vacuum pump, signal implausible/stuck
P25C600 Temperature sensor Vacuum pump Short circuit to ground
P25C700 Temperature sensor Vacuum pump Short circuit to B+

Diagnostic conditions

● Diagnostics runs continuously

P25C500
● Cold start: Switch-off time > 28,000 s (7h 47min)
● No electrical fault present
● Vehicle speed > 25 km/h (16 mph) for 30 seconds
or
● electric vacuum pump in current driving cycle active for more than 300 seconds or change in temperature at the radiator outlet

Fault setting condition(s)

● Short circuit to ground :
Sensor voltage < 0.20 V
● Short circuit to B+ :
Sensor voltage > 3.99 V

P25C500
● Cold-start temperature of vacuum pump: Difference compared with the other temperature sensors > 25 Kelvin
or
● Difference between min and max value of the sensor raw signal since beginning of the driving cycle < 0.46 °C (0.83 °F)

Monitored component or system

♦ **Temperature sensor Vacuum pump**

Fault effects

♦ The combustion engine is started more frequently during hard braking, because the electric vacuum pump is no longer activated.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - DME control module

P25C500 Temperature sensor Vacuum pump, signal implausible/stuck
P25C600 Temperature sensor Vacuum pump Short circuit to ground
P25C700 Temperature sensor Vacuum pump Short circuit to B+

Diagnostic conditions

● Diagnostics runs continuously

P25C500
● Cold start: Switch-off time > 28,000 s (7h 47min)
● No electrical fault present
● Vehicle speed > 25 km/h (16 mph) for 30 seconds
or
● electric vacuum pump in current driving cycle active for more than 300 seconds or change in temperature at the radiator outlet

Fault setting condition(s)

● Short circuit to ground :
Sensor voltage < 0.20 V
● Short circuit to B+ :
Sensor voltage > 3.99 V

P25C500
● Cold-start temperature of vacuum pump: Difference compared with the other temperature sensors > 25 Kelvin
or
● Difference between min and max value of the sensor raw signal since beginning of the driving cycle < 0.46 °C (0.83 °F)

Monitored component or system

♦ **Temperature sensor Vacuum pump**

Fault effects

♦ The combustion engine is started more frequently during hard braking, because the electric vacuum pump is no longer activated.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - DME control module

P25C500 Temperature sensor Vacuum pump, signal implausible/stuck
P25C600 Temperature sensor Vacuum pump Short circuit to ground
P25C700 Temperature sensor Vacuum pump Short circuit to B+

Diagnostic conditions

● Diagnostics runs continuously

P25C500
● Cold start: Switch-off time > 28,000 s (7h 47min)
● No electrical fault present
● Vehicle speed > 25 km/h (16 mph) for 30 seconds
or
● electric vacuum pump in current driving cycle active for more than 300 seconds or change in temperature at the radiator outlet

Fault setting condition(s)

● Short circuit to ground :
Sensor voltage < 0.20 V
● Short circuit to B+ :
Sensor voltage > 3.99 V

P25C500
● Cold-start temperature of vacuum pump: Difference compared with the other temperature sensors > 25 Kelvin
or
● Difference between min and max value of the sensor raw signal since beginning of the driving cycle < 0.46 °C (0.83 °F)

Monitored component or system

♦ **Temperature sensor Vacuum pump**

Fault effects

♦ The combustion engine is started more frequently during hard braking, because the electric vacuum pump is no longer activated.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P25D800

Diagnosis information DME control module

P046100 Fuel level sender - signal implausible
P206600 Fuel level sender 2 - physical value range exceeded
P25D800 Fuel level sender 3 - physical value range exceeded

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

P046100
- Fuel level sender, signal > 110 l (liters)
- Resistance of sensor 1 > 1,100 Ohm

P206600
- Resistance of sensor 2 > 1,100 Ohm

P25D800
- Resistance of sensor 3 > 550 Ohm

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Fuel level sender stuck
♦ Fault finding via instrument cluster

P25D900

Diagnosis information DME control module

P25D900 Fuel level sender 3 - short circuit to ground
P25DA00 Fuel level sender 3 - short circuit to B+/open circuit

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

- The fault is detected by the instrument cluster and transferred to the DME control unit, where it is entered in the fault memory.

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Fuel level sender 3 faulty
♦ see Guided fault finding for instrument cluster control unit

P25DA00

Diagnosis information DME control module

P25D900 Fuel level sender 3 - short circuit to ground
P25DA00 Fuel level sender 3 - short circuit to B+/open circuit

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

- The fault is detected by the instrument cluster and transferred to the DME control unit, where it is entered in the fault memory.

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Fuel level sender 3 faulty
♦ see Guided fault finding for instrument cluster control unit

Diagnosis information DME control module

P260000 Coolant pump - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the load decrease fault
- Monitoring of the electrical components for line open circuit

Monitored component or system

♦ Main water pump valve

Fault finding notes

♦ Check component
♦ Line test

Diagnosis information DME control module

P260200 Coolant pump - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the short circuit to ground fault
- Monitoring of the electrical components for short circuit to ground

Monitored component or system

♦ Main water pump valve

Fault finding notes

♦ Check valve internal resistance
♦ Line test

Function restrictions

♦ Restrictions in this sequence: no interior heating and no boost possible, lower recuperation, start/stop ban, no electric driving possible, disabling of accessories, breakdown possible.
♦ The driver is informed via the instrument cluster

P260300

Diagnosis information DME control module

P260300 Coolant pump - short circuit to B+

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the short circuit to battery positive voltage fault
- Monitoring of the electrical components for short circuit to B+

Monitored component or system

♦ Main water pump valve

Fault finding notes

♦ Check valve internal resistance
♦ Line test

P261A00

Diagnosis information DME control module

P261A00 Coolant pump 2 - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the load decrease fault
- Monitoring of the electrical components for line open circuit

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Line test

Diagnosis information DME control module

P261B00 Auxiliary coolant pump HT circuit diagnostic keying

Diagnostic conditions

- Diagnostics takes place only when the component is activated.

Fault setting condition(s)

- **DME control module** did not receive any valid information from the auxiliary coolant pump

ⓘ Information
The auxiliary coolant pump cyclically sends status information to the engine control unit by connecting the line to the engine control unit to ground for a defined duration.

Monitored component or system

♦ Auxiliary coolant pump

Fault finding notes

♦ **Supply voltage** Check
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Coolant pump** Faulty

Function restrictions

♦ The power of the electric machine can be restricted.

P261C00

Diagnosis information DME control module

P261C00 Coolant pump 2 - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the short circuit to ground fault
- Monitoring of the electrical components for short circuit to ground

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Line test

Function restrictions

♦ Restrictions in this sequence: no interior heating, power restriction of the combustion engine, no boost possible, lower recuperation, start/stop ban, no electric driving possible, disabling of accessories, breakdown possible.

♦ Breakdown possible

P261D00

Diagnosis information DME control module

P261D00 Coolant pump 2 - short circuit to B+

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the short circuit to battery positive voltage fault
- Monitoring of the electrical components for short circuit to B+

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Line test

Diagnosis information DME control module

P262600 Bank 1 linear oxygen sensor/comparison line pump current - open circuit

Diagnostic conditions

- Dew point end reached
- Heater control active
- Overrun mode active
- Exhaust temperature from model < 800.006 °C (1,472.011 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- Offset-corrected sensor voltage > 4.81006 V
- In overrun mode, the sensor voltage is higher than the maximum voltage

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 1 sensor 1 faulty

Diagnosis information DME control module

P262900 Bank 2 linear oxygen sensor/comparison line pump current - open circuit

Diagnostic conditions

- Dew point end reached
- Heater control active
- Overrun mode active
- Exhaust temperature from model < 800.006 °C (1,472.011 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- Offset-corrected sensor voltage > 4.81006 V
- In overrun mode, the sensor voltage is higher than the maximum voltage

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor ahead of catalytic converter, bank 2 sensor 1 faulty

Diagnosis information DME control module

P268100 Bypass valve activation for coolant - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for line open circuit
- The output stage hardware reports the load decrease fault

Monitored component or system

♦ Coolant bypass valve output stage for electric machine

Fault finding notes

♦ Line test

Diagnosis information DME control module

P268200 Bypass valve activation for coolant - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to ground
- The output stage hardware reports the short circuit to ground fault

Monitored component or system

♦ Coolant bypass valve output stage for electric machine

Function restrictions

♦ Restrictions in this sequence: no boost possible, lower recuperation, start/stop ban, no electric driving possible, disabling of accessories, breakdown possible.

Fault finding notes

♦ Line test

Diagnosis information DME control module

P268300 Bypass valve activation for coolant - short circuit to B+

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the electrical components for short circuit to B+
- The output stage hardware reports the short circuit to B+ fault

Monitored component or system

♦ Coolant bypass valve output stage for electric machine

Fault finding notes

♦ Line test

P304000

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

P304300 Fuel pump - mechanical fault

Diagnostic conditions

- Ignition on
- Activation of fuel-pump control unit/electronic fuel pump
- Diagnostics runs continuously

Fault setting condition(s)

- If the fuel-pump control unit detects a fault, it reports this back to the DME control unit by connecting the signal line to ground at defined times corresponding to the fault. The length of ground clocking corresponds to the respective fault and is interpreted accordingly by the DME control unit. When a fault occurs, the fault is sent only once in the form of 5 equal ground clock pulses in series in case of the electronic fuel pump. This is repeated in the same driving cycle if the fault is no longer present in the meantime (no healing!)

Monitored component or system

♦ Control unit for fuel pump

Fault finding notes

♦ Check of the electric lines between fuel-pump control unit and fuel pump (visual inspection; if possible, continuity measurements and short circuit measurements between the supply lines with disconnected plugs)
♦ Check of the fuel system (fuel filter, pump, kinked fuel line)
♦ Replace fuel pump

Function restrictions

♦ Fuel pump stationary

Diagnosis information DME control module

P304400 Fuel pump - short circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- if the fuel-pump control unit detects a fault, it reports this back to the DME control unit by connecting the signal line to ground at defined times corresponding to the fault. The length of ground clocking corresponds to the respective fault and is interpreted accordingly by the DME control unit. When a fault occurs, the fault is sent only once in the form of 5 equal ground clock pulses in series in case of the electronic fuel pump. This is repeated in the same driving cycle if the fault is no longer present in the meantime (no healing!)

Monitored component or system

♦ Control unit for fuel pump

Fault finding notes

♦ Check of the electrical lines between the fuel-pump control unit and fuel pump for damage (visual inspection)
♦ Remove plug on the fuel pump and erase the fault memory. If the fuel-pump control unit now detects an open line, the fuel pump is faulty. Otherwise, check the lines between the fuel-pump control unit and the fuel pump. If the lines are OK, then replace the fuel-pump control unit

Function restrictions

♦ Fuel pump can be stationary

P304500

Diagnosis information DME control module

P304500 Fuel-pump control unit faulty

Diagnostic conditions

- If the DME control unit is awake, e.g. due to door contact wake-up
- Diagnostics runs continuously

Fault setting condition(s)

- If the fuel-pump control unit detects a fault, it reports this back to the DME control unit by connecting the signal line to ground at defined times corresponding to the fault. The length of ground clocking corresponds to the respective fault and is interpreted accordingly by the DME control unit. When a fault occurs, the fault is sent only once in the form of 5 equal ground clock pulses in series in case of the electronic fuel pump. This is repeated in the same driving cycle if the fault is no longer present in the meantime (no healing!)

Monitored component or system

♦ Control unit for fuel pump

Fault finding notes

♦ Replace fuel-pump control unit

Function restrictions

♦ Speed limitation of the fuel pump
♦ Possibly torque restriction

P304C00

Diagnostic information - DME control unit

P304C00 Separating clutch adaptation above limit value

Diagnostic conditions

- Vehicle stationary in electric mode
- Restart (from electric driving)

Fault setting condition(s)

- Contact point is shifted too much toward >>clutch closed<<; separating clutch system malfunctioning.
- Clutch adaptation value is less than the lower limit during contact point adaptation.

Monitored component or system

♦ Hybrid clutch

Fault finding notes

♦ This fault memory entry is used for information purposes. If there are no other fault memory entries, the system is still OK.

If there are other faults in the separating clutch system:
♦ Air in system
♦ Loss of hydraulic fluid (leak)
♦ Visual inspection of reservoir fill level
♦ Select Maintenance/repairs ⇒ Clutch actuator and separating clutch ⇒ Perform **hydraulic air/leak test**

P304D00

Diagnostic information - DME control unit

P304D00 Separating clutch adaptation below limit value

Diagnostic conditions

- Vehicle stationary in electric mode
- Restart (from electric driving)

Fault setting condition(s)

- Contact point is shifted too much toward >>clutch open<<;
separating clutch system malfunctioning.
- Clutch adaptation value exceeds the upper limit during contact point adaptation.

Monitored component or system

♦ Hybrid clutch

Fault finding notes

♦ This fault memory entry is used for information purposes. If there are no other fault memory entries, the system is still OK.

If there are other faults in the separating clutch system:
♦ Hybrid clutch power input actual value (Y250) < 3 GJ = 3,000,000,000 J
► If this value is much lower, the separating clutch can be adapted using the Tester by selecting Maintenance/repairs ⇒ Clutch actuator and separating clutch ⇒ **Clutch adaptation**
► If this value was exceeded but no relevant fault memory entries exist, the clutch must not be replaced. This theoretical value is merely an indication of a worn-out separating clutch. If a new DME control unit was installed, this value no longer reflects the real power input of the clutch.
► After the separating clutch has been adapted, read out the measured values (Y110), (Y120) and see F1 Help.
⇒ If the actual values deviate significantly from the specified range, the clutch may be worn, otherwise the separating clutch has lost the values.

Functional restrictions

♦ It might no longer be possible to transmit the full torque.

Diagnosis information DME control module

P304F00 Switch for electric driving

Diagnostic conditions

- Ignition on
- Diagnostics runs several times

Fault setting condition(s)

- Monitoring of the electrical components for line open circuit and short circuit to B+/ground
- The fault setting condition is monitored by output stage diagnostics
- The E-drive switch info is routed from the A/C operator control unit via the gateway and is forwarded to the DME control unit in a gateway message.

Monitored component or system

♦ Switch for electric driving

Fault finding notes

♦ Line test; replace component
♦ Check infotainment CAN and A/C operator control unit

Function restrictions

♦ Driver can no longer select electric driving. The lamp does not light up despite being actuated
♦ "E-drive" switch information is described as a predefined fault value

P305C00

Diagnosis information DME control module

P305C00 Sensor for intake-air temperature behind throttle valve - short circuit to ground

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

- Monitoring of electrical components for short circuit to ground

Monitored component or system

♦ Intake-air temperature sensor

Fault finding notes

♦ Perform line test
♦ Spray sensor with cooling spray, observe measured value

P305D00

Diagnosis information DME control module

P305D00 Sensor for intake-air temperature behind throttle valve - short circuit to B+/open circuit

Diagnostic conditions

- Ignition on
- Continuously

Fault setting condition(s)

- Monitoring of electrical components for short circuit to B+

Monitored component or system

♦ Intake-air temperature sensor

Fault finding notes

♦ Perform line test
♦ Spray sensor with cooling spray, observe measured value

Diagnosis information DME control module

P305E00 Intake-air temperature sender 2 - implausible signal

Diagnostic conditions

- Engine temperature > 25 °C (77 °F)
- Enabling of "master cross-check"
- Once per driving cycle with conditioned vehicle

Fault setting condition(s)

- Temperature cross-check after engine start in the conditioned vehicle state.
- Comparison of intake-air temperature behind the throttle valve with engine temperature or intake-air temperature in the intake pipe

Monitored component or system

♦ Intake-air temperature sensor

Fault finding notes

♦ Check of the temperature sensor compared to the other temperature sensors, ideally after engine cooling phase
♦ If plug and wiring are OK, replace
sensor

P307300

Diagnosis information DME control module

P307300 Fuel pump - electrical fault in circuit

Diagnostic conditions

- Ignition on
- Activation of the fuel-pump control unit/fuel pump
- Diagnostics runs continuously

Fault setting condition(s)

- If the fuel-pump control unit detects a fault, it reports this back to the DME control unit by connecting the signal line to ground at defined times corresponding to the fault. The length of ground clocking corresponds to the respective fault and is interpreted accordingly by the DME control unit. This fault can also indicate a blocked pump or a short circuit (collective fault). When a fault occurs, the fault is sent only once in the form of 5 equal ground clock pulses in series in case of the fuel pump. This is repeated in the same driving cycle if the fault is no longer present in the meantime (no healing!)

Monitored component or system

♦ Control unit for fuel pump

Fault finding notes

♦ Check plug connections and lines between the fuel-pump control unit and fuel pump for continuity.
♦ The fuel pump can be measured (continuity between all phases on the pump). If OK, then replace the fuel-pump control unit

Function restrictions

♦ Fuel pump can be stationary

P307800

Diagnosis information DME control module

P307800 Throttle valve control unit - air throughput at idle too low

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Offset standardized mass air flow through throttle valve < -8.0 kg/h

Monitored component or system

♦ Throttle valve adjuster

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve plug when the ignition is on (throttle valve unplugged)

Diagnostic information - DME control unit

P308100 Engine temperature too low

Diagnostic conditions

- No electr. fault of the engine temperature sensor present
- Intake air temperature < 35 °C (95 °F)
- Currently no block heater detection
- Engine running
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Measured engine temperature is plausibility-tested compared to a modelled reference temperature

Monitored component or system

♦ Engine cooling system

Fault finding notes

♦ Affected by block heater
♦ Seal in thermostat housing faulty
♦ Thermostat housing faulty
♦ **Thermostat** faulty
♦ Engine temperature sensor faulty

- **ONLY Cayenne and Panamera hybrid:**
  ► Air in **cooling system** if P192A00 is also entered in the fault memory

- **ONLY Cayenne:**
  ► Check the Porsche part number in the DME control unit.
  (See **DME control unit** ⇒ Identification ⇒ Porsche part number)
  Are the last two digits of the Porsche part number higher than 05?
  - **NO** (e.g. 95860165**04**) ⇒ Program **DME control unit**.
  ► Then check whether the problem has been corrected.

Functional restrictions

♦ Engine temperature too low

♦ In combination with P017B00 ⇒ Activation of radiator fan

Diagnosis information DME control module

P308D00 Fuel pump - too slow

Diagnostic conditions

- Ignition on
- Activation of the fuel-pump control unit/fuel pump
- Diagnostics runs continuously

Fault setting condition(s)

- the fault is entered after identical sequential ground pulses

Monitored component or system

♦ Control unit for fuel pump

Fault finding notes

♦ Check of the fuel system, e.g. fuel filter, sluggish pump (flow measurement), kinked fuel line
♦ Check for line damage between the fuel-pump control unit and fuel pump or shunts in the plug contacts (visual inspection and, if possible, measurements between the supply lines of the pump with plugs disconnected; test for short circuits)
♦ Replace fuel pump

Function restrictions

♦ Speed limitation of the fuel pump
♦ Possibly torque restriction

Diagnosis information DME control module

P308E00 Fuel-pump control unit - overtemperature

Diagnostic conditions

- Ignition on
- Activation of the fuel-pump control unit/fuel pump
- Diagnostics runs continuously

Fault setting condition(s)

- Overtemperature in fuel-pump control unit output stage (load circuit); the temperature is measured by means of NTC thermistors on the PCB next to the output stage outputs
- If the fuel-pump control unit detects a fault, it reports this back to the DME control unit by connecting the signal line to ground at defined times corresponding to the fault. The length of the ground clocking corresponds to the respective fault.

Monitored component or system

♦ Control unit for fuel pump

Fault finding notes

♦ Check for sluggish pump (flow measurement). If OK, then replace the fuel-pump control unit

Function restrictions

♦ Fuel pump stationary
♦ Speed limitation of the fuel pump
♦ Possibly torque restriction

P309600

Diagnosis information DME control module

P309600 Control unit faulty

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The evaluation IC reports "low supply voltage" (< 9.0 V)
- The evaluation IC reports a communication error

Monitored component or system

♦ Control unit: Evaluation IC for oxygen sensor

Fault finding notes

♦ Replace DME control unit

Function restrictions

♦ No detection of electrical faults on the signal lines possible, and lambda control is therefore no longer possible

P309700

Diagnosis information DME control module

P309700 Control unit faulty

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The evaluation IC reports "low supply voltage" (< 9.0 V)
- The evaluation IC reports a communication error

Monitored component or system

♦ Control unit: Evaluation IC for oxygen sensor

Fault finding notes

♦ Replace DME control unit

Function restrictions

♦ No detection of electrical faults on the signal lines possible, and lambda control is therefore no longer possible

P309A00

Diagnostic information - DME control unit

P309A00 Separating clutch, pressure sensor, signal implausible

Diagnostic conditions

- Clutch closed
- Diagnostics runs continuously

Fault setting condition(s)

- Pressure greater than limit value detected in hydraulic system at spindle actuator position.

Monitored component or system

♦ Hybrid clutch

Fault finding notes

♦ Check spindle actuator pressure sensor using a brake servicing unit by applying pressure to the brake reservoir
⇒ Visible reaction to pressure (Y100)
♦ Check hydraulic line for blockage
♦ Check expansion port for blockage
♦ Pressure sensor faulty

P309C00

Diagnostic information - DME control unit

P309C00 Separating clutch, actuator, mechanical fault

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Spindle actuator detected an internal hardware fault
and switches to >>emergency operation mode<<, no electric driving
● Spindle actuator detected a component temperature above the critical threshold
● Spindle actuator detected an input voltage < 9 V

Monitored component or system

♦ Hybrid clutch

Fault finding notes

♦ DC/DC converter failed if vehicle electrical system voltage (with vehicle ready to drive after terminal 50) < 13 V
♦ Short circuit to B+/ground or open circuit in the line/connector
♦ Spindle actuator faulty

Functional restrictions

♦ Electric driving no longer possible

P309D00

Diagnostic information - DME control unit

P309D00 Separating clutch, actuator, insufficient slip with open clutch

Diagnostic conditions

- Diagnostics runs during electric driving
- Phase angle adaptation

Fault setting condition(s)

- When the contact point is approached for diagnostic purposes, the combustion engine was dragged along (engine speed > 60 rpm)
- Clutch should be open, but combustion engine continues to turn (engine speed > 60 rpm)
- Clutch should be open, but combustion engine is turned along by rotating phase angle adaptation (engine speed > 60 rpm)

Monitored component or system

♦ Hybrid clutch

Fault finding notes

♦ Air in system
♦ Loss of hydraulic fluid (leak)
♦ Visual inspection of reservoir fill level
♦ Select Maintenance/repairs ⇒ Clutch actuator and separating clutch ⇒ Perform **hydraulic air/leak test**

Functional restrictions

♦ Electric driving no longer possible

P309E00

Diagnostic information - DME control unit

P309E00 Separating clutch, position sensor for actuator, signal implausible

Diagnostic conditions

- Actuator in >>operation mode<<
- Diagnostics runs continuously

Fault setting condition(s)

- Position signal from clutch actuator is implausible

Monitored component or system

♦ Hybrid clutch

Fault finding notes

♦ Ignition on ⇒ Establish driving readiness and compare (Y080) and (Y090)
♦ Check fault memory content for hardware fault in spindle actuator
♦ Hydraulic lines kinked/blocked

P309F00

Diagnostic information - DME control unit

P309F00 Separating clutch, actuator, slip with closed clutch

Diagnostic conditions

● Combustion engine running
● Diagnostics runs continuously. (To reproduce the fault, carry out a test drive with some full-load operations, as this is when the clutch is more likely to slip.)

Fault setting condition(s)

● Speed difference between the combustion engine and the electric motor > 200...300 rpm, even though the clutch is closed
● Separating clutch does not close completely, slips

Monitored component or system

♦ Hybrid clutch

Fault finding notes

ⓘ **INFORMATION**
As of model year 2014 (E):
● See Technical Information 96/13.
● If other faults are entered, correct these first.

♦ Read out the fault memory; check for faults in the spindle actuator
♦ The hydraulic pressure actual value (Y100) in the clutch system must not be greater than 1 bar (14.5 psi) when the clutch is closed during engine warm-up

► If there is pressure when the clutch is closed:
  ♦ Expansion bore blocked
  ♦ Line for the brake reservoir of the spindle actuator blocked
► If pressure test is OK:
  ♦ Hydraulic line between spindle actuator and separating clutch blocked
  ♦ Separating clutch worn/faulty

♦ Hybrid clutch power input actual value (Y250) < 3 GJ = 3,000,000,000 J
⇒ If this value was exceeded but no relevant fault memory entries exist, the clutch must not be replaced. This theoretical value is merely an indication of a worn-out separating clutch. If a new DME control unit was installed, this value no longer reflects the real power input of the clutch.

♦ Visually inspect/check the separating clutch linings for transmission oil residues

⇒ If there is transmission oil on the linings, the transmission must be repaired/replaced following consultation with the importer.
Otherwise, a new separating clutch would wear out relatively quickly due to the leaking transmission.

Functional restrictions

♦ Vehicle can be driven only with limited combustion engine torque or not at all in some cases.
♦ After switching the ignition off and on again, it may be possible to continue driving electrically until the high-voltage battery is flat .

Diagnosis information DME control module

P30A100 Aborted engine starts - permitted number exceeded

Diagnostic conditions

- Ignition off, ignition on
- Diagnostics runs each time the combustion engine is started

Fault setting condition(s)

- Maximum permissible number of failed start attempts per ignition cycle exceeded

Monitored component or system

♦ Hybrid mode

Fault finding notes

♦ This fault path does not permit a concrete conclusion to be made about a certain component
♦ Attention must be paid to fault memory entries of other components involved in the starting process

Function restrictions

♦ The vehicle remains in the last stationary state (standby, E-driving)

P30A200

Diagnosis information DME control module

P30A200 Brake pedal travel sender/brake light switch - implausible signal

Diagnostic conditions

- Ignition on, apply brake
- Ignition on, release brake

Fault setting condition(s)

- Cross-check of brake pedal travel sender compared to brake light switch
- The brake light switch is set, and the evaluated brake pedal travel indicates a value > 27.002%
- The brake light switch value is deleted, and the evaluated brake pedal travel indicates a value < 2.002%

Monitored component or system

♦ Brake pedal travel sensor

Fault finding notes

♦ Perform fault finding on brake light switch
♦ Observe installation calibration of the brake pedal travel sender according to the installation specification
♦ Check installation position or adjustment of the sensor and adjust if necessary
♦ Line test
♦ Replace sensor

Function restrictions

♦ In the event of a fault, recuperation can only be controlled via the brake pressure. In the event of a fault, it is no longer possible to set recuperation in the free play range of the brake pedal. Different braking feel with larger pedal free play

Diagnosis information DME control module

P30C300 High-voltage system charging current monitoring implausible

Diagnostic conditions

- Charging or pre-conditioning state active
- Diagnostics runs continuously

ⓘ The charging current monitoring function is a higher-level function and acts only if the charging manager or battery does not limit the charging current.

Fault setting condition(s)

- Momentary charging current of the high-voltage battery for the duration of 1 s > 1,022 A

or

- Sum of the high-voltage currents (load currents and battery charging current) is not equal to the charging manager current

Monitored component or system

♦ High-voltage system

Fault finding notes

♦ Read out and work through the fault memories of the high-voltage components (high-voltage battery control unit, high-voltage power electronics, high-voltage charger) and the A/C operating panel.

Fault effects

♦ No charging of the high-voltage battery
♦ No high-voltage air-conditioning compressor available
♦ No high-voltage auxiliary heater available

P30DC00

Diagnostic information - DME control unit

P30DC00 Pressure tank, pressure reduction for refueling not possible

Diagnostic conditions

● Tank selector button actuated

Fault setting condition(s)

● After a refueling request from the front-end electronics (button actuated), the pressure does not decrease to below 20 hPa within 95 s, even though the fuel tank isolation valve (FTIV) is opened with the refueling request.

Monitored component or system

♦ Tank vent system

Fault finding notes

♦ Check fuel tank isolation valve (FTIV)
♦ Carefully open the tank cap, vent the tank, check the tank pressure sensor value after approx. 60 s
♦ Check lines between the tank, carbon canister and fresh-air filter for clogging and kinks

Functional restrictions

♦ Tank may be pressurized during opening
♦ Time until filler flap unlocking is extended (approx. 30 s)
♦ Vehicle cannot be refueled, because the fuel nozzle keeps switching off

ⓘ INFORMATION

♦ Possible as consequential fault of: P242200, P045000, P045200, P045300

Diagnostic information - DME control unit

P30E200 Pressure tank, refueling control, fault

Fault setting condition(s)

● Refueling request sent from front-end electronics permanently >>Fault/no pressure tank functionality<<

Monitored component or system

♦ Communication

Fault finding notes

♦ Tank selector button has been actuated for longer than 30 s
♦ Check front-end electronics control unit fault memory content
♦ Check front-end electronics coding

Functional restrictions

♦ Filler flap cannot be opened by button actuation
♦ Fuel nozzle keeps switching off during refueling

ⓘ INFORMATION

A pressure tank is necessary in order to comply with statutory requirements regarding evaporative emissions.

Since the engine control unit activates the fuel tank isolation valve (FTIV), there must be communication between the front-end electronics and the DME control unit in order to forward the refueling request so that the tank is ventilated for refueling.

In the event of incorrect coding of the front-end electronics or a faulty switch, the corresponding signal is zero, which indicates a fault in the front-end electronics.
⇒ Check front-end electronics control unit fault memory content

P310B00

Diagnosis information DME control module

P310B00 Fuel low pressure control - fuel pressure out of tolerance

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The measured fuel low pressure deviates significantly from the setpoint pressure.

Monitored component or system

♦ Fuel low pressure system

Fault finding notes

♦ Check fuel lines (tightness)
♦ Check fuel filter (soiled/clogged)
♦ Check pressure retaining valve
♦ Check pressure limiting valve
♦ Check activation of electric fuel pump (low pressure)
♦ Check low pressure sensor (in the high pressure pump)
♦ Check electric fuel pump (low pressure) (pressure, delivery quantity)

Diagnosis information DME control module

P310F00 Fuel tank empty, electric limp-home mode active

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

The fault setting condition involves two main steps:
● A breakdown due to an empty fuel tank is detected.
● No independent engine operation is detected during a subsequent restart.

Monitored component or system

♦ Fuel system, low-pressure side

Fault finding notes

♦ Check fuel tank content and supply
♦ Perform a restart

Function restrictions

♦ Engine starting during active electric limp-home mode is suppressed; only purely electrical operation is available.
♦ Possible restrictions regarding electrical performance (depending on battery condition, aging, charge state, temperature).

ⓘ **Information**
Electrical onward travel is not enabled if one of the deactivation conditions is met:
● Ignition is off
● Battery charge state below threshold value
● Electrical limp-home mode is blocked by another fault

Diagnosis information DME control module

P325500 Bank 1 oxygen sensor ahead of catalytic converter, heating circuit - control at upper limit

Diagnostic conditions

- Dew point end reached
- Heater control active for 50.0 sec
- Overrun mode not active for 50.0 sec
- Exhaust gas temperature at the sensor > 299.991 °C (571.984 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- If the setpoint temperature of the sensor ceramic element (684.998 °C/1,264.996 °F) is not reached during control operation of the heater, the pulse/duty ratio converges to 100%. The fault is set if this state is present for 60.0 sec.

Monitored component or system

♦ Oxygen sensor heating ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 1 sensor 1 faulty

Diagnosis information DME control module

P325700 Bank 2 oxygen sensor ahead of catalytic converter, heating circuit - control at upper limit

Diagnostic conditions

- Dew point end reached
- Heater control active for 50.0 sec
- Overrun mode not active for 50.0 sec
- Exhaust gas temperature at the sensor > 299.991 °C (571.984 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- If the setpoint temperature of the sensor ceramic element (684.998 °C/1,264.996 °F) is not reached during control operation of the heater, the pulse/duty ratio converges to 100%. The fault is set if this state is present for 60.0 sec.

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 2 sensor 1 faulty

P326600

Diagnosis information DME control module

P326600 Bank 1 sensor 1 - internal resistance implausible

Diagnostic conditions

● Only during the starting phase : Dew point end reached, heater control active, minimum off time > 180.0 sec, time after activation of heater control = 40.0 sec
● Diagnostics runs once per driving cycle

Fault setting condition(s)

● The ceramic element temperature is less than the minimum temperature (719.991 °C/1,327.984 °F)

Monitored component or system

♦ Oxygen sensor heating ahead of catalytic converter

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 1 sensor 1 faulty

P326700

Diagnosis information DME control module

P326700 Bank 2 sensor 1 - internal resistance implausible

Diagnostic conditions

● Only during the starting phase : Dew point end reached, heater control active, minimum off time > 180.0 sec, time after activation of heater control = 40.0 sec
● Diagnostics runs once per driving cycle

Fault setting condition(s)

● The ceramic element temperature is less than the minimum temperature (719.991 °C/1,327.984 °F)

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter, bank 2

Fault finding notes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Oxygen sensor heater ahead of cat. conv., bank 2 sensor 1 faulty

U000100

Diagnosis information - DME control module

Communication with CAN bus (drive)

ⓘ INFORMATION

♦ This fault entry was set when the **DME control module** could **not** communicate via the CAN bus (drive).
♦ The fact that the fault memory can be read out means that there is no problem with communication via the CAN bus (drive) at the moment.

Fault effects

♦ Communication no longer possible via the CAN bus.
♦ The radiator fans are running at full speed.

Possible fault causes

♦ Temporary short circuit or open circuit in CAN bus (drive)
♦ A control unit in the CAN bus (drive) system is faulty at times

U000200

Diagnosis information - DME control module

Communication with CAN bus (drive)

ⓘ INFORMATION

♦ This fault entry was set when the **DME control module** could **not** communicate via the CAN bus (drive).
♦ The fact that the fault memory can be read out means that there is no problem with communication via the CAN bus (drive) at the moment.

Fault effects

♦ Communication no longer possible via the CAN bus.
♦ The radiator fans are running at full speed.

Possible fault causes

♦ Temporary short circuit or open circuit in CAN bus (drive)
♦ A control unit in the CAN bus (drive) system is faulty at times

Diagnosis information DME control module

U002800 Sensor/hybrid CAN faulty

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Bus-off monitoring: the fault entry is made after 250 ms continuous BUS OFF

Monitored component or system

♦ CAN communication: turbocharger/NOX sensor

Fault finding notes

♦ Check electrical connection of the B-CAN line

U002900

Diagnosis information DME control module

U002900 Sensor/hybrid CAN - no communication

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Timeout monitoring: no message received on turbocharger/NOX sensor CAN

Monitored component or system

♦ CAN communication: turbocharger/NOX sensor

Fault finding notes

♦ Check CAN Low-High and plug contacts

Function restrictions

♦ Failure of the turbocharger/NOX sensor

C050000

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050100

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050200

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050300

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050600

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050700

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050800

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050900

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050D00

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050E00

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C050F00

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C051200

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C051300

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C051400

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C051500

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

C053D00

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

Diagnosis information DME control module

C05xxxx Check PSM control unit fault memory content

Diagnostic conditions

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

- Time after ignition on > 0.5 second

C053D00, C054000

- Once in driving cycle: Vehicle speed > 5 km/h (3 mph)

Monitored component or system

C050000, C050100, C050200, C050300, C050600, C050700, C050800, C050900, C050D00, C050E00, C050F00, C051300, C051400, C051500

♦ Speed sensor

C053D00, C054000

♦ Pressure sensor

Fault finding notes

♦ Check PSM control unit fault memory content

Function restrictions

♦ No recuperation during vehicle deceleration (example: battery charging during braking process)

U010100

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U011000

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U011100

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U011200

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U012100

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U012600

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U012800

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U013200

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U013C00

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U014000

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U014100

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U014600

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U015100

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U015500

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U015900

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U016400

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U016600

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U019900

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U019B00

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U021200

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U023500

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information DME control module

U030200 Transmission control unit - check data record

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- DME control unit is coded for manual transmission, but nevertheless still receives transmission messages

Monitored component or system

♦ CAN communication: transmission messages

Fault finding notes

♦ This fault is entered if the DME control unit in an automatic vehicle is incorrectly coded for a manual transmission

Diagnosis information DME control module

U032300 Dashboard insert control unit - software incompatible

Diagnostic conditions

- Ignition on

Monitored component or system

♦ CAN communication:
Ambient temperature
Air conditioner
Front-end electronics
Gateway
Instrument cluster

Fault finding notes

♦ Re-code gateway and instrument cluster

U040200

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U041100

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U041300

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U041500

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U041700

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042100

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042200

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042300

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042400

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042500

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042800

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042900

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U043100

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U043300

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U043D00

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U044700

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U045200

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U049C00

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U100300

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U100400

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U101600

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U101700

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U102500

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U102600

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U103B00

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U103B00

Diagnosis information - DME control module

Communication with CAN bus (drive)

ⓘ INFORMATION

♦ This fault entry was set when the **DME control module** could **not** communicate via the CAN bus (drive).
♦ The fact that the fault memory can be read out means that there is no problem with communication via the CAN bus (drive) at the moment.

Fault effects

♦ Communication no longer possible via the CAN bus.
♦ The radiator fans are running at full speed.

Possible fault causes

♦ Temporary short circuit or open circuit in CAN bus (drive)
♦ A control unit in the CAN bus (drive) system is faulty at times

U103C00

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U103E00

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U103F00

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U10DD00

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information DME control module

U110300 Production mode active

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Production mode set

Monitored component or system

♦ Control unit

Fault finding notes

♦ Perform vehicle handover with Tester

Function restrictions

♦ MIL or warning message in instrument cluster "engine control fault" on
♦ Rpm limitation
♦ Speed limitation
♦ Torque limitation
♦ Suppression of catalytic converter heating

Diagnosis information DME control module

U110600 Customer service mode active

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Local activation of customer service mode in the engine control unit takes place as soon as the following conditions are met simultaneously:
● Customer service mode activation request active during ignition on
● Control unit run-on mode
● Vehicle speed < 5 km/h (3 mph)
● Engine speed = 0 rpm
● E-machine is switched off and its speed is 0 rpm

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Local deactivation of customer service mode in the engine control unit takes place as soon as the following conditions are met simultaneously:
● Customer service mode deactivation request during ignition on or the maximum distance of 50 km (31 miles) since activation is exceeded
● Control unit run-on mode
● Vehicle speed < 5 km/h (3 mph)
● Engine speed = 0 rpm
● E-machine is switched off and its speed is 0 rpm

Function restrictions

♦ MIL on
♦ The vehicle behaves like a conventional vehicle with combustion engine with regard to engine starting and operation.
♦ When customer service mode is active, the combustion engine can be manually started independently of criteria such as the hood state, driver's door position, buckle switch, etc.
♦ Automatic starting or stopping of the combustion engine is not permissible while customer service mode is active.
♦ The recuperation and boost operation modes are deactivated when customer service mode is active.

Diagnosis information DME control module

U111200 Function restriction due to implausible message

Diagnostic conditions

● If the DME control unit is coded for cruise control, the corresponding operating lever is installed and cruise control is selected, the diagnostic function is released from ignition on
● If the DME control unit is coded for adaptive cruise control (ACC), the adaptive cruise control (ACC) is in the ACTIVE or OVERRIDE state and the driver performs braking intervention, the diagnostic function is released from ignition on
● If the DME control unit is coded for adaptive cruise control (ACC) and no corresponding CAN faults occur, the diagnostic function is released from terminal 15 on.
● Diagnostics runs continuously from ignition on

Fault setting condition(s)

● The driver brakes and the adaptive cruise control (ACC) remains in the ACTIVE or OVERRIDE state
● The adaptive cruise control ACC/cruise control main switch is "OFF", but an adaptive cruise control (ACC) torque request continues to be sent
● Speed signals in the instrument cluster and the vehicle speed deviate from each other
● Signals of the cruise control operating lever received in the DME control unit indicate an implausible button combination

Monitored component or system

♦ Adaptive cruise control (ACC) sensor
♦ TSK in DME control unit
♦ Speed in instrument cluster
♦ Cruise control operating lever

Fault finding notes

♦ Check brake light switch information
♦ Check whether the adaptive cruise control (ACC) control unit receives the brake light switch information
♦ Check whether the adaptive cruise control (ACC) control unit properly receives the plausibility-checked main switch (CAN and component signal)
♦ Check speed signals in/to the instrument cluster
♦ Check measurement of the vehicle speed
♦ Check coding in the instrument cluster
♦ Contact product support
♦ Ensure unambiguous actuation of the cruise control operating lever buttons. Use actual value to check whether plausible button combinations are sent from the cruise control operating lever.

If one button is pressed and two buttons are measured, then update the control unit and then replace the operating unit if necessary. If two buttons are pressed and two buttons are measured, then perform a software setpoint/actual comparison. If the fault is still present or recurs or updating is not possible, then contact the product support department

Function restrictions

♦ No adaptive cruise control (ACC)/cruise control operation possible in the current ignition cycle

Diagnosis information DME control module

U111300 Function restriction due to received fault value

Diagnostic conditions

● If the DME control unit is coded for cruise control, the corresponding operating lever is installed and cruise control is selected, the diagnostic function is released from ignition on
● If a longitudinal acceleration sensor is installed in the vehicle

Fault setting condition(s)

● Instrument cluster sends fault value for speed signal
● Front-end electronics control unit or steering wheel electronics reports a fault of the cruise control operating lever
● Longitudinal acceleration sensor sends a fault value

Monitored component or system

♦ Instrument cluster (dashboard insert)
♦ Adaptive cruise control (ACC)/cruise control operating lever
♦ Longitudinal acceleration sensor

Fault finding notes

♦ Read out instrument cluster fault memory
♦ Function test of the cruise control operating lever
♦ Read out fault memory of the front-end electronics and steering wheel electronics
♦ Read out fault memory of PSM or parking brake

Function restrictions

♦ No adaptive cruise control (ACC)/cruise control operation possible in the current ignition cycle
♦ No correct calculation of the road gradient

U14D000

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U14D100

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U14D200

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U14D300

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U14D400

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U14D500

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Cayenne, MY 2012-

Diagnosis information - DME V6 Diesel

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P001600

Diagnosis information DME control module

Crankshaft position sensor (crankshaft sensor)

INFORMATION
♦ The crankshaft sensor is an rpm and reference mark sender

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition off, Ignition on
or
● Engine running

● no faults on crankshaft sensor and camshaft sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Timing fault (camshaft controller, oil pressure, control valves)
♦ Pickup (sensor) wheel not installed correctly
♦ **Crankshaft position sensor** not installed correctly
♦ **Crankshaft position sensor** faulty

Fault effects

♦ Dynamic response is reduced (torque limitation)
♦ Engine runs irregularly up to engine off.
♦ none camshaft adjustment

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P004500

Diagnosis information DME control module

Electronic adjuster for turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P004500
● Control unit run-on (See ⓘ)

P004700, P004800, P334800
● Control unit run-on (See ⓘ)
or
● Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line (feedback signal lead ▶ **DME control unit**)
♦ Loose contact or corrosion on connectors or lines
♦ **Electronic adjuster for turbocharger** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Limp-home

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P004700

Diagnosis information DME control module

Electronic adjuster for turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P004500
● Control unit run-on (See ⓘ)

P004700, P004800, P334800
● Control unit run-on (See ⓘ)
or
● Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line (feedback signal lead ▶ **DME control unit**)
♦ Loose contact or corrosion on connectors or lines
♦ **Electronic adjuster for turbocharger** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Limp-home

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P004800

Diagnosis information DME control module

Electronic adjuster for turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P004500
● Control unit run-on (See ⓘ)

P004700, P004800, P334800
● Control unit run-on (See ⓘ)
or
● Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line (feedback signal lead ▶ **DME control unit**)
♦ Loose contact or corrosion on connectors or lines
♦ **Electronic adjuster for turbocharger** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Limp-home

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P007100

Diagnosis information - DME control module

Ambient temperature via CAN

Diagnostic conditions

- NO fault stored in **DME control module**
- Driving > 80 **km/h** > 15 Minute(s)
- then Driving > 1 Minute(s) under the following conditions:
  - **Coolant temperature** 47 ... 108 °C (°F)
  - **Engine speed** 1,200 ... 4,000 1/min
  - **Vehicle speed** 30 ... 180 **km/h**

Possible fault causes

♦ **Ambient temperature** incorrect (**Sensor** incorrectly trimmed / Faulty)
♦ **Intake air temperature** incorrect (**Sensor** incorrectly trimmed / Faulty)
♦ **Charge air cooler** Blocked

, Faulty, changed ...

Fault setting condition(s)

ⓘ INFORMATION

The temperature model depends mainly on the measured intake air temperature.

- Deviation between **Ambient temperature** via CAN and Substitute value from model > 25 °C (°F)

Fault effects

♦ Substitute value from model
♦ Positive crankcase ventilation is continuously activated if a fault is present when recording the ambient temperature.

Diagnosis information - DME control module

Ambient temperature via CAN (See **Air-conditioning system regulator**)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on > 5 Second(s)

Possible fault causes

- Fault **Outside temperature sensor**
- The expected signal or message deviates from the specified value.

Fault effects

- Substitute value from model

P007300

Diagnosis information - DME control module

Ambient temperature via CAN (See **Air-conditioning system regulator**)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on > 5 Second(s)

Possible fault causes

♦ Fault **Outside temperature sensor**
♦ The expected signal or message deviates from the specified value.

Fault effects

♦ Substitute value from model

P008700

Diagnosis information DME control module

Fuel high-pressure rail /System pressure

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- No fault entered for Low-pressure fuel circuit
- Ignition on

or

- Engine running

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- Fuel high-pressure system pressure drop
- Metering unit at the **Fuel high-pressure pump** faulty
- **Fuel high-pressure pump** faulty
- **Fuel pressure regulating valve** faulty
- Fuel pressure sensor faulty

Fault effects

- Torque reduction or shut-off

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P008800

Diagnosis information DME control module

Fuel high-pressure rail /System pressure

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- No fault entered for Low-pressure fuel circuit
- Ignition on

or

- Engine running

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- Fuel high-pressure system pressure drop
- Metering unit at the **Fuel high-pressure pump** faulty
- **Fuel high-pressure pump** faulty
- **Fuel pressure regulating valve** faulty
- Fuel pressure sensor faulty

Fault effects

- Torque reduction or shut-off

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P009000

Diagnosis information DME control module

Valve Fuel metering (metering unit)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Valve fuel metering (**metering unit) faulty

Fault effects

- ♦ **Fuel metering** fails
- ♦ Engine failure possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P009100

Diagnosis information DME control module

Valve Fuel metering (metering unit)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Valve fuel metering (**metering unit) faulty

Fault effects

- ♦ **Fuel metering** fails
- ♦ Engine failure possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P009200

Diagnosis information DME control module

Valve Fuel metering (metering unit)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Valve fuel metering (**metering unit) faulty

Fault effects

- ♦ **Fuel metering** fails
- ♦ Engine failure possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P00AF00
- Engine running

- Control unit run-on (See ⓘ)

P100E00
- Engine cold start

Possible fault causes

P00AF00
♦ **Connecting rod** (**ball socket**) stiff / Faulty (**Electronic adjuster for turbocharger** <=> **Turbocharger**)
♦ **Boost pressure adjuster** (**Electronic adjuster for turbocharger**) stiff / Faulty
♦ **Turbocharger** stiff / Faulty

P100E00
♦ Adjustment device for guide blades on the **Turbocharger** stiff during cold start

Fault effects

P00AF00
♦ none Particle filter regeneration
♦ Limp-home

P100E00
♦ Torque reduction

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P00C600

Diagnosis information DME control module

Fuel high-pressure rail /System pressure - Fuel pressure/quantity too low at start

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- No fault entered for Low-pressure fuel circuit
- Starting process
- **Ambient temperature** > - 7 °C (°F)
- Ambient pressure > 750 mbar (hPa)
- Minimum speed when starting > 70 1/min
- Vehicle voltage > 9.5V

Possible fault causes

- Fuel tank empty
- Electrical fault in circuit
- Loose contact or corrosion on connectors or lines
- Low-pressure fuel circuit Limited function
- Fuel high-pressure system Pressure decrease/ Leak
- Metering unit at the **Fuel high-pressure pump** faulty
- **Fuel high-pressure pump** faulty
- **Fuel pressure regulating valve** faulty
- Fuel pressure sensor faulty

Fault effects

- It might not be possible to start the engine

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Air flow sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Air flow sensor** Faulty

Fault effects

- No/hardly any change in driving performance because a good substitute value is used

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Air flow sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- No fault memory entries for exhaust gas recirculation, swirl flaps, throttle valve, turbocharger and boost pressure sensor/intake temperature sensor
- Test drive
- Enable overrun phase lasting for at least 5 seconds between 2,100 rpm and 1,300 rpm

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Intake air tract leaks
- Air cleaner Blocked

- Loose contact or corrosion on connectors or lines
- **Air flow sensor** Faulty

Fault effects

- none Particle filter regeneration
- Exhaust gas recirculation No function
- Reduced Engine output
- Smoke

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P010200

Diagnosis information DME control module

Air flow sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Air flow sensor** Faulty

Fault effects

- No/hardly any change in driving performance because a good substitute value is used

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P010300

Diagnosis information DME control module

Air flow sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Air flow sensor** Faulty

Fault effects

- No/hardly any change in driving performance because a good substitute value is used

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P010400

Diagnosis information DME control module

Air flow sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Air flow sensor** Faulty

Fault effects

- No/hardly any change in driving performance because a good substitute value is used

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Intake air temperature sensor

INFORMATION
♦ The boost pressure sensor and intake air temperature sensor are combined in one component and cannot be replaced individually.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P011100
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P011200, P011300
● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Intake air temperature sensor** faulty

Fault effects

P011100
♦ none

P011200, P011300
♦ none Particle filter regeneration
♦ Engine torque limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Intake air temperature sensor

INFORMATION
♦ The boost pressure sensor and intake air temperature sensor are combined in one component and cannot be replaced individually.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P011100
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P011200, P011300
● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Intake air temperature sensor** faulty

Fault effects

P011100
♦ none

P011200, P011300
♦ none Particle filter regeneration
♦ Engine torque limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Intake air temperature sensor

INFORMATION
♦ The boost pressure sensor and intake air temperature sensor are combined in one component and cannot be replaced individually.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P011100
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P011200, P011300
● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Intake air temperature sensor** faulty

Fault effects

P011100
♦ none

P011200, P011300
♦ none Particle filter regeneration
♦ Engine torque limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P011600

Diagnosis information DME control module

Coolant temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P011700, P011800
● Ignition on

P011600
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Coolant temperature sensor** faulty

Fault effects

P011700, P011800

♦ Radiator fan emergency operation, Ignition on (full activation)
♦ Possible cold start problems

P011600

none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P011700

Diagnosis information DME control module

Coolant temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P011700, P011800
● Ignition on

P011600
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Coolant temperature sensor** faulty

Fault effects

P011700, P011800

♦ Radiator fan emergency operation, Ignition on (full activation)
♦ Possible cold start problems

P011600

none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P011800

Diagnosis information DME control module

Coolant temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P011700, P011800
● Ignition on

P011600
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Coolant temperature sensor** faulty

Fault effects

P011700, P011800

♦ Radiator fan emergency operation, Ignition on (full activation)
♦ Possible cold start problems

P011600

none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Throttle potentiometer

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P012100
- Ignition on

or
- Control unit run-on (See ⓘ)

P012200, P012300
- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Throttle potentiometer** Faulty

Fault effects

- none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information DME control module

Throttle potentiometer

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P012100
- Ignition on

or
- Control unit run-on (See ⓘ)

P012200, P012300
- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Throttle potentiometer** Faulty

Fault effects

- none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information DME control module

Throttle potentiometer

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P012100
- Ignition on

or
- Control unit run-on (See ⓘ)

P012200, P012300
- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Throttle potentiometer** Faulty

Fault effects

- none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information DME control module

Cooling system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- rpm 1,100... 3,500 1/min
- Injection quantity <= 50 mg/stroke
- at operating temperature

Possible fault causes

- Fault in area **Thermostat**
- Fault in area **Coolant pump**
- Mechanical fault **Thermostat** (blocked)
- Mechanical fault **Coolant pump** (blocked)

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P013000
- Engine running

- Heater control Active

P013200
- Engine running

- Sensor temperature < 720 °C (1,328 °F)
- Heater control Active
- Dew point end reached

P013300
- no fault entry
- Test drive with load/overrun transition

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P013000
- Engine running

- Heater control Active

P013200
- Engine running

- Sensor temperature < 720 °C (1,328 °F)
- Heater control Active
- Dew point end reached

P013300
- no fault entry
- Test drive with load/overrun transition

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P013000
- Engine running

- Heater control Active

P013200
- Engine running

- Sensor temperature < 720 °C (1,328 °F)
- Heater control Active
- Dew point end reached

P013300
- no fault entry
- Test drive with load/overrun transition

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P013000
- Engine running

- Heater control Active

P013200
- Engine running

- Sensor temperature < 720 °C (1,328 °F)
- Heater control Active
- Dew point end reached

P013300
- no fault entry
- Test drive with load/overrun transition

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P013400

Diagnosis information DME control module

P013400 Oxygen sensor Bank 1

Diagnostic conditions

- Engine running

Fault setting condition(s)

- Oxygen sensor has no release for heating upon heating release

Monitored component or system

♦ Oxygen sensor heater

Possible fault causes

♦ Wiring harness Oxygen sensor Bank 1
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Leak in exhaust-gas tract from manifold flange to oxygen sensor
♦ Oxygen sensor Bank 1 faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P013500

Diagnosis information DME control module

Oxygen sensor heater Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Dew point end reached
- Heater control Active
- Driving > 10 Second(s), at:
  - without Overrun phase(s)

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oxygen sensor heater Bank 1** faulty

Fault effects

- Exhaust gas temperature control disabled
- none Particle filter regeneration
- Inexact calculation of particle filter load condition

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnostic information - DME control unit

P017100 Bank 1 fuel metering system - system too lean
P017200 Bank 1 fuel metering system - system too rich

Diagnostic conditions

- Continuously
- Engine running
- Heating phase reached (oxygen sensor dew point end reached)
- Gradient of injection quantity < 30 mg/stroke
- Ambient temperature > -7 °C (+19 °F)
- Ambient pressure > 700 hPa
- Battery positive voltage > 11 V

Fault setting condition(s)

- A correction quantity is formed for the injection system due to a deviation between the setpoint lambda and actual lambda. If this is outside a certain window, the fault is displayed.
- System too lean/rich

Monitored component or system

♦ Fuel quantity control

Possible fault causes

♦ Oxygen sensor faulty
♦ Intake air tract
E.g. mass air flow sensor faulty
♦ Injector/injectors faulty
♦ Charge-air tract
E.g. boost-pressure sensor
♦ Exhaust gas recirculation
E.g. EGR actuator
♦ Exhaust system
E.g. all temperature sensors, differential-pressure sensor

Further fault causes:
♦ Leakage (e.g. intake-air tract, charge-air tract, exhaust gas recirculation, exhaust system)
♦ Oil entrainment in combustion chamber (e.g. due to leakage in the engine block, piston rings, turbocharger, etc.)
⇒ Ask customer about oil consumption

Fault effects

- ♦ Rough-running engine possible
- ♦ Blue smoke possible

Diagnostic information - DME control unit

P017100 Bank 1 fuel metering system - system too lean
P017200 Bank 1 fuel metering system - system too rich

Diagnostic conditions

- Continuously
- Engine running
- Heating phase reached (oxygen sensor dew point end reached)
- Gradient of injection quantity < 30 mg/stroke
- Ambient temperature > -7 °C (+19 °F)
- Ambient pressure > 700 hPa
- Battery positive voltage > 11 V

Fault setting condition(s)

- A correction quantity is formed for the injection system due to a deviation between the setpoint lambda and actual lambda. If this is outside a certain window, the fault is displayed.
- System too lean/rich

Monitored component or system

♦ Fuel quantity control

Possible fault causes

♦ Oxygen sensor faulty
♦ Intake air tract
E.g. mass air flow sensor faulty
♦ Injector/injectors faulty
♦ Charge-air tract
E.g. boost-pressure sensor
♦ Exhaust gas recirculation
E.g. EGR actuator
♦ Exhaust system
E.g. all temperature sensors, differential-pressure sensor

Further fault causes:
♦ Leakage (e.g. intake-air tract, charge-air tract, exhaust gas recirculation, exhaust system)
♦ Oil entrainment in combustion chamber (e.g. due to leakage in the engine block, piston rings, turbocharger, etc.)
⇒ Ask customer about oil consumption

Fault effects

- ♦ Rough-running engine possible
- ♦ Blue smoke possible

P017B00

Diagnosis information DME control module

Temperature sender Cylinder head

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P017B00
- Cold start after > 9 hours
- Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P017C00, P017D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Temperature sender Cylinder head** faulty

P017B00
ELECTRICAL FAULT FOR: coolant temperature, intake air temperature, exhaust gas recirculation temperature, cylinder head temperature, oil and fuel temperature

Fault setting condition(s)

P017B00
♦ Electrical fault Temperature sensor/s
Comparison of the cylinder head temperature sender with the oil temperature, coolant temperature, intake air temperature, exhaust gas recirculation temperature, oil and fuel temperature during cold starting. The fault is set if the permissible tolerance threshold is exceeded.

Fault effects

♦ none

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P017C00

Diagnosis information DME control module

Temperature sender Cylinder head

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P017B00
- Cold start after > 9 hours
- Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P017C00, P017D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Temperature sender Cylinder head** faulty

P017B00
ELECTRICAL FAULT FOR: coolant temperature, intake air temperature, exhaust gas recirculation temperature, cylinder head temperature, oil and fuel temperature

Fault setting condition(s)

P017B00
♦ Electrical fault Temperature sensor/s
Comparison of the cylinder head temperature sender with the oil temperature, coolant temperature, intake air temperature, exhaust gas recirculation temperature, oil and fuel temperature during cold starting. The fault is set if the permissible tolerance threshold is exceeded.

Fault effects

♦ none

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P017D00

Diagnosis information DME control module

Temperature sender Cylinder head

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P017B00
- Cold start after > 9 hours
- Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P017C00, P017D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Temperature sender Cylinder head** faulty

P017B00
ELECTRICAL FAULT FOR: coolant temperature, intake air temperature, exhaust gas recirculation temperature, cylinder head temperature, oil and fuel temperature

Fault setting condition(s)

P017B00
♦ Electrical fault Temperature sensor/s
Comparison of the cylinder head temperature sender with the oil temperature, coolant temperature, intake air temperature, exhaust gas recirculation temperature, oil and fuel temperature during cold starting. The fault is set if the permissible tolerance threshold is exceeded.

Fault effects

♦ none

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Fuel-temperature sender

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P018100
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P018200, P018300
● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Fuel-temperature sender** faulty

P018100
ELECTRICAL FAULT FOR: coolant temperature, intake air temperature, exhaust gas recirculation temperature, cylinder head temperature, oil and fuel temperature

Fault setting condition(s)

P018100
♦ Electrical fault Temperature sensor/s
Comparison of the fuel-temperature sender with the oil temperature, coolant temperature, intake air temperature, exhaust gas recirculation temperature, oil and cylinder head temperature during cold starting. The fault is set if the permissible tolerance threshold is exceeded.

Fault effects

P018100
♦ none

P018200, P018300
♦ none Particle filter regeneration

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Fuel-temperature sender

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P018100
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P018200, P018300
● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Fuel-temperature sender** faulty

P018100
ELECTRICAL FAULT FOR: coolant temperature, intake air temperature, exhaust gas recirculation temperature, cylinder head temperature, oil and fuel temperature

Fault setting condition(s)

P018100
♦ Electrical fault Temperature sensor/s
Comparison of the fuel-temperature sender with the oil temperature, coolant temperature, intake air temperature, exhaust gas recirculation temperature, oil and cylinder head temperature during cold starting. The fault is set if the permissible tolerance threshold is exceeded.

Fault effects

P018100
♦ none

P018200, P018300
♦ none Particle filter regeneration

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Fuel-temperature sender

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P018100
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P018200, P018300
● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Fuel-temperature sender** faulty

P018100
ELECTRICAL FAULT FOR: coolant temperature, intake air temperature, exhaust gas recirculation temperature, cylinder head temperature, oil and fuel temperature

Fault setting condition(s)

P018100
♦ Electrical fault Temperature sensor/s
Comparison of the fuel-temperature sender with the oil temperature, coolant temperature, intake air temperature, exhaust gas recirculation temperature, oil and cylinder head temperature during cold starting. The fault is set if the permissible tolerance threshold is exceeded.

Fault effects

P018100
♦ none

P018200, P018300
♦ none Particle filter regeneration

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P019000

Diagnosis information DME control module

Fuel pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Fuel high-pressure system leaks
- ♦ **Fuel pressure sensor** faulty

Fault effects

- ♦ Torque reduction or shut-off
- ♦ Limp-home possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P019100

Diagnosis information DME control module

Fuel pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Fuel high-pressure system leaks
- ♦ **Fuel pressure sensor** faulty

Fault effects

- ♦ Torque reduction or shut-off
- ♦ Limp-home possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P019200

Diagnosis information DME control module

Fuel pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Fuel high-pressure system leaks
- ♦ **Fuel pressure sensor** faulty

Fault effects

- ♦ Torque reduction or shut-off
- ♦ Limp-home possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P019300

Diagnosis information DME control module

Fuel pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Fuel high-pressure system leaks
- ♦ **Fuel pressure sensor** faulty

Fault effects

- ♦ Torque reduction or shut-off
- ♦ Limp-home possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P019600

Diagnosis information DME control module

Oil level sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Cold start (at least 9 hours standstill time)
- Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

Possible fault causes

- Electrical fault Temperature sensor/s
(ELECTRICAL FAULT FOR: coolant temperature, intake air temperature, exhaust gas recirculation temperature, cylinder head temperature, oil and fuel temperature)
♦ **Oil level sensor** Faulty

Fault setting condition(s)

Comparison of the oil temperature sensor with the coolant temperature, intake air temperature, exhaust gas recirculation temperature, cylinder head temperature, oil and fuel temperature during cold starting. The fault is set if the permissible tolerance threshold is exceeded.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P019700

Diagnosis information DME control module

Oil level sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Oil level sensor** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P019800

Diagnosis information DME control module

Oil level sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Oil level sensor** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P019900

Diagnosis information DME control module

Oil level sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Oil level sensor** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

P01BA00 Oil temperature sensor for engine block, engine at cold start, implausible

Diagnostic conditions

- Once in driving cycle
- Cold start (off time > 9 hours)
- Cold start followed by driving for at least 60 seconds, including at least 20 seconds at a speed higher than 40 km/h (25 mph)
- No temperature increase due to active auxiliary heater, active block heater or intense solar irradiation

Fault setting condition(s)

- Tolerance thresholds exceeded during comparison of the oil temperature sensor temperature with all OBD-relevant temperature sensors on the engine side during cold start

Monitored component or system

♦ Oil temperature sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Engine block oil temperature sensor faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P01BB00

Diagnosis information DME control module

Oil temperature sensor Engine block

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oil temperature sensor** Engine block faulty

Fault effects

- none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P01BC00

Diagnosis information DME control module

Oil temperature sensor Engine block

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oil temperature sensor** Engine block faulty

Fault effects

- none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P01BD00

Diagnosis information DME control module

Oil temperature sensor Engine block

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oil temperature sensor** Engine block faulty

Fault effects

- none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P01E300

Diagnosis information DME control module

P01E300 Coolant temperature sensor for engine temperature control (engine outlet) - short circuit to B+/open circuit
P01E500 Coolant temperature sensor for engine temperature control (engine outlet) - short circuit to ground

Diagnostic conditions

- Ignition on

Fault setting condition(s)

P01E300
- Voltage > 4.921 V

P01E500
- Voltage < 0.224 V

Monitored component or system

♦ Coolant temperature sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Coolant temperature sensor for engine temperature control (engine outlet) faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P01E400

Diagnosis information DME control module

P01E400 Coolant temperature sensor for engine temperature control (engine outlet) implausible

Diagnostic conditions

- Ignition on
- Cold start after > 9 hours
- Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)
- No temperature increase due to active auxiliary heater, active block heater or intense solar irradiation

Fault setting condition(s)

- Permitted tolerance threshold exceeded

Monitored component or system

♦ Coolant temperature sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Coolant temperature sensor for engine temperature control (engine outlet) Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P01E500

Diagnosis information DME control module

P01E300 Coolant temperature sensor for engine temperature control (engine outlet) - short circuit to B+/open circuit
P01E500 Coolant temperature sensor for engine temperature control (engine outlet) - short circuit to ground

Diagnostic conditions

- Ignition on

Fault setting condition(s)

P01E300
- Voltage > 4.921 V

P01E500
- Voltage < 0.224 V

Monitored component or system

♦ Coolant temperature sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Coolant temperature sensor for engine temperature control (engine outlet) faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P020100

Diagnosis information DME control module

Injection valve (injector) Cylinder 1

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020100, P123700

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026300

♦ Adaptation value incorrect

Fault effects

P020100, **P123700**

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026300

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P020200

Diagnosis information DME control module

Injection valve (injector) Cylinder 2

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020200, P123800

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026600

♦ Adaptation value incorrect

Fault effects

P020200, P123800

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026600

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P020300

Diagnosis information DME control module

Injection valve (injector) Cylinder 3

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020300, P123900

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026900

♦ Adaptation value incorrect

Fault effects

P020300, P123900

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026900

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Injection valve (injector) Cylinder 4

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020400, P124000

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027200

♦ Adaptation value incorrect

Fault effects

P020400, P124000

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027200

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P020500

Diagnosis information DME control module

Injection valve (injector) Cylinder 5

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020500, P124100

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027500

♦ Adaptation value incorrect

Fault effects

P020500, P124100

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027500

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P020600

Diagnosis information DME control module

Injection valve (injector) Cylinder 6

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020600, P124200

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027800

♦ Adaptation value incorrect

Fault effects

P020600, P124200

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027800

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P020B00

Diagnosis information DME control unit

Cylinder 2 injection time outside tolerance P020B00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- at operating temperature

Possible fault causes

- Poor fuel quality
- Leaks/fouling of the injectors (Cylinder 2)
- Loss of compression

P020E00

Diagnosis information DME control unit

Cylinder 2 injection time outside tolerance P020E00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- at operating temperature

Possible fault causes

- Poor fuel quality
- Leaks/fouling of the injectors (Cylinder 5)
- Loss of compression

P021900

Diagnosis information - DME control module

Overspeed detection

INFORMATION
♦ If the engine limit speed is exceeded, the throttle valve is closed and is then opened again only when the speed has fallen below this limit.

Fault setting condition(s)

Maximum engine speed exceeded

Fault effects

♦ Engine damage possible

P023400

Diagnostic information - DME control unit

Charge-air tract

⚠ CAUTION
The maximum pressure for testing the charge-air tract must not exceed the value of 0.4 bar (5.8 psi).

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving under load

Possible fault causes

♦ Leak in the intake system
- Only Panamera up to MY E (2014):
  ♦ For more information, see Technical Information for main group 2:
2143 - Fault finding for dealing with customer complaint >Engine will not start or goes off again immediately< at outside temperatures below 0 °C (32 °F) and fault code P159200 entered (60/13)

Fault effects

♦ Boost pressure control off
♦ Reduced power
♦ No particulate filter regeneration

Diagnosis information DME control module

Boost-pressure sensor

INFORMATION
♦ The boost pressure sensor and intake air temperature sensor are combined in one component and cannot be replaced individually.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Engine running

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Boost-pressure sensor** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Engine torque limitation.
♦ No boost pressure control possible.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P023800

Diagnosis information DME control module

Boost-pressure sensor

INFORMATION
♦ The boost pressure sensor and intake air temperature sensor are combined in one component and cannot be replaced individually.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Engine running

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Boost-pressure sensor** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Engine torque limitation.
♦ No boost pressure control possible.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P025A00

Diagnosis information DME control module

Fuel pump module (Fuel-pump control)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Fuel pump module** faulty
- ♦ **Control module Fuel pump module** faulty

Fault effects

- ♦ **Engine failure**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P025C00

Diagnosis information DME control module

Fuel pump module (Fuel-pump control)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Fuel pump module** faulty
- ♦ **Control module Fuel pump module** faulty

Fault effects

- ♦ **Engine failure**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P025D00

Diagnosis information DME control module

Fuel pump module (Fuel-pump control)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Fuel pump module** faulty
- ♦ **Control module Fuel pump module** faulty

Fault effects

- ♦ **Engine failure**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P026300

Diagnosis information DME control module

Injection valve (injector) Cylinder 1

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020100, P123700

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026300

♦ Adaptation value incorrect

Fault effects

P020100, **P123700**

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026300

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P026600

Diagnosis information DME control module

Injection valve (injector) Cylinder 2

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020200, P123800

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026600

♦ Adaptation value incorrect

Fault effects

P020200, P123800

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026600

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P026900

Diagnosis information DME control module

Injection valve (injector) Cylinder 3

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020300, P123900

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026900

♦ Adaptation value incorrect

Fault effects

P020300, P123900

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026900

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P026A00

Diagnosis information DME control module

Charge air cooler

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Partial load ... Full load
- **Vehicle speed** > 40 **km/h**
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- No cooling medium ⇒ Not enough air is flowing to the radiators (they might be covered, e.g. with winter insulation cardboard)
- **Charge air cooler** Blocked

/ covered
- Temperature sensor (integrated in the boost pressure sender) behind charge air cooler faulty
- **Ambient temperature sensor** faulty
- Charge air coolers contaminated/faulty

P027200

Diagnosis information DME control module

Injection valve (injector) Cylinder 4

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020400, P124000

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027200

♦ Adaptation value incorrect

Fault effects

P020400, P124000

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027200

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P027500

Diagnosis information DME control module

Injection valve (injector) Cylinder 5

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020500, P124100

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027500

♦ Adaptation value incorrect

Fault effects

P020500, P124100

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027500

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P027800

Diagnosis information DME control module

Injection valve (injector) Cylinder 6

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020600, P124200

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027800

♦ Adaptation value incorrect

Fault effects

P020600, P124200

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027800

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P029900

Diagnosis information DME control module

Boost-pressure sensor

INFORMATION
♦ The boost pressure sensor and intake air temperature sensor are combined in one component and cannot be replaced individually.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

under Load

Possible fault causes

♦ Leak in charge-air tract
♦ **Boost-pressure sensor** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Engine torque limitation.

P030000

Diagnosis information DME control module

P030000 Misfiring detected on several cylinders

Diagnostic conditions

- Engine running
- Continuously

Fault setting condition(s)

- Misfiring limit value exceeded in several cylinders

Monitored component or system

♦ Misfire detection

Fault finding notes

♦ Compare learning values for zero-quantity calibration
♦ Check compression

Function restrictions

♦ Rough-running engine at idle speed

P030100

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

Diagnostic conditions

- Engine running
- Continuously

Fault setting condition(s)

- Misfiring limit value exceeded in one cylinder

Monitored component or system

♦ Misfire detection

Fault finding notes

♦ Compare learning values for zero-quantity calibration
♦ Check compression

Function restrictions

♦ Slightly rough-running engine at idle speed

P030200

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

Diagnostic conditions

- Engine running
- Continuously

Fault setting condition(s)

- Misfiring limit value exceeded in one cylinder

Monitored component or system

♦ Misfire detection

Fault finding notes

♦ Compare learning values for zero-quantity calibration
♦ Check compression

Function restrictions

♦ Slightly rough-running engine at idle speed

P030300

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

Diagnostic conditions

- Engine running
- Continuously

Fault setting condition(s)

- Misfiring limit value exceeded in one cylinder

Monitored component or system

♦ Misfire detection

Fault finding notes

♦ Compare learning values for zero-quantity calibration
♦ Check compression

Function restrictions

♦ Slightly rough-running engine at idle speed

P030400

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

Diagnostic conditions

- Engine running
- Continuously

Fault setting condition(s)

- Misfiring limit value exceeded in one cylinder

Monitored component or system

♦ Misfire detection

Fault finding notes

♦ Compare learning values for zero-quantity calibration
♦ Check compression

Function restrictions

♦ Slightly rough-running engine at idle speed

P030500

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

Diagnostic conditions

- Engine running
- Continuously

Fault setting condition(s)

- Misfiring limit value exceeded in one cylinder

Monitored component or system

♦ Misfire detection

Fault finding notes

♦ Compare learning values for zero-quantity calibration
♦ Check compression

Function restrictions

♦ Slightly rough-running engine at idle speed

P030600

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

Diagnostic conditions

- Engine running
- Continuously

Fault setting condition(s)

- Misfiring limit value exceeded in one cylinder

Monitored component or system

♦ Misfire detection

Fault finding notes

♦ Compare learning values for zero-quantity calibration
♦ Check compression

Function restrictions

♦ Slightly rough-running engine at idle speed

P032100

Diagnosis information DME control module

Crankshaft position sensor (crankshaft sensor)

INFORMATION
♦ The crankshaft sensor is an rpm and reference mark sender

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition off, Ignition on

or

- Engine running

- no faults on camshaft sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Pickup (sensor) wheel not installed correctly , faulty
♦ Crankshaft sensor not installed correctly
♦ Crankshaft sensor faulty

Fault effects

♦ Dynamic response is reduced (torque limitation)
♦ Higher idle speed
♦ Deactivation of smooth-running regulator and surge damper
♦ none Particle filter regeneration
♦ Deactivation of EGR
♦ none camshaft diagnosis

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P032200

Diagnosis information DME control module

Crankshaft position sensor (crankshaft sensor)

INFORMATION
♦ The crankshaft sensor is an rpm and reference mark sender

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition off, Ignition on
or
● Engine running

● no faults on camshaft sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Pickup (sensor) wheel not installed correctly , faulty
♦ Crankshaft sensor not installed correctly
♦ Crankshaft sensor faulty

Fault effects

♦ Dynamic response is reduced (torque limitation)
♦ Higher idle speed
♦ Deactivation of smooth-running regulator and surge damper
♦ none Particle filter regeneration
♦ Deactivation of EGR
♦ none camshaft diagnosis

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P034100

Diagnosis information DME control module

Camshaft position sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition off Ignition on

or

- Engine running

- none faults for crankshaft sensor

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- Pickup (sensor) wheel not installed correctly , faulty
- **Camshaft position sensor** not installed correctly
- **Camshaft position sensor** faulty

Fault effects

- none camshaft control
- Crankshaft diagnosis disabled
- none camshaft adaptation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

P038100 Warning light for preglow time - signal implausible

Diagnostic conditions

● Ignition on
● An open circuit in the line or short circuit to B+ in the instrument cluster can only be detected when the light is activated

Fault setting condition(s)

● The lamp status received from the instrument cluster via CAN does not match the lamp activation signal from the DME control unit that is currently sent via CAN

Monitored component or system

♦ Diesel indicator light

Possible fault causes

♦ Open circuit/short circuit to B+ in the instrument cluster
♦ **Instrument cluster** faulty

Diagnosis information DME control module

Exhaust gas recirculation Throughput

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040100 Throughput too low

- Exhaust gas recirculation Active
- **Engine speed** 1,100 ... 2,500 1/min
- Injection quantity 5 ... 35 mg

P040200 Throughput too high

- Exhaust gas recirculation not active
- Intake manifold flap position > 94 %
- Throttle valve position > 94 %
- **Engine speed** 1,100 ... 2,500 1/min
- Injection quantity < 0.5 mg/stroke
- **Coolant temperature** > 60 °C (°F)

Possible fault causes

- **Exhaust recirculation valve** stuck
- **Exhaust recirculation valve** Faulty
- **Exhaust gas recirculation line** Leak / leaks
- **Exhaust gas recirculation line** Blocked

- **Radiator** Exhaust gas recirculation Blocked

- **Radiator** Exhaust gas recirculation Faulty
- **Turbocharger** Function Faulty
- **Intake system** Leak / leaks
- **Air flow sensor** Function Faulty

Fault effects

- none Exhaust gas recirculation
- none Particle filter regeneration

Diagnosis information DME control module

Exhaust gas recirculation Throughput

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040100 Throughput too low

- Exhaust gas recirculation Active
- **Engine speed** 1,100 ... 2,500 1/min
- Injection quantity 5 ... 35 mg

P040200 Throughput too high

- Exhaust gas recirculation not active
- Intake manifold flap position > 94 %
- Throttle valve position > 94 %
- **Engine speed** 1,100 ... 2,500 1/min
- Injection quantity < 0.5 mg/stroke
- **Coolant temperature** > 60 °C (°F)

Possible fault causes

- **Exhaust recirculation valve** stuck
- **Exhaust recirculation valve** Faulty
- **Exhaust gas recirculation line** Leak / leaks
- **Exhaust gas recirculation line** Blocked

- **Radiator** Exhaust gas recirculation Blocked

- **Radiator** Exhaust gas recirculation Faulty
- **Turbocharger** Function Faulty
- **Intake system** Leak / leaks
- **Air flow sensor** Function Faulty

Fault effects

- none Exhaust gas recirculation
- none Particle filter regeneration

Diagnosis information DME control module

Exhaust recirculation valve

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine on or Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Exhaust recirculation valve** stuck
- ♦ **Exhaust recirculation valve** faulty

Fault effects

- ♦ none Particle filter regeneration
- ♦ Limp-home

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P040500

Diagnosis information DME control module

Exhaust recirculation valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040500, P040600
- Engine on or Control unit run-on (See ⓘ)

P046C00, P140000, P140100, P140200, P144000
- Control unit run-on (See ⓘ)

or
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust recirculation valve** faulty

Fault effects

- none Particle filter regeneration
- No Exhaust gas recirculation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P040600

Diagnosis information DME control module

Exhaust recirculation valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040500, P040600
- Engine on or Control unit run-on (See ⓘ)

P046C00, P140000, P140100, P140200, P144000
- Control unit run-on (See ⓘ)

or
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust recirculation valve** faulty

Fault effects

- none Particle filter regeneration
- No Exhaust gas recirculation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P040B00

Diagnosis information DME control module

Temperature sensor Exhaust gas recirculation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040B00
- Cold start after > 9 hours
- Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P040C00, P040D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Temperature sensor** for **Exhaust recirculation valve** faulty

Fault effects

P040B00
- ♦ none

P040C00, P040D00
- ♦ Abnormal termination of Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P040C00

Diagnosis information DME control module

Temperature sensor Exhaust gas recirculation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040B00
- Cold start after > 9 hours
- Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P040C00, P040D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Temperature sensor** for **Exhaust recirculation valve** faulty

Fault effects

P040B00
- ♦ none

P040C00, P040D00
- ♦ Abnormal termination of Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P040D00

Diagnosis information DME control module

Temperature sensor Exhaust gas recirculation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040B00
- Cold start after > 9 hours
- Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P040C00, P040D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Temperature sensor** for **Exhaust recirculation valve** faulty

Fault effects

P040B00
- ♦ none

P040C00, P040D00
- ♦ Abnormal termination of Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P042000

Diagnosis information DME control module

Catalytic converter Effect

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Particle filter regeneration Active
- one time during Particle filter regeneration

Possible fault causes

NOTE
Diagnosis/Fault finding!
DME control module: ► First process the other faults.

- Rough running Check
- Zero-quantity calibration Check
- Fault in area :
  - **Exhaust temperature sensor** 2(Ahead of catalytic converter)
  - **Exhaust temperature sensor** 3(Behind catalytic converter)
  - Exhaust gas recirculation
  - **Throttle valve**
  - Injection system
  - **Air flow sensor**
- **Catalytic converter**

Diagnostic information - DME control unit

P042100 Slip catalytic converter effect insufficient at cold start

Diagnostic conditions
Cold start conditions must be met:
● Engine switch-off time > 6 hours
● Exhaust temperature 4 (behind DPF) -7.04...+49.96 °C (+19.33...+121.93 °F)
● Vehicle speed < 100 km/h (62 mph)
● Time after engine start until exhaust gas temperature 5 (behind slip catalytic converter) is reached < 20 minutes

Possible fault causes

♦ No correct installation of exhaust gas temperature sensors 4 and 5 (behind DPF= ahead of slip catalytic converter (4) and behind slip catalytic converter (5))
♦ Damage to the exhaust system

Check/remedy fault entries in the following areas:
♦ Temperature sensor 4 ahead of slip catalytic converter
♦ Temperature sensor 5 behind slip catalytic converter
♦ Ambient temperature sensor
♦ Mass air flow sensor

♦ Slip catalytic converter faulty

P042600

Diagnosis information DME control module

P042600 Temp. sensor for catalytic converter - implausible signal

Diagnostic conditions

● Diagnostics runs continuously after engine start

Fault setting condition(s)

● Exhaust temperature sensor in oxi. cat.: Average difference over a given time between sensor and model value implausible

Monitored component or system

♦ Exhaust temperature sensor 2

Fault finding notes

♦ Check installation position of sensor in oxi. cat. and correct it if necessary, or replace exhaust temperature sensor

P046C00

Diagnosis information DME control module

Exhaust recirculation valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040500, P040600
- Engine on or Control unit run-on (See ⓘ)

P046C00, P140000, P140100, P140200, P144000
- Control unit run-on (See ⓘ)

or
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust recirculation valve** faulty

Fault effects

- none Particle filter regeneration
- No Exhaust gas recirculation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P048000

Diagnosis information DME control module

Radiator fan control module 1

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 1 faulty

Fault effects

♦ Radiator limp-home mode 10 s after Ignition on (full activation)

ⓘ NOTE
Limp-home mode of the radiator fans means that the requirements for load balance, acoustics and closed-circuit current are not met.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P048100

Diagnosis information DME control module

Radiator fan control module 2

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 2 faulty

Fault effects

♦ Radiator limp-home mode 10 s after Ignition on (full activation)

ⓘ NOTE
Limp-home mode of the radiator fans means that the requirements for load balance, acoustics and closed-circuit current are not met.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P04DD00

Diagnosis information DME control module

Exhaust gas recirculation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P04DD00
- Heating strategy active
- Exhaust gas recirculation Active

P04DE00
- Heating strategy active
- Exhaust gas recirculation not active
- **Coolant temperature** > 60 °C (°F)
- **Engine speed** 1,100 ... 2,500 1/min

Possible fault causes
- **Exhaust recirculation valve**
- **Intake system** Leak / leaks
- **Exhaust gas recirculation line** Leak / leaks

Diagnosis information DME control module

Exhaust gas recirculation

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P04DD00

- Heating strategy active
- Exhaust gas recirculation Active

P04DE00

- Heating strategy active
- Exhaust gas recirculation not active
- **Coolant temperature** > 60 °C (°F)
- **Engine speed** 1,100 ... 2,500 1/min

Possible fault causes

- **Exhaust recirculation valve**
- **Intake system** Leak / leaks
- **Exhaust gas recirculation line** Leak / leaks

P050100

Diagnosis information - DME control module

Speed signal (Vehicle speed)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle voltage 11...15 V
- Ignition on

Possible fault causes

♦ Fault entry in the brake control unit

Fault effects

♦ ACC/cruise control disabled
♦ Torque limitation

P050200

Diagnosis information - DME control module

Speed signal (Vehicle speed)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle voltage 11...15 V
- Ignition on

Possible fault causes

♦ Fault entry in the brake control unit

Fault effects

♦ ACC/cruise control disabled
♦ Torque limitation

P050600

Diagnosis information DME control module

P050600 Idle control - speed below setpoint

Diagnostic conditions

- Engine running

- **Vehicle speed** = 0 km/h (0 mph)
- Engine temperature -7...107 °C (19.4...224.6 °F)
- Idle speed control active
- Continuously at idle speed

Fault setting condition(s)

- Idle speed less than setpoint speed

Monitored component or system

♦ Idle speed controller

Possible fault causes

♦ Injector/injectors coked
♦ Fault in rail system
♦ Internal friction too high (engine wear)

Fault effects

♦ Idle speed at least 30% too low
♦ Engine can stall

P050700

Diagnosis information DME control module

P050700 Idle control - speed above setpoint

Diagnostic conditions

- Engine running

- **Vehicle speed** = 0 km/h (0 mph)
- Engine temperature -7...107 °C (19.4...224.6 °F)
- Idle speed control active
- Continuously at idle speed

Fault setting condition(s)

- Idle speed at least 30% too high

Monitored component or system

♦ Idle speed controller

Possible fault causes

♦ Injector leak
♦ Oil or fuel entering the combustion chamber
♦ Turbocharger damage
♦ Engine damage

Fault effects

♦ Idle speed at least 30% too high

P050A00

Diagnosis information DME control unit

DME control module Idle speed control P054F00, P054E00, P050A00, P050600, P050700

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Idle speed
- Vehicle is stationary

Possible fault causes

- Fault in injection system
- Leaks/fouling of the injectors
- Oil or fuel entering the combustion chamber
- Loss of compression
- Engine/turbocharger damage (for example: bearings)

P050E00

Diagnostic information - DME control unit Diesel

Exhaust gas temperature Cold start

Diagnostic conditions
- to Engine start

Possible fault causes
- **Exhaust temperature sensor behind particle filter** Faulty
- Fault in area **Exhaust system**
- Fault in area Exhaust gas recirculation

P052F00

Diagnosis information DME control module

Control unit for automatic glow time:

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- no communication errors present
- no faults for Overtemperature present
- no faults for Control unit for automatic glow time: present
- no ground offset faults present
- no faults for incorrect Control unit for automatic glow time: present
- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Engine ground strap** /**Body** faulty
- **Ground line** Engine control unit/ **Body** faulty
- **Control unit for automatic glow time:** faulty

Fault effects

- Preglow system does not function
- Poor Engine can be started
- Smoke may come from engine during start-up

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P054400

Diagnosis information DME control module

Exhaust temperature sensor ahead of turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Exhaust temperature sensor ahead of turbocharger** faulty

Fault effects

P054400
♦ none Particle filter regeneration

P054500
♦ none Particle filter regeneration
♦ Torque limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P054500

Diagnosis information DME control module

Exhaust temperature sensor ahead of turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Exhaust temperature sensor ahead of turbocharger** faulty

Fault effects

P054400
- ♦ none Particle filter regeneration

P054500
- ♦ none Particle filter regeneration
- ♦ Torque limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
- ♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P054E00

Diagnosis information DME control unit

DME control module Idle speed control P054F00, P054E00, P050A00, P050600, P050700

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Idle speed
- Vehicle is stationary

Possible fault causes

- Fault in injection system
- Leaks/fouling of the injectors
- Oil or fuel entering the combustion chamber
- Loss of compression
- Engine/turbocharger damage (for example: bearings)

P054F00

Diagnosis information DME control unit

DME control module Idle speed control P054F00, P054E00, P050A00, P050600, P050700

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Idle speed
- Vehicle is stationary

Possible fault causes

- Fault in injection system
- Leaks/fouling of the injectors
- Oil or fuel entering the combustion chamber
- Loss of compression
- Engine/turbocharger damage (for example: bearings)

P055500

Diagnosis information DME control module

Brake booster pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- Brake booster pressure sensor Faulty

Fault effects

- Failure of Start/Stop function
- This is activated permanently on vehicles with an electric vacuum pump

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P055700

Diagnosis information DME control module

Brake booster pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Brake booster pressure sensor Faulty

Fault effects

♦ Failure of Start/Stop function
♦ This is activated permanently on vehicles with an electric vacuum pump

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P056200

Diagnosis information DME control module

Engine DME control module Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P056200
- Ignition on

P056300
- Engine running

Possible fault causes

P056200: Supply voltage Vehicle electrical system too low

♦ Starter battery discharged or Faulty
♦ Contact resistance, Loose contact or corrosion on connectors or lines (**DME control module**)

P056300: Supply voltage Vehicle electrical system Too high

♦ e.g. due to Jump starting
♦ Contact resistance, Loose contact or corrosion on connectors or lines (**DME control module**)

Fault setting condition(s)

- Deviation **Supply voltage**:
  ♦ < 10 V (P056200)
  or
  ♦ > 16 V (P056300)

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

P056300

Diagnosis information DME control module

Engine DME control module Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P056200
- Ignition on

P056300
- Engine running

Possible fault causes

P056200: Supply voltage Vehicle electrical system too low

♦ Starter battery discharged or Faulty
♦ Contact resistance, Loose contact or corrosion on connectors or lines (**DME control module**)

P056300: Supply voltage Vehicle electrical system Too high

♦ e.g. due to Jump starting
♦ Contact resistance, Loose contact or corrosion on connectors or lines (**DME control module**)

Fault setting condition(s)

- Deviation **Supply voltage**:
  ♦ < 10 V (P056200)
  or
  ♦ > 16 V (P056300)

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

P056800

Diagnosis information DME control module

Switch for cruise control system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Switch for cruise control system**
faulty

Fault effects

♦ none cruise control/ACC function possible with Ignition on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P057100

Diagnosis information DME control module

Stop light switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- No CAN fault present

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Stop light switch** faulty

Fault effects

- no cruise control/ACC

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P057200

Diagnosis information DME control module

Stop light switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- No CAN fault present

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Stop light switch** faulty

Fault effects

- no cruise control/ACC

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P057300

Diagnosis information DME control module

Stop light switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- No CAN fault present

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Stop light switch** faulty

Fault effects

- no cruise control/ACC

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P059700

Diagnosis information DME control module

Thermostat

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Diagnosis runs continuously

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Thermostat** faulty

Fault effects

- ♦ Final stage deactivated
- ♦ **Thermostat failure**
- ♦ **Insufficient Engine cooling**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P059800

Diagnosis information DME control module

Thermostat

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Diagnosis runs continuously

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Thermostat** faulty

Fault effects

- Final stage deactivated
- **Thermostat failure**
- **Insufficient Engine cooling**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P059900

Diagnosis information DME control module

Thermostat

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Diagnosis runs continuously

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Thermostat** faulty

Fault effects

- Final stage deactivated
- **Thermostat failure**
- **Insufficient Engine cooling**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

Diagnostic information - DME control unit

P05A000 Radiator shutter, servo motor turns freely/mechanically blocked

Diagnostic conditions
- Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- Radiator shutter was turned manually while the ignition was off
- Radiator shutter iced up
- Radiator shutter dirty
- Radiator shutter, vanes scrape/stick (incorrectly installed, positioned)
- Radiator shutter, mechanism broken
- Servo motor faulty

Fault setting conditions
- Increased current draw during movement
- No increased current draw when the learned limit stops are reached

Fault effects
- New initialization
- When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

P05A200

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- ♦ Short circuit to B+/ground/between lines or open circuit in the signal line
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the shutter as far as possible

Diagnostic information - DME control unit

P05A300 Radiator shutter, signal implausible

Diagnostic conditions
- Ignition on

Possible fault causes
- Implausible request from DME control unit, e.g. during reprogramming
- Servo motor signal line ◄► Open circuit in DME control unit
- Servo motor power supply or ground supply faulty
- Servo motor faulty

Fault setting conditions
- No signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the shutter as far as possible

P05A400

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the signal line
- Loose contact or corrosion on connectors or lines
- Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the shutter as far as possible

P05A500

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the signal line
- Loose contact or corrosion on connectors or lines
- Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the shutter as far as possible

Diagnostic information - DME control unit

P05C000 Radiator shutter unit, overtemperature

Diagnostic conditions
● Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
♦ Ambient temperature too high
♦ Servo motor overloaded
♦ Servo motor faulty

Fault setting conditions
● Temperature in servo motor too high

Fault effects
♦ New initialization
♦ When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

P060200

Diagnosis information DME control module

Coding cruise control/ACC

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Vehicle data incorrect
  (See **PIWIS Tester II** ▶ Additional menu [F7] ▶ Maintenance of vehicle data)
- Vehicle equipment incorrect
- **Control module** incorrectly coded - The data record does not match the vehicle.
- **Steering wheel electronics control module** incorrectly coded

P060500

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P060600

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ **INFORMATION**
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P060700

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P061000

Diagnosis information DME control module

Coding cruise control/ACC

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Vehicle data incorrect
  (See **PIWIS Tester II** ▶ Additional menu [F7] ▶ Maintenance of vehicle data)
- Vehicle equipment incorrect
- **Control module** incorrectly coded - The data record does not match the vehicle.
- **Steering wheel electronics control module** incorrectly coded

P061500

Diagnosis information DME control module

Relay 1 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 1 for starter** faulty

Fault effects

P061500, P061600, P061700

- Starter does not rotate

P304600

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Relay 1 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 1 for starter** faulty

Fault effects

P061500, P061600, P061700

- Starter does not rotate

P304600

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Relay 1 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 1 for starter** faulty

Fault effects

P061500, P061600, P061700

- Starter does not rotate

P304600

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P063400

Diagnosis information DME control module

Engine DME control module , temperature switch-off

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- none electrical fault entries in the Fault memory
- Ignition on

or

- Control unit run-on (See ⓘ)

Possible fault causes

- Engine **DME control module** installed incorrectly
- Engine **DME control module** faulty

Fault effects

- Limp-home
- none Particle filter regeneration
- Exhaust gas recirculation No function
- Various faults on actuators/sensors
- Engine failure

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P064100

Diagnostic information - DME control unit

Engine DME control unit sender reference voltage A

Diagnostic conditions

- Ignition on

Monitored component or system

♦ Sender reference voltage 5 V

Fault finding notes

♦ Check the electrical connection of the components connected to the shared power supply
♦ Check components
♦ Control unit:
  ♦ Connector [A], contact 16
  or
  ♦ Connector [A], contact 38
  or
  ♦ Connector [A], contact 57
  or
  ♦ Connector [A], contact 60
  or
  ♦ Connector [A], contact 103
  or
  ♦ Connector [B], contact 34

Fault effects

♦ Limp-home mode
♦ Failure of the affected sensors

P064C00

Diagnosis information DME control module

Control unit for automatic glow time:

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- no communication errors present
- no faults for Overtemperature present
- no faults for Control unit for automatic glow time: present
- no ground offset faults present
- no faults for incorrect Control unit for automatic glow time: present
- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Engine ground strap** /**Body** faulty
- **Ground line** Engine control unit/ **Body** faulty
- **Control unit for automatic glow time:** faulty

Fault effects

- Preglow system does not function
- Poor Engine can be started
- Smoke may come from engine during start-up

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P065100

Diagnostic information - DME control unit

Engine DME control unit sender reference voltage B

Diagnostic conditions

- Ignition on

Monitored component or system

♦ Sender reference voltage 5 V

Fault finding notes

♦ Check the electrical connection of the components connected to the shared power supply
♦ Check components
♦ Control unit:
  ♦ Connector [A], contact 35
  or
  ♦ Connector [A], contact 52
  or
  ♦ Connector [A], contact 56
  or
  ♦ Connector [A], contact 61
  or
  ♦ Connector [A], contact 62
  or
  ♦ Connector [B], contact 17
  or
  ♦ Connector [B], contact 46
  or
  ♦ Connector [B], contact 48
  or
  ♦ Connector [B], contact 49
  or
  ♦ Connector [B], contact 70

Fault effects

♦ Limp-home mode
♦ Failure of the affected sensors

P066A00

Diagnosis information DME control module

Glow plug Cylinder 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 1** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P066B00

Diagnosis information DME control module

Glow plug Cylinder 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 1** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P066C00

Diagnosis information DME control module

Glow plug Cylinder 2

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 2** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P066D00

Diagnosis information DME control module

Glow plug Cylinder 2

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 2** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P066E00

Diagnosis information DME control module

Glow plug Cylinder 3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 3** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P066F00

Diagnosis information DME control module

Glow plug Cylinder 3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 3** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067100

Diagnosis information DME control module

Glow plug Cylinder 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 1** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067200

Diagnosis information DME control module

Glow plug Cylinder 2

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 2** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067300

Diagnosis information DME control module

Glow plug Cylinder 3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 3** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067400

Diagnosis information DME control module

Glow plug Cylinder 4

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 4** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067500

Diagnosis information DME control module

Glow plug Cylinder 5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 5** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067600

Diagnosis information DME control module

Glow plug Cylinder 6

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 6** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067A00

Diagnosis information DME control module

Glow plug Cylinder 4

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 4** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067B00

Diagnosis information DME control module

Glow plug Cylinder 4

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 4** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067C00

Diagnosis information DME control module

Glow plug Cylinder 5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 5** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067D00

Diagnosis information DME control module

Glow plug Cylinder 5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 5** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067E00

Diagnosis information DME control module

Glow plug Cylinder 6

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 6** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P067F00

Diagnosis information DME control module

Glow plug Cylinder 6

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 6** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P068300

Diagnosis information DME control module

Control unit for automatic glow time:

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- no communication errors present
- no faults for Overtemperature present
- no faults for Control unit for automatic glow time: present
- no ground offset faults present
- no faults for incorrect Control unit for automatic glow time: present
- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Engine ground strap** /**Body** faulty
- **Ground line** Engine control unit/ **Body** faulty
- **Control unit for automatic glow time:** faulty

Fault effects

- Preglow system does not function
- Poor Engine can be started
- Smoke may come from engine during start-up

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P068A00

Diagnosis information DME control module

Main relay Power supply Terminal 30

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Main relay Power supply Terminal 30** faulty

Fault effects

- Engine off
- **Control module** off

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P068B00

Diagnosis information DME control module

Main relay Power supply Terminal 30

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Main relay Power supply Terminal 30** faulty

Fault effects

- Engine off
- **Control module** off

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P069100

Diagnosis information DME control module

Radiator fan control module 1

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 1 faulty

Fault effects

♦ Radiator limp-home mode 10 s after Ignition on (full activation)

ⓘ NOTE
Limp-home mode of the radiator fans means that the requirements for load balance, acoustics and closed-circuit current are not met.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P069200

Diagnosis information DME control module

Radiator fan control module 1

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

- **DO NOT** allow hair or clothing close to the rotating range of the fan.
- **DO NOT** reach into the rotating fan.
- **DO NOT** place tools or other items in the rotating range of the fan.
- Perform work on the fan only with the ignition switched off.
- Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Radiator fan control module** 1 faulty

Fault effects

- Radiator limp-home mode 10 s after Ignition on (full activation)

ⓘ NOTE
Limp-home mode of the radiator fans means that the requirements for load balance, acoustics and closed-circuit current are not met.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P069300

Diagnosis information DME control module

Radiator fan control module 2

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 2 faulty

Fault effects

♦ Radiator limp-home mode 10 s after Ignition on (full activation)

ⓘ NOTE
Limp-home mode of the radiator fans means that the requirements for load balance, acoustics and closed-circuit current are not met.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P069400

Diagnosis information DME control module

Radiator fan control module 2

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 2 faulty

Fault effects

♦ Radiator limp-home mode 10 s after Ignition on (full activation)

ⓘ NOTE
Limp-home mode of the radiator fans means that the requirements for load balance, acoustics and closed-circuit current are not met.

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 1** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 2

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 2** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 3** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 4

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 4** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 5** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 6

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 6** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 1** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 2

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 2** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 3** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 4

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 4** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 5** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 6

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 6** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P06E500

Diagnosis information DME control module

Control unit for automatic glow time:

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- no communication errors present
- no faults for Overtemperature present
- no faults for Control unit for automatic glow time: present
- no ground offset faults present
- no faults for incorrect Control unit for automatic glow time: present
- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Engine ground strap** /**Body** faulty
- **Ground line** Engine control unit/ **Body** faulty
- **Control unit for automatic glow time:** faulty

Fault effects

- Preglow system does not function
- Poor Engine can be started
- Smoke may come from engine during start-up

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P070300

Diagnosis information DME control module

Stop light switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- No CAN fault present

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Stop light switch** faulty

Fault effects

- no cruise control/ACC

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P071500

Diagnosis information - DME control module

Transmission control unit fault

Diagnostic conditions

- Engine running

Possible fault causes

♦ Fault entry in the transmission control unit

P071600

Diagnosis information - DME control module

Transmission control unit fault

Diagnostic conditions

- Engine running

Possible fault causes

♦ Fault entry in the transmission control unit

P085000

Diagnosis information DME control module

Start inhibit switch (P/N signal)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Start inhibit switch** faulty

Fault effects

P085000, P085100
♦ </cf> automatic start possible

P019900
♦ no cruise control/ACC

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P085100

Diagnosis information DME control module

Start inhibit switch (P/N signal)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Start inhibit switch** faulty

Fault effects

P085000, P085100
♦ </cf> automatic start possible

P019900
♦ no cruise control/ACC

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P091900

Diagnosis information DME control module

Start inhibit switch (P/N signal)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Start inhibit switch** faulty

Fault effects

P085000, P085100
♦ </cf> automatic start possible

P019900
♦ no cruise control/ACC

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P00AF00
- Engine running

- Control unit run-on (See ⓘ)

P100E00
- Engine cold start

Possible fault causes

P00AF00
♦ **Connecting rod** (**ball socket**) stiff / Faulty (**Electronic adjuster for turbocharger** <=> **Turbocharger**)
♦ **Boost pressure adjuster** (**Electronic adjuster for turbocharger**) stiff / Faulty
♦ **Turbocharger** stiff / Faulty

P100E00
♦ Adjustment device for guide blades on the **Turbocharger** stiff during cold start

Fault effects

P00AF00
♦ none Particle filter regeneration
♦ Limp-home

P100E00
♦ Torque reduction

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information DME control unit

Sensor 1 for NOx Signal
P101900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- once at the transition from traction mode to overrun mode
- No fault entered for
  - Exhaust gas recirculation
  - **Sensor 1 for NOx** / **Sensor 2 for NOx**
  - DeNOx catalytic converter

Possible fault causes

- Sender 1 for NOx faulty due to the following possible causes
  - increased oil consumption
  - Coolant leak into combustion chamber

P102800

Diagnosis information DME control module

Engine intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P200800, P200900, P201000
- Load reduction diagnosis not active
- Ignition on

or
- Control unit run-on (See ⓘ)

P200400, P200600
- Engine running

or
- Control unit run-on (See ⓘ)

P102800
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Linkage jammed
- ♦ **Engine Intake manifold flap** faulty

Fault effects

- ♦ Limp-home possible
- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P102A00

Diagnosis information DME control module

Engine DME control module torque limitation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

P102A00
♦ Coolant level too low
P102B00
♦ Oil level too low
♦ Poor oil quality
P102C00
♦ Fuel line routing incorrect
♦ Fuel filter Blocked

P102D00
♦ Charge air cooler soiled
P102E00
♦ Timing incorrect
♦ Mixture formation error

Fault effects

♦ Consequential faults: Torque limitation due to excessively high temperatures
ⓘ Work through all other fault memory entries first

P102B00

Diagnosis information DME control module

Engine DME control module torque limitation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

P102A00
♦ Coolant level too low
P102B00
♦ Oil level too low
♦ Poor oil quality
P102C00
♦ Fuel line routing incorrect
♦ Fuel filter Blocked

P102D00
♦ Charge air cooler soiled
P102E00
♦ Timing incorrect
♦ Mixture formation error

Fault effects

♦ Consequential faults: Torque limitation due to excessively high temperatures
ⓘ Work through all other fault memory entries first

P102C00

Diagnosis information DME control module

Engine DME control module torque limitation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

P102A00
♦ Coolant level too low
P102B00
♦ Oil level too low
♦ Poor oil quality
P102C00
♦ Fuel line routing incorrect
♦ Fuel filter Blocked

P102D00
♦ Charge air cooler soiled
P102E00
♦ Timing incorrect
♦ Mixture formation error

Fault effects

♦ Consequential faults: Torque limitation due to excessively high temperatures
ⓘ Work through all other fault memory entries first

P102D00

Diagnosis information DME control module

Engine DME control module torque limitation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

P102A00
♦ Coolant level too low
P102B00
♦ Oil level too low
♦ Poor oil quality
P102C00
♦ Fuel line routing incorrect
♦ Fuel filter Blocked

P102D00
♦ Charge air cooler soiled
P102E00
♦ Timing incorrect
♦ Mixture formation error

Fault effects

♦ Consequential faults: Torque limitation due to excessively high temperatures
ⓘ Work through all other fault memory entries first

Diagnosis information DME control module

Engine DME control module torque limitation

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

P102A00
♦ Coolant level too low
P102B00
♦ Oil level too low
♦ Poor oil quality
P102C00
♦ Fuel line routing incorrect
♦ Fuel filter Blocked

P102D00
♦ Charge air cooler soiled
P102E00
♦ Timing incorrect
♦ Mixture formation error

Fault effects

♦ Consequential faults: Torque limitation due to excessively high temperatures
ⓘ Work through all other fault memory entries first

Diagnosis information DME control unit

Sensor 1 for NOx
P103200, P103300

INFORMATION
This fault can result from other faults relating to engine control (DME control unit). Please correct all existing fault memory entries in the DME control unit first.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Engine temperature**: at operating temperature
- Particle filter regeneration inactive
- Idle speed

Possible fault causes

- **Intake system** Leak / leaks
- Exhaust gas recirculation Leak / leaks
- **Injection valve** leaks
- **Evaluation unit/control unit, sensor 1 for NOx**

Diagnosis information DME control unit

Sensor 1 for NOx
P103200, P103300

INFORMATION
This fault can result from other faults relating to engine control (DME control unit). Please correct all existing fault memory entries in the DME control unit first.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Engine temperature**: at operating temperature
- Particle filter regeneration inactive
- Idle speed

Possible fault causes

- **Intake system** Leak / leaks
- Exhaust gas recirculation Leak / leaks
- **Injection valve** leaks
- **Evaluation unit/control unit, sensor 1 for NOx**

P106500

Diagnosis information DME control module

Fuel high-pressure rail /System pressure

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- No fault entered for Low-pressure fuel circuit
- Ignition on

or

- Engine running

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- Fuel high-pressure system pressure drop
- Metering unit at the **Fuel high-pressure pump** faulty
- **Fuel high-pressure pump** faulty
- **Fuel pressure regulating valve** faulty
- Fuel pressure sensor faulty

Fault effects

- Torque reduction or shut-off

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P123700

Diagnosis information DME control module

Injection valve (injector) Cylinder 1

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020100, P123700

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026300

♦ Adaptation value incorrect

Fault effects

P020100, **P123700**

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026300

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P123800

Diagnosis information DME control module

Injection valve (injector) Cylinder 2

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020200, P123800

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026600

♦ Adaptation value incorrect

Fault effects

P020200, P123800

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026600

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P123900

Diagnosis information DME control module

Injection valve (injector) Cylinder 3

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020300, P123900

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P026900

♦ Adaptation value incorrect

Fault effects

P020300, P123900

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P026900

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P124000

Diagnosis information DME control module

Injection valve (injector) Cylinder 4

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020400, P124000

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027200

♦ Adaptation value incorrect

Fault effects

P020400, P124000

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027200

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P124100

Diagnosis information DME control module

Injection valve (injector) Cylinder 5

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020500, P124100

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027500

♦ Adaptation value incorrect

Fault effects

P020500, P124100

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027500

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P124200

Diagnosis information DME control module

Injection valve (injector) Cylinder 6

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

P020600, P124200

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

P027800

♦ Adaptation value incorrect

Fault effects

P020600, P124200

♦ Rough-running engine,
♦ Limp-home
♦ Engine failure

P027800

♦ Fuel injection quantity incorrect

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

P125A00 Temperature of stagnant water during cold start implausible

Diagnostic conditions

● Cold start (off time > 9 hours)

Fault setting condition(s)

● Difference between temperature of coolant at engine outlet and temperature of cylinder head is less than 5 °C (9 °F)

Monitored component or system

♦ Coolant temperature system, performance capacity

Possible fault causes

♦ Head block valve including vacuum supply
⇒ Check vacuum hoses
⇒ Remove valve and check for smooth operation
⇒ Check function of vacuum unit
⇒ Valve should shut off when vacuum is applied

♦ Inflow check valves for block
⇒ Balls in the check valves should move freely and shut off in one flow direction

♦ Continuous bleeding
⇒ When the bleeder valve is upright, air should be able to pass through, not water - viewed from the bottom up

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P138800

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ **INFORMATION**
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnostic information - DME control unit

Cylinder 2 internal-pressure sender P13D100, P13D200

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Power supply (3 … 12 V fluctuating) faulty
- Ground supply faulty
- **Cylinder 2 internal pressure sender** faulty
- **DME control unit** faulty

Fault effects

Rough-running engine

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 Mohm**

Open circuit:
- Setpoint resistance **< 2 ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 Mohm**

Diagnostic information - DME control unit

Cylinder 2 internal-pressure sender P13D100, P13D200

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Power supply (3 … 12 V fluctuating) faulty
♦ Ground supply faulty
♦ **Cylinder 2 internal pressure sender** faulty
♦ **DME control unit** faulty

Fault effects

Rough-running engine

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 Mohm**

Open circuit:
♦ Setpoint resistance **< 2 ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 Mohm**

Diagnostic information - DME control unit

Cylinder 5 internal-pressure sender P13DA00, P13DB00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Power supply (3 … 12 V fluctuating) faulty
- ♦ Ground supply faulty
- ♦ **Cylinder 5 internal pressure sender** faulty
- ♦ **DME control unit** faulty

Fault effects

Rough-running engine

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 Mohm**

Open circuit:
♦ Setpoint resistance **< 2 ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 Mohm**

Diagnostic information - DME control unit

Cylinder 5 internal-pressure sender P13DA00, P13DB00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Power supply (3 … 12 V fluctuating) faulty
- ♦ Ground supply faulty
- ♦ **Cylinder 5 internal pressure sender** faulty
- ♦ **DME control unit** faulty

Fault effects

Rough-running engine

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 Mohm**

Open circuit:
♦ Setpoint resistance **< 2 ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 Mohm**

P13E600

Diagnosis information DME control module

Cylinder internal pressure sensor P13E600

Monitoring of all cylinder pressure sensors, global fault path

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ **Cylinder 2 internal pressure sensor** Faulty
- ♦ **Cylinder 5 internal pressure sensor** Faulty
- ♦ **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Exhaust recirculation valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040500, P040600
- Engine on or Control unit run-on (See ⓘ)

P046C00, P140000, P140100, P140200, P144000
- Control unit run-on (See ⓘ)

or
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Exhaust recirculation valve** faulty

Fault effects

- ♦ none Particle filter regeneration
- ♦ No Exhaust gas recirculation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P140100

Diagnosis information DME control module

Exhaust recirculation valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040500, P040600
- Engine on or Control unit run-on (See ⓘ)

P046C00, P140000, P140100, P140200, P144000
- Control unit run-on (See ⓘ)

or
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust recirculation valve** faulty

Fault effects

- none Particle filter regeneration
- No Exhaust gas recirculation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P140200

Diagnosis information DME control module

Exhaust recirculation valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040500, P040600
- Engine on or Control unit run-on (See ⓘ)

P046C00, P140000, P140100, P140200, P144000
- Control unit run-on (See ⓘ)

or
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust recirculation valve** faulty

Fault effects

- none Particle filter regeneration
- No Exhaust gas recirculation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P144000

Diagnosis information DME control module

Exhaust recirculation valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P040500, P040600
- Engine on or Control unit run-on (See ⓘ)

P046C00, P140000, P140100, P140200, P144000
- Control unit run-on (See ⓘ)

or
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust recirculation valve** faulty

Fault effects

- none Particle filter regeneration
- No Exhaust gas recirculation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P146D00

Diagnosis information DME control module

Feedback line Heater 1 for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P146F00

Diagnosis information DME control module

Feedback line Heater 2 for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P148A00

Diagnosis information DME control unit

Sensor for reducing agent tank filling level P203A, P203B, P148A

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15
- Reducing-agent tank temperature > 5 °C (41 °F)

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit
- **Sensor for reducing agent tank filling level** Faulty
- **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

P148B00 Output stage 1 for tank heater for reducing agent faulty

Diagnostic conditions

- Always when line/pump heating is switched off
- Also with Ignition on

Fault setting condition(s)

- Tank heater sensor current when heater circuit is not activated > 200 micro amps

Monitored component or system

♦ SCR - Tank heating system

Possible fault causes

♦ Output stage 1 for tank heater for reducing agent faulty

Fault effects

♦ Tank heater for reducing agent runs continuously (Unintentional heating)

Diagnosis information DME control module

P148C00 Output stage 2 for reducing-agent pump and line heating faulty

Diagnostic conditions

- Always when line/pump heating is switched off
- Also with Ignition on

Fault setting condition(s)

- Tank heater sensor current when heater circuit is not activated > 200 micro amps

Monitored component or system

♦ SCR - Line/pump heating system

Possible fault causes

♦ Output stage 2 for reducing-agent pump and line heating faulty

Fault effects

♦ Heater for reducing-agent pump and line runs continuously (Unintentional heating)

P150A00

Diagnosis information - DME control module

Fault Switch-off time

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- then Switch off ignition
- immediately afterward Ignition on > 10 Minute(s) , at:
  - **Instrument cluster** ready for operation

Possible fault causes

- The power supply of the DME control unit was interrupted during control unit run-on
- Incorrect software version **Control module** DME
- Incorrect software version **Gateway control module**
- Incorrect software version **Instrument cluster**
- Fault in area CAN drive or **CAN comfort**
- **Instrument cluster** failed or Faulty

Fault setting condition(s)

- The power supply of the DME control unit was interrupted during control unit run-on

or

- No or implausible time pulse from the gateway control unit within 60 seconds. , at:
  - Ignition on

INFORMATION

The DME control unit receives time information from the gateway control unit at regular intervals when the ignition is on. (approx. 4 Second(s))

P151D00

Diagnosis information - DME control module

Fault component protection

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Start-up (engine not yet at idle speed)

Possible fault causes

♦ Engine switch-off during start-up as a result of shifting out of selector lever position P/N too quickly

Diagnosis information - DME control module

Control module blocked

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle voltage > 11 V
- Ignition on

or

- Engine running

> 1 minute detected:
- Switch off ignition
- Switch on ignition after approx. 1 minute

Possible fault causes

- Power supply of the DME control unit was interrupted (See ⓘ)
- Immobilizer code incorrect from front-end electronics
- Control unit faulty

ⓘ INFORMATION

This fault can be entered if the power supply of the DME control unit is interrupted within the first 45 seconds after ignition off (discharge time of the R/C) and is then restored again immediately afterwards and the ignition is switched on.
- After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
- The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).

The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.
- The run-on time is 1 ... 60 minutes.

P158600

Diagnosis information DME control module

Unit support P158600, P158700 and P158800

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Short circuit between the lines
- **Unit support**

Fault setting condition(s)

- Current consumption > 3 A
- Voltage < 1.6 V
- Voltage < 2.5 V

Fault effects

No function **Unit support**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Resistance **Unit support Solenoid valve**:

♦ Nominal value 28 - 32 Ohm

♦ Specified resistance values, if not otherwise specified, are based on an ambient temperature of 20 °C (68 °F).

P158700

Diagnosis information DME control module

Unit support P158600, P158700 and P158800

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Short circuit between the lines
- **Unit support**

Fault setting condition(s)

- Current consumption > 3 A
- Voltage < 1.6 V
- Voltage < 2.5 V

Fault effects

No function **Unit support**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Resistance **Unit support Solenoid valve**:

♦ Nominal value 28 - 32 Ohm

♦ Specified resistance values, if not otherwise specified, are based on an ambient temperature of 20 °C (68 °F).

P158800

Diagnosis information DME control module

Unit support P158600, P158700 and P158800

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Short circuit between the lines
- **Unit support**

Fault setting condition(s)

- Current consumption > 3 A
- Voltage < 1.6 V
- Voltage < 2.5 V

Fault effects

No function **Unit support**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Resistance **Unit support Solenoid valve**:

♦ Nominal value 28 - 32 Ohm

♦ Specified resistance values, if not otherwise specified, are based on an ambient temperature of 20 °C (68 °F).

P159200

Diagnostic information - DME control unit

Charge-air tract

⚠ CAUTION
The maximum pressure for testing the charge-air tract must not exceed the value of 0.4 bar (5.8 psi).

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving under load

Possible fault causes

♦ Leak in the intake system
- Only Panamera up to MY E (2014):
  ♦ For more information, see Technical Information for main group 2:
2143 - Fault finding for dealing with customer complaint >Engine will not start or goes off again immediately< at outside temperatures below 0 °C (32 °F) and fault code P159200 entered (60/13)

Fault effects

♦ Boost pressure control off
♦ Reduced power
♦ No particulate filter regeneration

P159D00

Diagnosis information DME control module

Oil level sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Oil level sensor** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P15A400

Diagnosis information DME control module

Vehicle shutdown

INFORMATION
♦ No repairs necessary
♦ Vehicle owner must inform security service in order to release vehicle

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● CAN message STS (Tracking System) active

Possible fault causes

♦ Vehicle shutdown was activated

Fault effects

♦ Speed limited to 12 mph (20 km/h)

P160300

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ **INFORMATION**
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P160400

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ **INFORMATION**
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P160900

Diagnosis information - DME control module

Crash signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line Signal lead（Airbag triggering unit）

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P161200

Diagnosis information DME control module

Coding cruise control/ACC

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Vehicle data incorrect
  (See **PIWIS Tester II** ▶ Additional menu [F7] ▶ Maintenance of vehicle data)
- Vehicle equipment incorrect
- **Control module** incorrectly coded - The data record does not match the vehicle.
- **Steering wheel electronics control module** incorrectly coded

P161A00

Diagnosis information DME control module

Glow plug Cylinder 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 1** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 2

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 2** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P161C00

Diagnosis information DME control module

Glow plug Cylinder 3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 3** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 4

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 4** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Glow plug Cylinder 5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 5** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P161F00

Diagnosis information DME control module

Glow plug Cylinder 6

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Power supply** OK
- Engine cold
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Glow plug Cylinder 6** faulty
- Control unit for automatic glow time: faulty

Fault effects

- Failure of individual Glow plug
- Poor Engine can be started

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - DME control module

Fault entry in the specified control unit

ⓘ **NOTE**
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information DME control module

Engine DME control module Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

only P060500
- Control unit run-on (See ⓘ)

Possible fault causes

♦ **Engine DME control module Faulty**

Fault effects

♦ Rough-running engine
♦ no Engine running

♦ Starting problems
♦ Significant jerking
♦ none Particle filter regeneration
♦ Exhaust gas recirculation No function
♦ Reduced Engine output

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

P164700

Diagnosis information DME control module

Coding cruise control/ACC

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Vehicle data incorrect
  (See **PIWIS Tester II** ▶ Additional menu [F7] ▶ Maintenance of vehicle data)
- Vehicle equipment incorrect
- **Control module** incorrectly coded - The data record does not match the vehicle.
- **Steering wheel electronics control module** incorrectly coded

P164A00

Diagnosis information DME control module

Oil pressure switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P164A00
- Engine off for at least 60 seconds
- Ignition on
- **Oil temperature** > 0 °C (32 °F)

P164B00
- Engine running

> 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Engine oil pressure** too low
  (Oil level, Oil dilution, Soiling **Oil circuit**, **Oil circuit** Faulty)
- **Oil pressure switch** faulty

Fault effects

P164A00

- None

P164B00

- Rpm limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P164B00

Diagnosis information DME control module

Oil pressure switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P164A00
- Engine off for at least 60 seconds
- Ignition on
- **Oil temperature** > 0 °C (32 °F)

P164B00
- Engine running

> 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Engine oil pressure** too low
  (Oil level, Oil dilution, Soiling **Oil circuit**, **Oil circuit** Faulty)
- **Oil pressure switch** faulty

Fault effects

P164A00

- None

P164B00

- Rpm limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P164C00

Diagnosis information DME control module

Oil pressure switch low pressure

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P164C00
- Engine off for at least 60 seconds
- Ignition on
- **Oil temperature** > 0 °C (32 °F)

P164D00
- Engine running

> 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Engine oil pressure** too low
  (Oil level, Oil dilution, Soiling **Oil circuit**, **Oil circuit** Faulty)
- **Oil pressure switch** low pressure faulty

Fault effects

- None

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P164D00

Diagnosis information DME control module

Oil pressure switch low pressure

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P164C00
- Engine off for at least 60 seconds
- Ignition on
- **Oil temperature** > 0 °C (32 °F)

P164D00
- Engine running

> 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Engine oil pressure** too low
  (Oil level, Oil dilution, Soiling **Oil circuit**, **Oil circuit** Faulty)
- **Oil pressure switch** low pressure faulty

Fault effects

- None

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P164E00

Diagnosis information DME control module

Oil pressure control valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Engine oil pressure** too low
  (Oil level, Oil dilution, Soiling **Oil circuit**, **Oil circuit** Faulty)
- ♦ **Oil pressure control valve** faulty

Fault effects

P164E00

- ♦ Switch does not work; high oil pressure is always set.

P164F00

- ♦ Switch is permanently switched; low oil pressure is always set.

- ♦ Rpm limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P165F00

Diagnosis information DME control module

Oil pressure control valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Engine oil pressure** too low
  (Oil level, Oil dilution, Soiling **Oil circuit**, **Oil circuit** Faulty)
- ♦ **Oil pressure control valve** faulty

Fault effects

P164E00

- ♦ Switch does not work; high oil pressure is always set.

P164F00

- ♦ Switch is permanently switched; low oil pressure is always set.

- ♦ Rpm limitation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P167E00

Diagnosis information - DME control module

Start/Stop max. start time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Restart after Start/Stop

Possible fault causes

♦ Fault memory entry in the front-end electronics

Fault effects

♦ **Start/Stop function blocked**

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

P169800

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

P169A00

Diagnosis information DME control module

DME control unit loading mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Control unit run-on (See ⓘ)

Possible fault causes

♦ Loading mode active

Fault effects

♦ Torque reduction
♦ Rpm limitation
♦ Speed limitation

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information DME control module

Start inhibit switch (P/N signal)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P172300
- Engine start attempt

P172400
- Ignition on

P172900
- Transmission range D engaged
- Engine speed > 800 rpm
- Vehicle speed > 6 mph (10 km/h)

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Start inhibit switch** faulty

Fault effects

P172300
- Engine cannot be started

P172400
- </cf> automatic start possible

P172900
- </cf> automatic start possible
- Start/Stop function blocked

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Start inhibit switch (P/N signal)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P172300
- Engine start attempt

P172400
- Ignition on

P172900
- Transmission range D engaged
- Engine speed > 800 rpm
- Vehicle speed > 6 mph (10 km/h)

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Start inhibit switch** faulty

Fault effects

P172300
- Engine cannot be started

P172400
- </cf> automatic start possible

P172900
- </cf> automatic start possible
- Start/Stop function blocked

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P172900

Diagnosis information DME control module

Start inhibit switch (P/N signal)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P172300
- Engine start attempt

P172400
- Ignition on

P172900
- Transmission range D engaged
- Engine speed > 800 rpm
- Vehicle speed > 6 mph (10 km/h)

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Start inhibit switch** faulty

Fault effects

P172300
- Engine cannot be started

P172400
- </cf> automatic start possible

P172900
- </cf> automatic start possible
- Start/Stop function blocked

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

P191A00 Loss of crankshaft synchronisation

Diagnostic conditions

- Engine running
- Engine running at between 450 and 4,000 rpm when fault occurs
- Diagnostics runs continuously

Fault setting condition(s)

- Sporadic, rare, short-term faults are detected on the crankshaft
- Short-term faults on the crankshaft can cause perceptible jerking, or cause the engine to stall

Monitored component or system

♦ Crankshaft sensor

Fault finding notes

♦ Check the sensor for correct installation (distance from sensor to sender wheel, correct seating)
♦ Check sensor supply voltage (only when sensor is active); check sensor signal with the engine running
♦ Check wiring
♦ Check sender wheel

Function restrictions

♦ Jerking while driving, engine stalls

P192500

Diagnosis information DME control module

Relay for auxiliary coolant pump

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Relay for auxiliary coolant pump** faulty

Fault effects

P192500, P192700
♦ Water recirculation fails

P192600
♦ Water recirculation permanently active

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P192600

Diagnosis information DME control module

Relay for auxiliary coolant pump

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Relay for auxiliary coolant pump** faulty

Fault effects

P192500, P192700
♦ Water recirculation fails

P192600
♦ Water recirculation permanently active

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P192700

Diagnosis information DME control module

Relay for auxiliary coolant pump

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Relay for auxiliary coolant pump** faulty

Fault effects

P192500, P192700
♦ Water recirculation fails

P192600
♦ Water recirculation permanently active

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P194400

Diagnosis information DME control module

Radiator fan control module 1

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on
● Activate radiator fans for at least 6 minutes

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 1 faulty

Fault effects

♦ No or reduced fan output
♦ Air conditioning switch-off
♦ "Hot" lamp on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P194500

Diagnosis information DME control module

Radiator fan control module 1

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Activate radiator fans for at least 6 minutes

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 1 faulty

Fault effects

♦ No or reduced fan output
♦ Air conditioning switch-off
♦ "Hot" lamp on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P194600

Diagnosis information DME control module

Radiator fan control module 1

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on
● Activate radiator fans for at least 6 minutes

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 1 faulty

Fault effects

♦ No or reduced fan output
♦ Air conditioning switch-off
♦ "Hot" lamp on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P194700

Diagnosis information DME control module

Radiator fan control module 2

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on
● Activate radiator fans for at least 6 minutes

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 2 faulty

Fault effects

♦ No or reduced fan output
♦ Air conditioning switch-off
♦ "Hot" lamp on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P194800

Diagnosis information DME control module

Radiator fan control module 2

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on
● Activate radiator fans for at least 6 minutes

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 2 faulty

Fault effects

♦ No or reduced fan output
♦ Air conditioning switch-off
♦ "Hot" lamp on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P194900

Diagnosis information DME control module

Radiator fan control module 2

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Activate radiator fans for at least 6 minutes

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Radiator fan control module** 2 faulty

Fault effects

♦ No or reduced fan output
♦ Air conditioning switch-off
♦ "Hot" lamp on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P194E00

Diagnostic information - DME control unit

Engine compartment temperature sensor - short circuit

Diagnostic conditions

- Ignition on

Monitored component or system

♦ Engine compartment temperature sensor

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line

Functional restrictions

♦ The radiator shutter is completely opened if the sensor is faulty.

P194F00

Diagnostic information - DME control unit

Engine compartment temperature sensor - short circuit

Diagnostic conditions

- Ignition on

Monitored component or system

♦ Engine compartment temperature sensor

Fault finding notes

♦ Short circuit to B+/ground or open circuit in the line

Functional restrictions

♦ The radiator shutter is completely opened if the sensor is faulty.

P195000

Diagnosis information DME control module

Radiator fans 1

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

- **DO NOT** allow hair or clothing close to the rotating range of the fan.
- **DO NOT** reach into the rotating fan.
- **DO NOT** place tools or other items in the rotating range of the fan.
- Perform work on the fan only with the ignition switched off.
- Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Activate radiator fans for at least 6 minutes

Possible fault causes

- Radiator fans 1 stiff
- Radiator fans 1 blocked
- **Radiator fan control module** 1 faulty

Fault effects

- No or reduced fan output
- Air conditioning switch-off
- "Hot" lamp on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P195100

Diagnosis information DME control module

Radiator fans 2

⚠WARNING
Open-running fan blades!
Danger of limbs being cut off!
Risk of serious injuries due to foreign bodies being thrown out!

♦ **DO NOT** allow hair or clothing close to the rotating range of the fan.
♦ **DO NOT** reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent accidental switching on by other persons.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Activate radiator fans for at least 6 minutes

Possible fault causes

♦ Radiator fans 2 stiff
♦ Radiator fans 2 blocked
♦ **Radiator fan control module** 2 faulty

Fault effects

♦ No or reduced fan output
♦ Air conditioning switch-off
♦ "Hot" lamp on

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P199C00

Diagnosis information DME control module

Thermostat

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Diagnosis runs continuously

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Thermostat** faulty

Fault effects

- ♦ Final stage deactivated
- ♦ **Thermostat failure**
- ♦ **Insufficient Engine cooling**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P199D00

Diagnosis information DME control module

Thermostat

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Diagnosis runs continuously

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Thermostat** faulty

Fault effects

- ♦ Final stage deactivated
- ♦ **Thermostat failure**
- ♦ **Insufficient Engine cooling**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Thermostat

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Diagnosis runs continuously

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Thermostat** faulty

Fault effects

- Final stage deactivated
- **Thermostat failure**
- **Insufficient Engine cooling**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P199F00

Diagnosis information DME control module

Thermostat

INFORMATION
The thermostat and coolant pump are in a shared housing outside of the engine.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **DME control module** - driver overloaded
- **DME control module** Faulty

INFORMATION

► Erase the fault memory
If the fault occurs again: Control unit replacement

P200200

Diagnostic information - DME control unit

Bank 1 particulate filter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine at operating temperature
- Driving at low load
- No particulate filter regeneration

Possible fault causes

♦ Bank 1 **particulate filter** overloaded
♦ Exclusively short-distance driving (regeneration is not possible during driving, because the required exhaust gas temperature is not reached, e.g. due to stop-and-go traffic.)
♦ Differential-pressure hoses leaking/blocked/iced up/kinked/pinched (In case of iced-up hoses, for example, the fault would no longer be active and the load in the extended fault memory entry would be significantly higher than in the state in which the hoses are no longer iced up.)
♦ Differential-pressure sensor faulty
♦ Exhaust gas recirculation valve faulty
♦ Mass air flow sensor faulty
♦ Leak in charge-air tract
♦ Bank 1 exhaust gas temperature sensors ahead of and behind particulate filter faulty

Fault effects

♦ Torque limitation
♦ No exhaust gas recirculation
♦ Particulate filter regeneration no longer possible during driving. Depends on loading (see actual-value group K: comparison of K100 and K105 with limits K112 and K113. Observe F1 Help texts for this purpose.)

P200400

Diagnosis information DME control module

Engine intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P200800, P200900, P201000
- Load reduction diagnosis not active
- Ignition on

or
- Control unit run-on (See ⓘ)

P200400, P200600
- Engine running

or
- Control unit run-on (See ⓘ)

P102800
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Linkage jammed
- ♦ **Engine Intake manifold flap** faulty

Fault effects

- ♦ Limp-home possible
- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P200600

Diagnosis information DME control module

Engine intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P200800, P200900, P201000
- Load reduction diagnosis not active
- Ignition on

or
- Control unit run-on (See ⓘ)

P200400, P200600
- Engine running

or
- Control unit run-on (See ⓘ)

P102800
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Linkage jammed
- ♦ **Engine Intake manifold flap** faulty

Fault effects

- ♦ Limp-home possible
- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P200800

Diagnosis information DME control module

Engine intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P200800, P200900, P201000
- Load reduction diagnosis not active
- Ignition on

or
- Control unit run-on (See ⓘ)

P200400, P200600
- Engine running

or
- Control unit run-on (See ⓘ)

P102800
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Linkage jammed
- ♦ **Engine Intake manifold flap** faulty

Fault effects

- ♦ Limp-home possible
- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P200900

Diagnosis information DME control module

Engine intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P200800, P200900, P201000
- Load reduction diagnosis not active
- Ignition on

or
- Control unit run-on (See ⓘ)

P200400, P200600
- Engine running

or
- Control unit run-on (See ⓘ)

P102800
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Linkage jammed
- ♦ **Engine Intake manifold flap** faulty

Fault effects

- ♦ Limp-home possible
- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P200A00

Diagnosis information DME control module

Potentiometer intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Potentiometer Intake manifold flap** faulty

P201500
- ♦ Push rod faulty
- ♦ Swirl flap faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
- ♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P201000

Diagnosis information DME control module

Engine intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P200800, P200900, P201000
- Load reduction diagnosis not active
- Ignition on

or
- Control unit run-on (See ⓘ)

P200400, P200600
- Engine running

or
- Control unit run-on (See ⓘ)

P102800
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Linkage jammed
- ♦ **Engine Intake manifold flap** faulty

Fault effects

- ♦ Limp-home possible
- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P201500

Diagnosis information DME control module

Potentiometer intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Potentiometer Intake manifold flap** faulty

P201500
- ♦ Push rod faulty
- ♦ Swirl flap faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
- ♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P201600

Diagnosis information DME control module

Potentiometer intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Potentiometer Intake manifold flap** faulty

P201500
- ♦ Push rod faulty
- ♦ Swirl flap faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
- ♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P201700

Diagnosis information DME control module

Potentiometer intake manifold flap

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Potentiometer Intake manifold flap** faulty

P201500
- ♦ Push rod faulty
- ♦ Swirl flap faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
- ♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information DME control module
P20B900, P20BB00, P20BC00, P202A00, P202B00, P202C00

Heater 1 for reducing agent P20B900, P20BB00, P20BC00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B900, P20BB00
- Terminal 15
- Final stage **not** activated

P20BC00
- Terminal 15
- Final stage activated

Possible fault causes

- Line between DME and external heater driver (Electrical fault)
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Tank heater for reducing agent P202A00, P202B00, P202C00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P202A00
- Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P202B00, P202C00
- BAUT_tankheiz_reduktionsmittel Active > 1 Minute(s)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

♦ Line between DME and external heater driver (Electrical fault)
♦ Line between external heater driver and heating element (Electrical fault)
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20B900, P20BB00, P20BC00, P202A00, P202B00, P202C00

Heater 1 for reducing agent P20B900, P20BB00, P20BC00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B900, P20BB00
- Terminal 15
- Final stage **not** activated

P20BC00
- Terminal 15
- Final stage activated

Possible fault causes

- Line between DME and external heater driver (Electrical fault)
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Tank heater for reducing agent P202A00, P202B00, P202C00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P202A00
- Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P202B00, P202C00
- BAUT_tankheiz_reduktionsmittel Active > 1 Minute(s)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

♦ Line between DME and external heater driver (Electrical fault)
♦ Line between external heater driver and heating element (Electrical fault)
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20B900, P20BB00, P20BC00, P202A00, P202B00, P202C00

Heater 1 for reducing agent P20B900, P20BB00, P20BC00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B900, P20BB00
- Terminal 15
- Final stage **not** activated

P20BC00
- Terminal 15
- Final stage activated

Possible fault causes

- Line between DME and external heater driver (Electrical fault)
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Tank heater for reducing agent P202A00, P202B00, P202C00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P202A00
- Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P202B00, P202C00
- BAUT_tankheiz_reduktionsmittel Active > 1 Minute(s)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

♦ Line between DME and external heater driver (Electrical fault)
♦ Line between external heater driver and heating element (Electrical fault)
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P203100

Diagnosis information DME control module

Exhaust temperature sensor upstream of catalytic converter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P203100, P203200
- Ignition on

P208400
- Cold start after > 9 hours

Then
- Engine running

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust temperature sensor upstream of catalytic converter** faulty

Fault effects

- none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P203200

Diagnosis information DME control module

Exhaust temperature sensor upstream of catalytic converter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P203100, P203200
- Ignition on

P208400
- Cold start after > 9 hours

Then
- Engine running

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust temperature sensor upstream of catalytic converter** faulty

Fault effects

- none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P203A00

Diagnosis information DME control unit

Sensor for reducing agent tank filling level P203A, P203B, P148A

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15
- Reducing-agent tank temperature > 5 °C (41 °F)

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit
- **Sensor for reducing agent tank filling level** Faulty
- **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P203B00

Diagnosis information DME control unit

Sensor for reducing agent tank filling level P203A, P203B, P148A

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15
- Reducing-agent tank temperature > 5 °C (41 °F)

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit
- **Sensor for reducing agent tank filling level** Faulty
- **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module P204700, P204800, P204900, P208E00

Reducing agent injector P204700, P204800, P204900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- Exhaust gas temperature to **Particle filter** > 100°C (212 °F)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Short circuit between the lines
- ♦ Reducing agent injector Faulty
- ♦ **DME control module** Faulty

Fault setting condition(s)

- Open circuit (Voltage > 4.5 V)
- Short circuit to ground (Voltage < 2.8V)
- Short circuit to B+ (Current consumption > 2.2 A or < 200 mA)

Fault effects

No metering of the reducing agent

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Reducing agent injector P208E00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- **Engine temperature**: at operating temperature
- No fault entered for **System for reducing agent injection**

Possible fault causes

- Reducing agent injector Faulty

Fault setting condition(s)

- Reducing agent injector stuck Closed

Fault effects

No metering of the reducing agent

Diagnosis information DME control module P204700, P204800, P204900, P208E00

Reducing agent injector P204700, P204800, P204900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- Exhaust gas temperature to **Particle filter** > 100°C (212 °F)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Short circuit between the lines
- ♦ Reducing agent injector Faulty
- ♦ **DME control module** Faulty

Fault setting condition(s)

- Open circuit (Voltage > 4.5 V)
- Short circuit to ground (Voltage < 2.8V)
- Short circuit to B+ (Current consumption > 2.2 A or < 200 mA)

Fault effects

No metering of the reducing agent

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Reducing agent injector P208E00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- **Engine temperature**: at operating temperature
- No fault entered for **System for reducing agent injection**

Possible fault causes

- Reducing agent injector Faulty

Fault setting condition(s)

- Reducing agent injector stuck Closed

Fault effects

No metering of the reducing agent

Diagnosis information DME control module P204700, P204800, P204900, P208E00

Reducing agent injector P204700, P204800, P204900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- Exhaust gas temperature to **Particle filter** > 100°C (212 °F)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Short circuit between the lines
- ♦ Reducing agent injector Faulty
- ♦ **DME control module** Faulty

Fault setting condition(s)

- Open circuit (Voltage > 4.5 V)
- Short circuit to ground (Voltage < 2.8V)
- Short circuit to B+ (Current consumption > 2.2 A or < 200 mA)

Fault effects

No metering of the reducing agent

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Reducing agent injector P208E00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- **Engine temperature**: at operating temperature
- No fault entered for **System for reducing agent injection**

Possible fault causes

- Reducing agent injector Faulty

Fault setting condition(s)

- Reducing agent injector stuck Closed

Fault effects

No metering of the reducing agent

P204A00

Diagnosis information DME control unit

Pressure sensor for reducing agent P204A, P204B, P204D

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P204A, P204D
- Terminal 15

P204B
- Reducing agent thawing process complete and no pressure generated yet
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit
- **Pressure sensor for reducing agent** Faulty
- **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P204B00

Diagnosis information DME control unit

Pressure sensor for reducing agent P204A, P204B, P204D

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P204A, P204D
- Terminal 15

P204B
- Reducing agent thawing process complete and no pressure generated yet
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit
- **Pressure sensor for reducing agent** Faulty
- **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P204D00

Diagnosis information DME control unit

Pressure sensor for reducing agent P204A, P204B, P204D

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P204A, P204D
- Terminal 15

P204B
- Reducing agent thawing process complete and no pressure generated yet
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit
- **Pressure sensor for reducing agent** Faulty
- **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P205A00

Diagnosis information DME control unit

Sensor for reducing agent tank temperature P205A, P205B, P205C

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P205A, P205C
- Terminal 15

P205B
- Switch-off time > 9 hours (Cold start)

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Sensor for reducing agent tank temperature** Faulty
- ♦ **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P205B00

Diagnosis information DME control unit

Sensor for reducing agent tank temperature P205A, P205B, P205C

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P205A, P205C
- Terminal 15

P205B
- Switch-off time > 9 hours (Cold start)

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Sensor for reducing agent tank temperature** Faulty
- ♦ **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P205C00

Diagnosis information DME control unit

Sensor for reducing agent tank temperature P205A, P205B, P205C

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P205A, P205C
- Terminal 15

P205B
- Switch-off time > 9 hours (Cold start)

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Sensor for reducing agent tank temperature** Faulty
- ♦ **DME control module** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P207F00

Diagnosis information DME control module

Reducing agent P207F00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Engine temperature**: at operating temperature
- **System for reducing agent injection**: ready for operation
- Temperature of the DeNOx catalytic converter 230 ... 349 °C (°F)
- **Sensor 1 for NOx** - No relevant fault in fault memory
- **Sensor 2 for NOx** - No relevant fault in fault memory
- particle filter not overloaded

Possible fault causes

♦ Fault in area **System for reducing agent injection**
► Remedy existing faults
♦ Reducing agent insufficient
♦ **Exhaust temperature sensor behind particle filter** Faulty
♦ **Intake system** Leak / leaks
♦ **Exhaust system** Leak / leaks
♦ Reducing agent injector: Spray pattern , Metered quantity incorrect
♦ **System pressure**
♦ DeNOx catalytic converter : Mechanical fault

Diagnosis information DME control module

Exhaust temperature sensor ahead of turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Diagnostic conditions
- Ignition on
- Engine running

or

- Cold start after > 9 hours

then
- Engine running

- No temperature increase due to active auxiliary heater, block heater or intense solar irradiation

Fault setting condition(s)

- Average temperature difference over a given time between sensor and model value outside of permitted tolerance threshold

Monitored component or system

♦ **Exhaust temperature sensor** ahead of turbocharger

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Exhaust temperature sensor upstream of catalytic converter** faulty

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P208400

Diagnosis information DME control module

Exhaust temperature sensor upstream of catalytic converter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P203100, P203200
- Ignition on

P208400
- Cold start after > 9 hours

Then
- Engine running

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust temperature sensor upstream of catalytic converter** faulty

Fault effects

- none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control unit

Metering pump for reducing agent
P208A, P208C, P208D

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Metering pump for reducing agent**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P208B00

Diagnosis information DME control module

Metering pump for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

, warm-up cycle not active

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Metering pump for reducing agent** mechanical faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control unit

Metering pump for reducing agent
P208A, P208C, P208D

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Metering pump for reducing agent**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control unit

Metering pump for reducing agent
P208A, P208C, P208D

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Metering pump for reducing agent**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module P204700, P204800, P204900, P208E00

Reducing agent injector P204700, P204800, P204900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- Exhaust gas temperature to **Particle filter** > 100°C (212 °F)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Short circuit between the lines
- ♦ Reducing agent injector Faulty
- ♦ **DME control module** Faulty

Fault setting condition(s)

- Open circuit (Voltage > 4.5 V)
- Short circuit to ground (Voltage < 2.8V)
- Short circuit to B+ (Current consumption > 2.2 A or < 200 mA)

Fault effects

No metering of the reducing agent

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Reducing agent injector P208E00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- **Engine temperature**: at operating temperature
- No fault entered for **System for reducing agent injection**

Possible fault causes

- Reducing agent injector Faulty

Fault setting condition(s)

- Reducing agent injector stuck Closed

Fault effects

No metering of the reducing agent

P20A000

Diagnosis information DME control unit P20A0, P20A2, P20A3, P20A5

Purge valve for reducing agent

P20A0, P20A2, P20A3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Purge valve for reducing agent** Faulty
- ♦ **DME control module** Faulty

P20A5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine run-on, if pressure was built up in the reducing agent system beforehand

Possible fault causes

- ♦ Return line Blocked

- ♦ **Purge valve for reducing agent** stuck Closed

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P20A200

Diagnosis information DME control unit P20A0, P20A2, P20A3, P20A5

Purge valve for reducing agent

P20A0, P20A2, P20A3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Purge valve for reducing agent** Faulty
- ♦ **DME control module** Faulty

P20A5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine run-on, if pressure was built up in the reducing agent system beforehand

Possible fault causes

- ♦ Return line Blocked

- ♦ **Purge valve for reducing agent** stuck Closed

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P20A300

Diagnosis information DME control unit P20A0, P20A2, P20A3, P20A5

Purge valve for reducing agent

P20A0, P20A2, P20A3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Purge valve for reducing agent** Faulty
- ♦ **DME control module** Faulty

P20A5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine run-on, if pressure was built up in the reducing agent system beforehand

Possible fault causes

- ♦ Return line Blocked

- ♦ **Purge valve for reducing agent** stuck Closed

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P20A500

Diagnosis information DME control unit P20A0, P20A2, P20A3, P20A5

Purge valve for reducing agent

P20A0, P20A2, P20A3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ **Purge valve for reducing agent** Faulty
- ♦ **DME control module** Faulty

P20A5

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine run-on, if pressure was built up in the reducing agent system beforehand

Possible fault causes

- ♦ Return line Blocked

- ♦ **Purge valve for reducing agent** stuck Closed

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20B500, P20B700, P20B800

External heater driver for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B500
● Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P20B700, P20B800
● once per heating cycle

Possible fault causes

♦ Line between DME and external heater driver （Electrical fault）
♦ Line between external heater driver and heating element （Electrical fault）
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20B500, P20B700, P20B800

External heater driver for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B500
● Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P20B700, P20B800
● once per heating cycle

Possible fault causes

♦ Line between DME and external heater driver （Electrical fault）
♦ Line between external heater driver and heating element （Electrical fault）
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20B500, P20B700, P20B800

External heater driver for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B500
● Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P20B700, P20B800
● once per heating cycle

Possible fault causes

♦ Line between DME and external heater driver （Electrical fault）
♦ Line between external heater driver and heating element （Electrical fault）
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20B900, P20BB00, P20BC00, P202A00, P202B00, P202C00

Heater 1 for reducing agent P20B900, P20BB00, P20BC00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B900, P20BB00
- Terminal 15
- Final stage **not** activated

P20BC00
- Terminal 15
- Final stage activated

Possible fault causes

- Line between DME and external heater driver (Electrical fault)
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Tank heater for reducing agent P202A00, P202B00, P202C00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P202A00
- Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P202B00, P202C00
- BAUT_tankheiz_reduktionsmittel Active > 1 Minute(s)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

♦ Line between DME and external heater driver (Electrical fault)
♦ Line between external heater driver and heating element (Electrical fault)
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20B900, P20BB00, P20BC00, P202A00, P202B00, P202C00

Heater 1 for reducing agent P20B900, P20BB00, P20BC00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B900, P20BB00
- Terminal 15
- Final stage **not** activated

P20BC00
- Terminal 15
- Final stage activated

Possible fault causes

- Line between DME and external heater driver (Electrical fault)
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Tank heater for reducing agent P202A00, P202B00, P202C00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P202A00
- Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P202B00, P202C00
- BAUT_tankheiz_reduktionsmittel Active > 1 Minute(s)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

♦ Line between DME and external heater driver (Electrical fault)
♦ Line between external heater driver and heating element (Electrical fault)
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20B900, P20BB00, P20BC00, P202A00, P202B00, P202C00

Heater 1 for reducing agent P20B900, P20BB00, P20BC00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20B900, P20BB00
- Terminal 15
- Final stage **not** activated

P20BC00
- Terminal 15
- Final stage activated

Possible fault causes

- Line between DME and external heater driver (Electrical fault)
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Tank heater for reducing agent P202A00, P202B00, P202C00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P202A00
- Power peak detected when the tank heater is switched on. This generally takes place several seconds after the tank heater for the reducing agent is switched on.

P202B00, P202C00
- BAUT_tankheiz_reduktionsmittel Active > 1 Minute(s)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

♦ Line between DME and external heater driver (Electrical fault)
♦ Line between external heater driver and heating element (Electrical fault)
♦ **External heater driver for reducing agent** Faulty
♦ Heating element Faulty
♦ **DME control module** Faulty

Fault effects

♦ No heating

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20BD00, P20BF00, P20C000

Heater 2 for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20BD00, P20BF00
- Terminal 15
- Final stage **not** activated

P20C000
- Terminal 15
- Final stage activated

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20BD00, P20BF00, P20C000

Heater 2 for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20BD00, P20BF00
- Terminal 15
- Final stage **not** activated

P20C000
- Terminal 15
- Final stage activated

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module
P20BD00, P20BF00, P20C000

Heater 2 for reducing agent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P20BD00, P20BF00
- Terminal 15
- Final stage **not** activated

P20C000
- Terminal 15
- Final stage activated

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- **External heater driver for reducing agent** Faulty
- **DME control module** Faulty

Fault effects

- No heating
- Heater continuously activated

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P20E800

Diagnosis information DME control module

System for reducing agent injection P20E800, P20E900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Reducing agent system thawing process completed
- Pressure build-up in system successful
- **System for reducing agent injection**: at operating temperature
- No fault entered for: **System for reducing agent injection**

Possible fault causes

P20E800
♦ **Tank for reducing agent** empty (**Sensor for reducing agent tank filling level** stuck)
♦ **Metering line for reducing agent**: Leak
♦ Reducing agent injector: stuck open
♦ **Metering pump for reducing agent** Faulty
♦ **Purge valve for reducing agent** Faulty

P20E900
♦ **Metering line for reducing agent**: Return line Blocked

Fault effects

♦ **System for reducing agent injection:** not ready for operation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

System for reducing agent injection P20E800, P20E900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Reducing agent system thawing process completed
- Pressure build-up in system successful
- **System for reducing agent injection**: at operating temperature
- No fault entered for: **System for reducing agent injection**

Possible fault causes

P20E800
♦ **Tank for reducing agent** empty (**Sensor for reducing agent tank filling level** stuck)
♦ **Metering line for reducing agent**: Leak
♦ Reducing agent injector: stuck open
♦ **Metering pump for reducing agent** Faulty
♦ **Purge valve for reducing agent** Faulty

P20E900
♦ **Metering line for reducing agent**: Return line Blocked

Fault effects

♦ **System for reducing agent injection:** not ready for operation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

DeNOx catalytic converter P20EE00

INFORMATION
This fault can result from other faults in the system for reducing agent injection. Please remedy all existing fault memory entries relating to the system for reducing agent injection first.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Engine temperature**: at operating temperature
- **System for reducing agent injection**: ready for operation
- Temperature of the DeNOx catalytic converter 230 ... 349 °C (°F)
- **Sensor 1 for NOx** - No relevant fault in fault memory
- **Sensor 2 for NOx** - No relevant fault in fault memory
- particle filter not overloaded

Possible fault causes

- Reducing agent insufficient
- **Exhaust temperature sensor behind particle filter** Faulty
- **Intake system** Leak / leaks
- **Exhaust system** Leak / leaks
- Reducing agent injector: Spray pattern , Metered quantity incorrect
- **System pressure**
- DeNOx catalytic converter
- **Sensor 1 for NOx** or **Sensor 2 for NOx** Faulty

Diagnosis information DME control module

System for reducing agent injection P20F400, P20F500

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Engine temperature**: at operating temperature
- Temperature of the DeNOx catalytic converter > 220 °C (°F)
- **Vehicle speed** > 50 **km/h** (constant)

Possible fault causes

P20F400

♦ Fault in area **System for reducing agent injection**
► Remedy existing faults
♦ **Exhaust temperature sensor behind particle filter** Faulty
♦ Reducing agent injector: Spray pattern , Metered quantity incorrect
♦ **System pressure**
♦ DeNOx catalytic converter : poisoned (hydrocarbon inclusions)
♦ DeNOx catalytic converter : Mechanical fault

P20F500

♦ Fault in area **System for reducing agent injection**
► Remedy existing faults
♦ **Exhaust temperature sensor behind particle filter** Faulty
♦ Reducing agent injector: Spray pattern , Metered quantity incorrect
♦ **System pressure**

Diagnosis information DME control module

System for reducing agent injection P20F400, P20F500

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Engine temperature**: at operating temperature
- Temperature of the DeNOx catalytic converter > 220 °C (°F)
- **Vehicle speed** > 50 **km/h** (constant)

Possible fault causes

P20F400

♦ Fault in area **System for reducing agent injection**
► Remedy existing faults
♦ **Exhaust temperature sensor behind particle filter** Faulty
♦ Reducing agent injector: Spray pattern , Metered quantity incorrect
♦ **System pressure**
♦ DeNOx catalytic converter : poisoned (hydrocarbon inclusions)
♦ DeNOx catalytic converter : Mechanical fault

P20F500

♦ Fault in area **System for reducing agent injection**
► Remedy existing faults
♦ **Exhaust temperature sensor behind particle filter** Faulty
♦ Reducing agent injector: Spray pattern , Metered quantity incorrect
♦ **System pressure**

Diagnosis information DME control module

P20FE00 Reducing-agent metering unit malfunction

Diagnostic conditions

- Reducing-agent temperature = 250...350 °C (482...662 °F)
- Diagnostics runs several times per driving cycle

Fault setting condition(s)

- The speed signal of the reducing-agent metering pump is used to assess whether a deviation occurs between the requested setpoint quantity and the actual quantity

Monitored component or system

♦ Metering valve

Fault finding notes

♦ Remove metering valve
♦ Check spray head and metering valve receptacle for deposits
♦ Deposits found? Yes: Take note of deposits and remove them
♦ No: Continue to measure metering quantity
♦ Quantity OK? Yes: Install metering valve and reset adaptation factor
♦ No: Replace metering valve

Function restrictions

♦ Less efficient NOx reduction

P210000

Diagnosis information DME control module

Throttle adjusting unit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

or

- Control unit run-on (See ⓘ)

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Throttle adjusting unit** Faulty

Fault effects

- none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P210100

Diagnosis information DME control module

Throttle adjusting unit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

or

- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Throttle adjusting unit** Faulty

Fault effects

- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P210200

Diagnosis information DME control module

Throttle adjusting unit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

or

- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Throttle adjusting unit** Faulty

Fault effects

- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P210300

Diagnosis information DME control module

Throttle adjusting unit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

or

- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Throttle adjusting unit** Faulty

Fault effects

- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P211100

Diagnosis information DME control module

Throttle adjusting unit stuck

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ **Throttle adjusting unit** soiled
- ♦ **Throttle adjusting unit** frozen
- ♦ **Throttle adjusting unit** Faulty

Fault effects

- ♦ Limp-home

ⓘ **INFORMATION**
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P211200

Diagnosis information DME control module

Throttle adjusting unit stuck

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

or
- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ **Throttle adjusting unit** soiled
- ♦ **Throttle adjusting unit** frozen
- ♦ **Throttle adjusting unit** Faulty

Fault effects

- ♦ Limp-home

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P212200

Diagnosis information DME control module

Pedal sensor 1

INFORMATION
Pedal sensor 1 and Pedal sensor 2 are combined in one component and are integrated in the accelerator pedal module.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- 5-volt power supply for signal line OK

P213800
- Control unit run-on (See)

P212200, P212300
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Pedal sensor** 1 faulty

Fault effects

- **Engine speed > 3,000 rpm, torque significantly reduced**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P212300

Diagnosis information DME control module

Pedal sensor 1

INFORMATION
Pedal sensor 1 and Pedal sensor 2 are combined in one component and are integrated in the accelerator pedal module.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- 5-volt power supply for signal line OK

P213800
- Control unit run-on (See)

P212200, P212300
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Pedal sensor** 1 faulty

Fault effects

- **Engine speed > 3,000 rpm, torque significantly reduced**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P212700

Diagnosis information DME control module

Pedal sensor 2

INFORMATION
Pedal sensor 1 and Pedal sensor 2 are combined in one component and are integrated in the accelerator pedal module.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- 5-volt power supply for signal line OK
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Pedal sensor** 2 faulty

Fault effects

- **Engine speed > 3,000 rpm, torque significantly reduced**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P212800

Diagnosis information DME control module

Pedal sensor 2

INFORMATION
Pedal sensor 1 and Pedal sensor 2 are combined in one component and are integrated in the accelerator pedal module.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- 5-volt power supply for signal line OK
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Pedal sensor** 2 faulty

Fault effects

- **Engine speed > 3,000 rpm, torque significantly reduced**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P213800

Diagnosis information DME control module

Pedal sensor 1

INFORMATION
Pedal sensor 1 and Pedal sensor 2 are combined in one component and are integrated in the accelerator pedal module.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- 5-volt power supply for signal line OK

P213800
- Control unit run-on (See)

P212200, P212300
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Pedal sensor** 1 faulty

Fault effects

- **Engine speed > 3,000 rpm, torque significantly reduced**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P214600

Diagnosis information DME control module

Injection valve (injector) - bank 1 and/or 2

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

Fault effects

♦ The engine is switched off

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P214900

Diagnosis information DME control module

Injection valve (injector) - bank 1 and/or 2

⚠WARNING
High voltage
Death or severe injuries due to high voltage or high current!

♦ Perform work only with the ignition switched off

INFORMATION
When a fuel injector is replaced, the adaptation value for the new injector must be written to the engine control unit .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Engine running

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Injection valve (injector)** faulty

Fault effects

♦ The engine is switched off

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P218100

Diagnosis information DME control module

Cooling system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- rpm 1,100... 3,500 1/min
- Injection quantity <= 50 mg/stroke
- at operating temperature

Possible fault causes

- Fault in area **Thermostat**
- Fault in area **Coolant pump**
- Mechanical fault **Thermostat** (blocked)
- Mechanical fault **Coolant pump** (blocked)

P218300

Diagnosis information DME control module

Coolant temperature sensor, Radiator output

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P218400, P218500
● Ignition on

P218300
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Coolant temperature sensor, Radiator output** faulty

Fault effects

P218400, P218500

♦ Radiator fan emergency operation, Ignition on (full activation)

P218300

none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P218400

Diagnosis information DME control module

Coolant temperature sensor, Radiator output

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P218400, P218500
● Ignition on

P218300
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Coolant temperature sensor, Radiator output** faulty

Fault effects

P218400, P218500

♦ Radiator fan emergency operation, Ignition on (full activation)

P218300

none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P218500

Diagnosis information DME control module

Coolant temperature sensor, Radiator output

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P218400, P218500
● Ignition on

P218300
● Cold start after > 9 hours
● Test drive ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Coolant temperature sensor, Radiator output** faulty

Fault effects

P218400, P218500

♦ Radiator fan emergency operation, Ignition on (full activation)

P218300

none

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P219500

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- no fault entry
- Test drive with overrun and partial-load operation
- Test drive with full throttle point

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P219600

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- no fault entry
- Test drive with overrun and partial-load operation
- Test drive with full throttle point

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control unit

Sensor 1 for NOx
P2200, P2201, P2202, P2203, P220A

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P2200
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P2201
- Transition from load to overrun mode followed by long overrun phase

P2202, P2203, P220A
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 1 for NOx**
♦ **Evaluation unit/control unit, sensor 1 for NOx**

Diagnosis information DME control unit

Sensor 1 for NOx
P2200, P2201, P2202, P2203, P220A

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P2200
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P2201
- Transition from load to overrun mode followed by long overrun phase

P2202, P2203, P220A
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 1 for NOx**
♦ **Evaluation unit/control unit, sensor 1 for NOx**

Diagnosis information DME control unit

Sensor 1 for NOx
P2200, P2201, P2202, P2203, P220A

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P2200
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P2201
- Transition from load to overrun mode followed by long overrun phase

P2202, P2203, P220A
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 1 for NOx**
♦ **Evaluation unit/control unit, sensor 1 for NOx**

Diagnosis information DME control unit

Sensor 1 for NOx
P2200, P2201, P2202, P2203, P220A

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P2200
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P2201
- Transition from load to overrun mode followed by long overrun phase

P2202, P2203, P220A
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 1 for NOx**
♦ **Evaluation unit/control unit, sensor 1 for NOx**

Diagnosis information DME control unit

Sensor 1 for NOx Heating
P220900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210 ... 1,112 °F)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- Lines/connections or **Sensor 1 for NOx**
- **Evaluation unit/control unit, sensor 1 for NOx**

Diagnosis information DME control unit

Sensor 1 for NOx
P2200, P2201, P2202, P2203, P220A

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P2200
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P2201
- Transition from load to overrun mode followed by long overrun phase

P2202, P2203, P220A
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 1 for NOx**
♦ **Evaluation unit/control unit, sensor 1 for NOx**

Diagnosis information DME control unit

Sensor 2 for NOx
P220B, P229E, P229F, P22A0, P22A1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P229E
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P229F
- Transition from load to overrun mode followed by long overrun phase

P22A0, P22A1, P220B
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 2 for NOx**
♦ **Evaluation unit/control unit, sensor 2 for NOx**

P223700

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P223700
- Driving > 10 Second(s), at:
  - without Overrun phase(s)
- Sensor temperature < 720 °C (1,328 °F)

P224300, P225100
- Dew point end reached
- Driving > 10 Second(s), at:
  - without Overrun phase(s)
- Heater control Active > 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P224300

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P223700
- Driving > 10 Second(s), at:
  - without Overrun phase(s)
- Sensor temperature < 720 °C (1,328 °F)

P224300, P225100
- Dew point end reached
- Driving > 10 Second(s), at:
  - without Overrun phase(s)
- Heater control Active > 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P225100

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P223700
- Driving > 10 Second(s), at:
  - without Overrun phase(s)
- Sensor temperature < 720 °C (1,328 °F)

P224300, P225100
- Dew point end reached
- Driving > 10 Second(s), at:
  - without Overrun phase(s)
- Heater control Active > 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P227900

Diagnostic information - DME control unit

Charge-air tract

⚠ CAUTION
The maximum pressure for testing the charge-air tract must not exceed the value of 0.4 bar (5.8 psi).

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving under load

Possible fault causes

♦ Leak in the intake system
- Only Panamera up to MY E (2014):
  ♦ For more information, see Technical Information for main group 2:
2143 - Fault finding for dealing with customer complaint >Engine will not start or goes off again immediately< at outside temperatures below 0 °C (32 °F) and fault code P159200 entered (60/13)

Fault effects

♦ Boost pressure control off
♦ Reduced power
♦ No particulate filter regeneration

P229400

Diagnosis information DME control module

Fuel pressure regulating valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Fuel pressure regulating valve** faulty

Fault effects

- Engine failure

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P229500

Diagnosis information DME control module

Fuel pressure regulating valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Fuel pressure regulating valve** faulty

Fault effects

- Engine failure

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P229600

Diagnosis information DME control module

Fuel pressure regulating valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Fuel pressure regulating valve** faulty

Fault effects

- Engine failure

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control unit

Sensor 2 for NOx
P220B, P229E, P229F, P22A0, P22A1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P229E
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P229F
- Transition from load to overrun mode followed by long overrun phase

P22A0, P22A1, P220B
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 2 for NOx**
♦ **Evaluation unit/control unit, sensor 2 for NOx**

Diagnosis information DME control unit

Sensor 2 for NOx
P220B, P229E, P229F, P22A0, P22A1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P229E
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P229F
- Transition from load to overrun mode followed by long overrun phase

P22A0, P22A1, P220B
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 2 for NOx**
♦ **Evaluation unit/control unit, sensor 2 for NOx**

Diagnosis information DME control unit

Sensor 2 for NOx
P220B, P229E, P229F, P22A0, P22A1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P229E
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P229F
- Transition from load to overrun mode followed by long overrun phase

P22A0, P22A1, P220B
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 2 for NOx**
♦ **Evaluation unit/control unit, sensor 2 for NOx**

Diagnosis information DME control unit

Sensor 2 for NOx
P220B, P229E, P229F, P22A0, P22A1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P229E
- Measured lambda value > 1
- Lambda control Active
- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210.2 … 1,112 °F)
- **Engine temperature**: at operating temperature

P229F
- Transition from load to overrun mode followed by long overrun phase

P22A0, P22A1, P220B
- NOx control active

Possible fault causes

♦ Lines/connections or **Sensor 2 for NOx**
♦ **Evaluation unit/control unit, sensor 2 for NOx**

Diagnosis information DME control unit

Sensor 2 for NOx Heating
P22A700

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Exhaust gas temperature (to **Particle filter**) 99 ... 600 °C (210 ... 1,112 °F)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- Lines/connections or **Sensor 2 for NOx**
- **Evaluation unit/control unit, sensor 2 for NOx**

P240F00

Diagnosis information DME control module

P240F00 Exhaust gas recirculation system - signal too slow

Diagnostic conditions

- Engine running

- Change in air mass
- Once per air mass jump

Fault setting condition(s)

- If there is a change in mass air flow, the actual value of the air mass only follows the setpoint value with a delay

Monitored component or system

♦ Exhaust gas recirculation system

Possible fault causes

♦ Fault in air system
♦ Changes in the intake tract
♦ Leaks or blockages in the intake and exhaust gas recirculation tract
♦ **Air flow sensor** Faulty

P241400

Diagnosis information DME control module

Oxygen sensor Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- no fault entry
- Test drive with full throttle point

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Charge-air system leaks
- ♦ Exhaust system leaks
- ♦ **Oxygen sensor Bank 1** faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P242500

Diagnosis information DME control module

Bypass valve for exhaust gas recirc. cooler

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Bypass valve for exhaust gas recirc. cooler faulty

Fault effects

P242500, P242700
♦ Failure of bypass valve for exhaust gas recirc. cooler

P242600
♦ Permanent activation of bypass valve for exhaust gas recirc. cooler

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P242600

Diagnosis information DME control module

Bypass valve for exhaust gas recirc. cooler

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Bypass valve for exhaust gas recirc. cooler faulty

Fault effects

P242500, P242700
- ♦ Failure of bypass valve for exhaust gas recirc. cooler

P242600
- ♦ Permanent activation of bypass valve for exhaust gas recirc. cooler

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
- ♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P242700

Diagnosis information DME control module

Bypass valve for exhaust gas recirc. cooler

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Bypass valve for exhaust gas recirc. cooler faulty

Fault effects

P242500, P242700
- ♦ Failure of bypass valve for exhaust gas recirc. cooler

P242600
- ♦ Permanent activation of bypass valve for exhaust gas recirc. cooler

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- ♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- ♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
- ♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P242A00

Diagnosis information DME control module

Exhaust temperature sensor ahead of particle filter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P242B00
- Cold start (engine and ignition off > 9 hours)
- Test drive (at least 1 minute > 25 mph (40 km/h))

P242C00, P242D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Exhaust temperature sensor ahead of particle filter** faulty

Fault effects

- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P242B00

Diagnosis information DME control module

Exhaust temperature sensor ahead of particle filter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P242B00
- Cold start (engine and ignition off > 9 hours)
- Test drive (at least 1 minute > 25 mph (40 km/h))

P242C00, P242D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Exhaust temperature sensor ahead of particle filter** faulty

Fault effects

- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P242C00

Diagnosis information DME control module

Exhaust temperature sensor ahead of particle filter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P242B00
- Cold start (engine and ignition off > 9 hours)
- Test drive (at least 1 minute > 25 mph (40 km/h))

P242C00, P242D00
- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Exhaust temperature sensor ahead of particle filter** faulty

Fault effects

- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P242F00

Diagnosis information DME control module

Particle filter Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Particle filter** Bank 1 overloaded
- **Diff. pressure sensor** not installed correctly
- **Exhaust temperature sensor** not installed correctly

Fault effects

- Torque limitation
- none Exhaust gas recirculation
- none Particle filter regeneration

Diagnosis information DME control module

P244C00 - Bank 1 exhaust temperature too low for diesel particulate filter regeneration

Diagnostic conditions

- Diesel particulate filter regeneration is active
- Once in regeneration mode

Fault setting condition(s)

- Response time following regeneration request until exhaust gas temperature controller is active is out of tolerance

Monitored component or system

♦ Exhaust gas temperature sensor

Possible fault causes

♦ Exhaust temperature sensor downstream of catalytic converter
♦ Exhaust gas recirculation
♦ Throttle valve
♦ Injector/injectors
♦ Mass air flow sensor
♦ Diesel particulate filter
♦ Catalytic converter

P245200

Diagnosis information DME control module

Diff. pressure sensor / Pressure sensor 1 for exhaust

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P245300
- Control unit run-on (See ⓘ)

P245200, P245400
- Ignition on

P245600
- Ignition on
- Engine running

> 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Connecting hose/line** Blocked

- **Diff. pressure sensor / Pressure sensor 1 for exhaust** Faulty

Fault effects

- none Particle filter regeneration
- Exhaust gas recirculation No function
- Reduced Engine output

P245600
- none

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P245300

Diagnosis information DME control module

Diff. pressure sensor / Pressure sensor 1 for exhaust

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P245300
- Control unit run-on (See ⓘ)

P245200, P245400
- Ignition on

P245600
- Ignition on
- Engine running

> 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Connecting hose/line** Blocked

- **Diff. pressure sensor / Pressure sensor 1 for exhaust** Faulty

Fault effects

- none Particle filter regeneration
- Exhaust gas recirculation No function
- Reduced Engine output

P245600
- none

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P245400

Diagnosis information DME control module

Diff. pressure sensor / Pressure sensor 1 for exhaust

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P245300
- Control unit run-on (See ⓘ)

P245200, P245400
- Ignition on

P245600
- Ignition on
- Engine running

> 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Connecting hose/line** Blocked

- **Diff. pressure sensor / Pressure sensor 1 for exhaust** Faulty

Fault effects

- none Particle filter regeneration
- Exhaust gas recirculation No function
- Reduced Engine output

P245600
- none

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P245600

Diagnosis information DME control module

Diff. pressure sensor / Pressure sensor 1 for exhaust

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P245300
- Control unit run-on (See ⓘ)

P245200, P245400
- Ignition on

P245600
- Ignition on
- Engine running

> 10 seconds

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Connecting hose/line** Blocked

- **Diff. pressure sensor / Pressure sensor 1 for exhaust** Faulty

Fault effects

- none Particle filter regeneration
- Exhaust gas recirculation No function
- Reduced Engine output

P245600
- none

Setpoint definitions

NOTE

The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

ⓘ INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P245800

Diagnosis information DME control module

Particle filter P245800

NOTE
Faults can be reset only via regeneration by means of the Tester.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Particle filter regeneration

Possible fault causes

♦ **Particle filter** Blocked

♦ **Diff. pressure sensor**
♦ **Sensors** Exhaust gas temperature

P245900

Diagnosis information DME control module

Particle filter P245900

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- At the beginning of particle filter regeneration after prior successful or cancelled regeneration

Possible fault causes

- Particle filter regeneration performed too often
- Mixture too rich
- Air section behind mass air flow sensor leaks
- Injector injects too much

P245B00

Diagnosis information - DME control module

Switch-over valve Radiator Exhaust gas recirculation

Diagnostic conditions

- **Engine speed** 1,200 ... 2,500 1/min
- Injection quantity 9 ... 50 mg
- Exhaust gas recirculation < 90 %
- Exhaust gas recirculation Active
- **Exhaust gas temperature sensor behind particle filter** > 220 °C (°F)
- **Temperature** Exhaust gas recirculation < 350 °C (°F)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- **Vacuum system** (Activation)
- **Switch-over valve**
- **Radiator** Exhaust gas recirculation
- Temperature sensor/s Exhaust gas recirculation
- Micro catalytic converter Exhaust gas recirculation

P246300

Diagnosis information DME control module

Particle filter Bank 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Particle filter** Bank 1 overloaded
- **Diff. pressure sensor** not installed correctly
- **Exhaust temperature sensor** not installed correctly

Fault effects

- Torque limitation
- none Exhaust gas recirculation
- none Particle filter regeneration

P246E00

Diagnosis information DME control module

Exhaust temperature sensor behind particle filter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Exhaust temperature sensor behind particle filter** faulty

Fault effects

- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P246F00

Diagnosis information DME control module

Exhaust temperature sensor behind particle filter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust temperature sensor behind particle filter** faulty

Fault effects

- none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P247000

Diagnosis information DME control module

Exhaust temperature sensor behind particle filter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Exhaust temperature sensor behind particle filter** faulty

Fault effects

- none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

P247A00 Exhaust gas temperature sensor downstream of catalytic converter, exhaust gas temperature out of tolerance

Diagnostic conditions

- Diesel particulate filter regeneration is active

Fault setting condition(s)

- Control deviation > limit value

Monitored component or system

♦ Exhaust gas temperature sensor

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Exhaust temperature sensor downstream of catalytic converter
♦ Exhaust temperature sensor ahead of turbocharger
♦ Exhaust gas recirculation
♦ Throttle valve
♦ Injector/injectors
♦ Mass air flow sensor

Fault effects

♦ Regeneration might not be completed fully
♦ Regeneration interval increases

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Particle sensor Measuring electrode P24AE00, P24B000, P24B100, P24AF00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24AE00, P24AF00
- Battery Voltage 11 ... 16V
- to Particle filter regeneration

P24B000
- Diagnostics active in the regeneration phase of the particle sensor (after self-cleaning)

P24B100
- Battery Voltage 11 ... 16V

Possible fault causes

- Electrical fault internal
- **Particle sensor** Function restriction

Diagnosis information DME control module

Particle sensor Measuring electrode P24AE00, P24B000, P24B100, P24AF00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24AE00, P24AF00
- Battery Voltage 11 ... 16V
- to Particle filter regeneration

P24B000
- Diagnostics active in the regeneration phase of the particle sensor (after self-cleaning)

P24B100
- Battery Voltage 11 ... 16V

Possible fault causes

- Electrical fault internal
- **Particle sensor** Function restriction

Diagnosis information DME control module

Particle sensor Measuring electrode P24AE00, P24B000, P24B100, P24AF00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24AE00, P24AF00
- Battery Voltage 11 ... 16V
- to Particle filter regeneration

P24B000
- Diagnostics active in the regeneration phase of the particle sensor (after self-cleaning)

P24B100
- Battery Voltage 11 ... 16V

Possible fault causes

- Electrical fault internal
- **Particle sensor** Function restriction

Diagnosis information DME control module

Particle sensor Measuring electrode P24AE00, P24B000, P24B100, P24AF00

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24AE00, P24AF00
- Battery Voltage 11 ... 16V
- to Particle filter regeneration

P24B000
- Diagnostics active in the regeneration phase of the particle sensor (after self-cleaning)

P24B100
- Battery Voltage 11 ... 16V

Possible fault causes

- Electrical fault internal
- **Particle sensor** Function restriction

Diagnosis information DME control module

Particle sensor Heating current circuit P24B500, P24B600, P24B300

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24B500, P24B600
- Battery Voltage 11 ... 16 V

P24B300
- Battery Voltage 11 ... 16 V
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- Electrical fault internal
- **Particle sensor** Function restriction

Diagnosis information DME control module

Particle sensor Heating current circuit P24B500, P24B600, P24B300

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24B500, P24B600
- Battery Voltage 11 ... 16 V

P24B300
- Battery Voltage 11 ... 16 V
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- Electrical fault internal
- **Particle sensor** Function restriction

Diagnosis information DME control module

Particle sensor Heating current circuit P24B500, P24B600, P24B300

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24B500, P24B600
- Battery Voltage 11 ... 16 V

P24B300
- Battery Voltage 11 ... 16 V
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- Electrical fault internal
- **Particle sensor** Function restriction

Diagnosis information DME control unit

Particle sensor Temperature recording P24C600, P24C700

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24C700
- Cold start (Switch-off time > 9 h)
- ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P24C600
- No fault entered for
  - ♦ Power supply **Particle sensor**
  - ♦ Communication **Particle sensor**
  - ♦ **Exhaust gas temperature sensor behind particle filter** -25 ... 800 °C (°F)

Possible fault causes

- **Particle sensor** not installed correctly
- **Particle sensor** Function restriction / Faulty

Diagnosis information DME control unit

Particle sensor Temperature recording P24C600, P24C700

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P24C700
- Cold start (Switch-off time > 9 h)
- ► Drive for at least 60 s and drive at least 20 s of this at a speed of > 40 km/h (25 mph)

P24C600
- No fault entered for
  - ♦ Power supply **Particle sensor**
  - ♦ Communication **Particle sensor**
  - ♦ **Exhaust gas temperature sensor behind particle filter** -25 ... 800 °C (°F)

Possible fault causes

- **Particle sensor** not installed correctly
- **Particle sensor** Function restriction / Faulty

Diagnosis information DME control module

Particle sensor Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Battery Voltage 11 ... 16 V
- No fault entered for
  - ♦ CAN bus
  - ♦ Battery

Possible fault causes

- Electrical fault in circuit (**Sensor supply voltage**)
- **Particle sensor** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P253300

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

P253500

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

P256400

Diagnosis information DME control module

Position sensor for Boost pressure adjuster

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Control unit run-on (See ⓘ)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line (Feedback line ▶ **DME control module**)
♦ Loose contact or corrosion on connectors or lines
♦ **Position sensor** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Limp-home

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P256500

Diagnosis information DME control module

Position sensor for Boost pressure adjuster

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Control unit run-on (See ⓘ)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line (Feedback line ▶ **DME control module**)
♦ Loose contact or corrosion on connectors or lines
♦ **Position sensor** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Limp-home

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P268A00

Diagnosis information DME control module

Injection valve Calibration

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- This fault is set if no result of the zero-quantity calibration is supplied within the following time: 40 s

Possible fault causes

- Control deviation of the rail pressure too high
- **Speed sensor not** adapted (Crankshaft)

P2BA700

Diagnosis information DME control module

Tank for reducing agent empty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

♦ **Tank for reducing agent** empty
♦ **Sensor for reducing agent tank filling level** Function not available or available only to a limited extent / Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

P300700

Diagnosis information DME control module

Camshaft position sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition off Ignition on

or

- Engine running

- none faults for crankshaft sensor

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- Pickup (sensor) wheel not installed correctly , faulty
- **Camshaft position sensor** not installed correctly
- **Camshaft position sensor** faulty

Fault effects

- none camshaft control
- Crankshaft diagnosis disabled
- none camshaft adaptation

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:

- Setpoint resistance **> 0.9 MOhm**

Open circuit:

- Setpoint resistance **< 2 Ohm**

Short circuit between lines:

- Setpoint resistance **> 0.9 MOhm**

P304000

Diagnosis information - DME control module

Transmission control unit fault

Diagnostic conditions

- Engine running

Possible fault causes

♦ Fault entry in the transmission control unit

P304300

Diagnosis information DME control module

Fuel pump module (Fuel-pump control)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Fuel pump module** faulty
- **Control module Fuel pump module** faulty

Fault effects

- **Engine failure**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P304400

Diagnosis information DME control module

Fuel pump module (Fuel-pump control)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Fuel pump module** faulty
- **Control module Fuel pump module** faulty

Fault effects

- **Engine failure**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

P304500

Diagnosis information DME control module

Fuel pump module (Fuel-pump control)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Fuel pump module** faulty
- **Control module Fuel pump module** faulty

Fault effects

- **Engine failure**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Relay 1 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 1 for starter** faulty

Fault effects

P061500, P061600, P061700

- Starter does not rotate

P304600

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Relay 2 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 2 for starter** faulty

Fault effects

P304700, P304800, P304900

- Starter does not rotate

P305000

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Relay 2 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 2 for starter** faulty

Fault effects

P304700, P304800, P304900

- Starter does not rotate

P305000

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Relay 2 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 2 for starter** faulty

Fault effects

P304700, P304800, P304900

- Starter does not rotate

P305000

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Relay 2 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 2 for starter** faulty

Fault effects

P304700, P304800, P304900

- Starter does not rotate

P305000

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Starting process

Possible fault causes

Lines/connections for Starter Terminal 50:
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Engine mechanical blocked
♦ Starter faulty

Fault effects

♦ Only manual start possible
♦ Voltage drop Starting process
♦ no Starting process

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Starting process

Possible fault causes

Lines/connections for Starter Terminal 50:
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Engine mechanical blocked
♦ Starter faulty

Fault effects

♦ Only manual start possible
♦ Voltage drop Starting process
♦ no Starting process

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P305400

Diagnosis information DME control module

Starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Starting process

Possible fault causes

Lines/connections for Starter Terminal 50:
♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ Engine mechanical blocked
♦ Starter faulty

Fault effects

♦ Only manual start possible
♦ Voltage drop Starting process
♦ no Starting process

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

P307300

Diagnosis information DME control module

Fuel pump module (Fuel-pump control)

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Fuel pump module** faulty
- **Control module Fuel pump module** faulty

Fault effects

- **Engine failure**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines:
- Setpoint resistance **> 0.9 MOhm**

Diagnosis information DME control module

Relay 1 for starter

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- only PDK: Brake actuated

+ **Selector-lever position P or N**
- only **Manual transmission**: Clutch complete depress
- Ignition on > 3 Second(s)
- then Engine start

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Relay 1 for starter** faulty

Fault effects

P061500, P061600, P061700

- Starter does not rotate

P304600

- Only manual start possible

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P308D00

Diagnosis information DME control module

Electric fuel pump (**Low-pressure fuel circuit**)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Fuel filter not** Blocked

- Fuel lines not kinked/ Blocked

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Fuel pump module** faulty
♦ **Control module Fuel pump module** faulty

Fault effects

P0308E00
♦ **Engine failure**

P0308D00
♦ **Torque limitation**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

P308E00

Diagnosis information DME control module

Electric fuel pump (**Low-pressure fuel circuit**)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Fuel filter not** Blocked

- Fuel lines not kinked/ Blocked

- Ignition on
- **Electric fuel pump** activate

Possible fault causes

♦ Open circuit
♦ Short circuit to B+
♦ Short circuit to ground
♦ Loose contact or corrosion on connectors or lines
♦ **Fuel pump module** faulty
♦ **Control module Fuel pump module** faulty

Fault effects

P0308E00
♦ **Engine failure**

P0308D00
♦ **Torque limitation**

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - DME control module

Switch-over valve 2 Radiator Exhaust gas recirculation

Diagnostic conditions

- **Engine speed** 1,200 ... 2,500 1/min
- Injection quantity 9 ... 50 mg
- Exhaust gas recirculation < 90 %
- Exhaust gas recirculation Active
- **Exhaust gas temperature sensor behind particle filter** > 220 °C (°F)
- **Temperature** Exhaust gas recirculation < 350 °C (°F)
- one time after fulfillment of the diagnostic conditions

Possible fault causes

- **Vacuum system** (Activation)
- **Switch-over valve**
- **Radiator** Exhaust gas recirculation
- Temperature sensor/s Exhaust gas recirculation
- Micro catalytic converter Exhaust gas recirculation

Diagnosis information DME control module

Throttle adjusting unit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

or

- Control unit run-on (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ **Throttle adjusting unit** Faulty

Fault effects

- ♦ none Particle filter regeneration

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P334800

Diagnosis information DME control module

Electronic adjuster for turbocharger

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

P004500
● Control unit run-on (See ⓘ)

P004700, P004800, P334800
● Control unit run-on (See ⓘ)
or
● Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line (feedback signal lead ▶ **DME control unit**)
♦ Loose contact or corrosion on connectors or lines
♦ **Electronic adjuster for turbocharger** Faulty

Fault effects

♦ none Particle filter regeneration
♦ Limp-home

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information DME control module

C10A700 Rolling test mode detected

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Ignition on
● Tester requests deactivation
● No faults in the fault memory
● Gear-selector lever in neutral position
● Engine off
● Vehicle speed = 0 km/h (0 mph)
● Rolling test mode specifically deactivates functions and components to guarantee safe operation on the roller test stand and allow you to perform comparable fuel-efficiency test drives

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Deactivate rolling test mode
♦ Read out DME control unit fault memory
♦ If the fault is still entered, replace the DME control unit

U000100

Diagnosis information - DME control module

Communication with CAN bus (drive)

ⓘ INFORMATION

♦ This fault entry was set when the **DME control module** could **not** communicate via the CAN bus (drive).
♦ The fact that the fault memory can be read out means that there is no problem with communication via the CAN bus (drive) at the moment.

Fault effects

♦ Communication no longer possible via the CAN bus.
♦ The radiator fans are running at full speed.

Possible fault causes

♦ Temporary short circuit or open circuit in CAN bus (drive)
♦ A control unit in the CAN bus (drive) system is faulty at times

U000200

Diagnosis information - DME control module

Communication with CAN bus (drive)

ⓘ INFORMATION

♦ This fault entry was set when the **DME control module** could **not** communicate via the CAN bus (drive).
♦ The fact that the fault memory can be read out means that there is no problem with communication via the CAN bus (drive) at the moment.

Fault effects

♦ Communication no longer possible via the CAN bus.
♦ The radiator fans are running at full speed.

Possible fault causes

♦ Temporary short circuit or open circuit in CAN bus (drive)
♦ A control unit in the CAN bus (drive) system is faulty at times

U010100

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U010600

Diagnosis information DME control module

Control unit for automatic glow time: communication

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- The electrical fault LinBusOff must not be active.
- no incorrect Control unit for automatic glow time: installed
- Ignition on

Possible fault causes

- Open circuit
- Short circuit to B+
- Short circuit to ground
- Loose contact or corrosion on connectors or lines
- **Control unit for automatic glow time:** faulty

Fault effects

- Preglow system does not function
- Poor Engine can be started
- Smoke may come from engine during start-up

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
- Setpoint resistance **> 0.9 MOhm**

Open circuit:
- Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

U011000

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U011200

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U012100

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U012600

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U012800

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U013000

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U013200

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U014000

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U014600

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U015500

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U015900

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U016400

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U016600

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U016700

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U019900

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U020000

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U020100

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U020200

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U021200

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

U023500

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information DME control unit

Particle sensor Communication U04A400, U02A300

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15
- Voltage 11 ... 16 V

Possible fault causes

- **Particle sensor Power supply**
- Lines/connections CAN bus (between **Particle sensor** and **DME control module**)
- **Particle sensor** Faulty
- **DME control module**

U030200

Diagnosis information - DME control module

Transmission control unit fault

Diagnostic conditions

- Engine running

Possible fault causes

♦ Fault entry in the transmission control unit

U030700

Diagnosis information DME control module

Control unit for automatic glow time: incorrect installation

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Incorrect Control unit for automatic glow time:** installed

Fault effects

♦ Preglow system does not function
♦ Poor Engine can be started
♦ Smoke may come from engine during start-up

U040200

Diagnosis information - DME control module

Transmission control unit fault

Diagnostic conditions

- Engine running

Possible fault causes

♦ Fault entry in the transmission control unit

U040700

Diagnosis information DME control module

Control unit for automatic glow time: faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- The electrical fault LinBusOff and the TimeOut fault must not be active
- Ignition on

Possible fault causes

♦ **Control unit for automatic glow time:** faulty

Fault effects

♦ Preglow system does not function
♦ Poor Engine can be started
♦ Smoke may come from engine during start-up

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U041500

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U041900

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Ambient temperature via CAN

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on > 5 Second(s)

Possible fault causes

♦ **Gateway control module** incorrect (See ⓘ)

♦ Message via CAN Faulty or missing

Fault setting condition(s)

- No time information from the gateway control unit (0.5 ... 5 Second(s)).

and

- There is also no other available time information via satellite (e.g. via garage).

Fault effects

♦ Substitute value from model
♦ Positive crankcase ventilation is continuously activated if a fault is present when recording the ambient temperature.

U042300

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U042400

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U042500

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U042800

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U042900

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U043300

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U044700

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information DME control unit

Particle sensor Communication U04A400, U02A300

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15
- Voltage 11 ... 16 V

Possible fault causes

- **Particle sensor Power supply**
- Lines/connections CAN bus (between **Particle sensor** and **DME control module**)
- **Particle sensor** Faulty
- **DME control module**

U100300

Diagnosis information DME control module

Communication with control unit not possible

NOTE
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No control unit power supply
- Incorrect coding of control unit
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- Communication no longer possible via the CAN bus
- The control unit can no longer be addressed by any other control unit

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U100600

Diagnostic information - DME control unit

NOX sensor 1 - no communication

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Timeout monitoring: no NOx message received

Monitored component or system

♦ Communication with the NOx sensor

Possible fault causes

♦ Check of CAN line
♦ Check of sensor/control unit plug-in contacts

Fault effects

♦ Failure of the turbocharger
♦ Failure of the NOx sensor

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 Mohm**

Open circuit:
♦ Setpoint resistance **< 2 ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 Mohm**

Diagnosis information - DME control module

Fault entry in the specified control unit

ⓘ **NOTE**
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

ⓘ **NOTE**
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

ⓘ **NOTE**
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U102400

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U102600

Diagnosis information - DME control module

Transmission control unit fault

Diagnostic conditions

- Engine running

Possible fault causes

♦ Fault entry in the transmission control unit

Diagnosis information DME control unit

Sensor 1 for NOx Signal implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- **DME control module**: Coding incorrect or not carried out
- **Sensor 1 for NOx** - Incorrect component installed
- **Evaluation unit/control unit, sensor 1 for NOx** - Incorrect component installed
- **Evaluation unit/control unit, sensor 1 for NOx** Faulty

Diagnosis information DME control unit

Sensor 2 for NOx U10C100, U10C200

U10C100

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ **DME control module**: Coding incorrect or not carried out
- ♦ **Sensor 2 for NOx** - Incorrect component installed
- ♦ **Evaluation unit/control unit, sensor 2 for NOx** - Incorrect component installed
- ♦ **Evaluation unit/control unit, sensor 2 for NOx** Faulty

U10C200

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Lines/connections CAN bus (between **Sensor 2 for NOx** and **DME control module**)
- ♦ **Evaluation unit/control unit, sensor 2 for NOx Power supply**
- ♦ **Evaluation unit/control unit, sensor 2 for NOx** - Incorrect component installed
- ♦ **Evaluation unit/control unit, sensor 2 for NOx** Faulty
- ♦ **DME control module**

Diagnosis information DME control unit

Sensor 2 for NOx U10C100, U10C200

U10C100

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ **DME control module**: Coding incorrect or not carried out
- ♦ **Sensor 2 for NOx** - Incorrect component installed
- ♦ **Evaluation unit/control unit, sensor 2 for NOx** - Incorrect component installed
- ♦ **Evaluation unit/control unit, sensor 2 for NOx** Faulty

U10C200

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Terminal 15

Possible fault causes

- ♦ Lines/connections CAN bus (between **Sensor 2 for NOx** and **DME control module**)
- ♦ **Evaluation unit/control unit, sensor 2 for NOx Power supply**
- ♦ **Evaluation unit/control unit, sensor 2 for NOx** - Incorrect component installed
- ♦ **Evaluation unit/control unit, sensor 2 for NOx** Faulty
- ♦ **DME control module**

U110300

Diagnosis information DME control module

DME control unit, production mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Control unit run-on (See ⓘ)

Possible fault causes

♦ Production mode active

Fault effects

♦ Torque reduction
♦ Rpm limitation
♦ Speed limitation

ⓘ INFORMATION
After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

ⓘ **NOTE**
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - DME control module

Fault entry in the specified control unit

ⓘ **NOTE**
Internal function test completed.

Diagnostic conditions

The control unit first tests internal function sequences upon wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- "Ignition on"

Possible fault causes

- Incorrect coding of control unit
- The peripheral device connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit!)

Fault effects

- The specified control unit sends only substitute values via CAN
- Other control units detect these substitute values and set this fault code

U114B00

Diagnosis information DME control module

U114B00 Control unit 1 for catalytic converter heating - no communication

Diagnostic conditions

- Time after ignition on > 500 ms
- Diagnostics runs continuously

Fault setting condition(s)

- Timeout monitoring
- No message is received for 1,000 ms

Monitored component or system

♦ Control unit 1 for catalytic converter heating

Fault finding notes

♦ Check sensor CAN data bus
♦ Electric heating disc control unit faulty

Diagnosis information DME control module

U114C00 Control unit 1 for catalytic converter heating - implausible message

Diagnostic conditions

- Time after ignition on > 500 ms
- Diagnostics runs continuously

Fault setting condition(s)

- An incorrect message length was detected three times
- The received message is shorter than the message length defined by the application (received message length)

Monitored component or system

♦ Control unit 1 for catalytic converter heating

Fault finding notes

♦ Check sensor CAN data bus
♦ Electric heating disc control unit faulty

Diagnosis information DME control module

Power supply Terminal 30 Open circuit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Control unit run-on completed fully (See ⓘ)

Possible fault causes

- ♦ Open circuit
- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Fuse faulty

Fault effects

- ♦ Locking of temperature sensor plausibility check during cold starting
- ♦ Restrictions in calculation of maintenance interval extension

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

INFORMATION

After the ignition is switched off (terminal 15), the DME control unit switches to control unit after-run mode.
The run-on period depends on many boundary conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Cayenne, MY 2011-

Diagnosis information - DME V6TFSI

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U300B..... 570

P000A

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- **Engine oil temperature** -10 ... +120 °C (14 … 248 °F)
- **Engine speed** 1,200 ... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Intake camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on intake camshaft

or
- Intake camshaft adjustment slow

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature -10 ... +120 °C (14 … 248 °F)
- Engine speed 1,200 .... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
- Dynamic driving style when oil level is near minimum (oil foaming)
- Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- Camshaft adjustment faulty
- Intake camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on intake camshaft

or
- Intake camshaft adjustment slow

P0010

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 1

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- **Engine oil temperature** -10 ... +120 °C (14 … 248 °F)
- **Engine speed** 1,200 ... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Intake camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on intake camshaft

or
- Intake camshaft adjustment slow

P0013

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P0016

Diagnostic information - DME (DFI) control unit

Crankshaft position in relation to bank 1 intake camshaft

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- Timing set incorrectly
- Timing chain stretched
- Camshaft adjustment faulty (locking)
- Hall sender rotor (camshaft) wrong or damaged
- Intake camshaft sensor wrong

Fault setting condition(s)
- Adaptation not within the valid value range

P0018

Diagnostic information - DME (DFI) control unit

Crankshaft position in relation to bank 2 intake camshaft

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- ♦ Timing set incorrectly
- ♦ Timing chain stretched
- ♦ Camshaft adjustment faulty (locking)
- ♦ Hall sender rotor (camshaft) wrong or damaged
- ♦ Intake camshaft sensor wrong

Fault setting condition(s)
- Adaptation not within the valid value range

P0020

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 2

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature -10 ... +120 °C (14 … 248 °F)
- Engine speed 1,200 .... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
- Dynamic driving style when oil level is near minimum (oil foaming)
- Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- Camshaft adjustment faulty
- Intake camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on intake camshaft

or
- Intake camshaft adjustment slow

P0023

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P0030

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 1
faulty

P0031

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 1
faulty

P0032

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 1
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 1
faulty

P0037

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 1
faulty

P0038

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 1
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor(s) upstream of catalytic converter interchanged

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Lambda control active
- Driving with:
  - small valve lift (See Actual value A220)
  - large valve lift (See Actual value A220)

Possible fault causes

♦ Oxygen sensors upstream of catalytic converter bank 1 and bank 2 interchanged

Diagnostic information - DME (DFI) control unit

Oxygen sensor(s) downstream of catalytic converter interchanged

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Oxygen sensors downstream of catalytic converter bank 1 and bank 2 interchanged

P0049

Diagnostic information - DME (DFI) control unit

Turbocharger governor

Diagnostic conditions
- Full-load acceleration

Possible fault causes
- Ambient pressure too low (e.g. at high altitude)
- Boost pressure too high (P0234) at high altitude

Fault setting condition(s)
Turbocharger exceeds speed limits ⇒ approx. 170,000 ... 180,000 rpm (See ⓘ)

Fault effects
- Reduced engine torque
- Wastegate open

ⓘ INFORMATION
The turbocharger's speed is calculated from various input variables.

P0050

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 2
faulty

P0051

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 2
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 2
faulty

P0053

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Electrical fault in electric circuit (short circuit) for oxygen sensor heater

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

P0056

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 2
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

P0058

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 2
faulty

P0059

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Electrical fault in electric circuit (short circuit) for oxygen sensor heater

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

P0068

Diagnostic information - DME (DFI) control unit

Mass air flow implausible

ⓘ INFORMATION

Totals fault

One or more additional faults are entered that more precisely indicate the operating ranges in which the fault occurred.

- Near idle speed range:
  - ♦ P1069 + P1070 + P1071 + P1072 + P1073
- Lower partial-load range :
  - ♦ P1074 + P1075
- Upper partial-load range :
  - ♦ P1076 + P1077

P0069

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Intake manifold pressure sensor faulty

- **ONLY** for '**40-Time after Start**' greater than **0** (see Extended fault memory):
  - Throttle valve adjusting unit soiled

Fault effects
- Substitute value from model

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN

Diagnostic conditions
- NO fault stored in the DME (DFI) control unit
- Driving > 80 km/h (49 mph) for > 15 minute(s)
- then driving > 1 minute(s) under the following conditions:
  - Coolant temperature 47 ... 108 °C (116 … 226 °F)
  - Engine speed 1,200 ... 4,000 rpm
  - Vehicle speed 40 ... 180 km/h (24 … 111 mph)

Possible fault causes
- ♦ Ambient temperature incorrect (sensor trimming incorrect/faulty)
- ♦ Intake air temperature incorrect (sensor trimming incorrect/faulty)
- Turbo only:
  - ♦ Charge-air cooler blocked, faulty, modified …

Fault setting condition(s)

ⓘ INFORMATION

The temperature model depends mainly on the measured intake air temperature.
- Deviation between ambient temperature via CAN and substitute value from model > 25 °C (77 °F)

Fault effects

♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
♦ Outside temperature sensor fault (See Fault memory for air-conditioning system regulator)

Fault setting condition(s)
Outside temperature sensor fault (See Fault memory for **air-conditioning system regulator**)

Fault effects
♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
♦ Outside temperature sensor fault (See Fault memory for air-conditioning system regulator)

Fault setting condition(s)
Outside temperature sensor fault (See Fault memory for **air-conditioning system regulator**)

Fault effects
♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

P0076

Diagnostic information - DME (DFI) control unit

Valve lift control driver, bank 1

Diagnostic conditions
- Idle speed > 10 second(s)
- then increase engine speed until the large valve lift has been switched (See Actual value A220)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic valve lift control faulty

P0077

Diagnostic information - DME (DFI) control unit

Valve lift control driver, bank 1

Diagnostic conditions
- Idle speed > 10 second(s)
- then increase engine speed until the large valve lift has been switched (See Actual value A220)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic valve lift control faulty

P0082

Diagnostic information - DME (DFI) control unit

Valve lift control driver, bank 2

Diagnostic conditions
- Idle speed > 10 second(s)
- then increase engine speed until the large valve lift has been switched (See Actual value A220)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic valve lift control faulty

P0083

Diagnostic information - DME (DFI) control unit

Valve lift control driver, bank 2

Diagnostic conditions
- Idle speed > 10 second(s)
- then increase engine speed until the large valve lift has been switched (See Actual value A220)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic valve lift control faulty

P0089

Diagnostic information - DME (DFI) control unit

Fuel low pressure implausible

Diagnostic conditions
- Engine running > 2 second(s)
- Engine temperature 60 ... 110 °C (140 ... 230 °F)

Possible fault causes
- ♦ Fuel tank (driven) empty
  - ► See Extended fault memory
  - ⇒ Actual value **40-Fuel Level Input** [**0%**]
- ♦ Fuel filter clogged up
- ♦ Fuel line kinked/trapped
- ♦ Pressure relief valve in fuel delivery unit leaking
- ♦ Fuel delivery unit leaking
- ♦ Electric fuel pump faulty
- ♦ Fuel low-pressure sensor out of adjustment

Fault setting condition(s)
Setpoint-to-actual comparison of fuel pump control unit activation.
♦ If the actual fuel low-pressure value cannot follow the setpoint or cannot follow it quickly enough, a fault entry is made for a deviation of the actual fuel low-pressure value of:
- > 1,200 hPa below the setpoint for > 15 seconds

or
- > 2,400 hPa above the setpoint for > 15 seconds

P008A

Diagnostic information - DME (DFI) control unit

Fuel low-pressure system pressure too low

Diagnostic conditions
- Engine running > 2 second(s)

Possible fault causes
- ♦ Fuel tank (driven) empty
  - ► See Extended fault memory
  - ⇒ Actual value **40-Fuel Level Input** [**0%**]
- ♦ Fuel line detached
- ♦ Electric fuel pump faulty
- ♦ Fuel low-pressure sensor faulty

Fault setting condition(s)
Actual fuel low pressure value below 3,000 hPa minimum pressure for 0.7 seconds.

P008B

Diagnostic information - DME (DFI) control unit

Fuel low-pressure system pressure too high

Diagnostic conditions
- Engine running > 2 second(s)

Possible fault causes
- ♦ Fuel low-pressure sensor faulty
- ♦ Fuel high-pressure pump faulty (supplies high pressure to low-pressure side)

Fault setting condition(s)
Actual fuel low pressure value above 9,000 hPa maximum pressure for 0.7 seconds.
ⓘ The pressure relief valve in the fuel delivery unit opens at approx. 7,000 hPa.

P0090

Diagnostic information - DME (DFI) control unit

Bank 1 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 1 fuel high-pressure pump)

P0091

Diagnostic information - DME (DFI) control unit

Bank 1 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 1 fuel high-pressure pump)

P0092

Diagnostic information - DME (DFI) control unit

Bank 1 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 1 fuel high-pressure pump)

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Intake manifold pressure sensor faulty

- **ONLY** for '**40-Time after Start**' greater than **0** (see Extended fault memory):
  - Throttle valve adjusting unit soiled

Fault effects
- Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

- **Turbo only**
  - Only if fault P1638 or P1639 (boost pressure sensor) is entered at the same time:
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve leaking
- ♦ Wastegate leaking

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

- **Turbo only**
  - Only if fault P1638 or P1639 (boost pressure sensor) is entered at the same time:
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve leaking
- ♦ Wastegate leaking

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake air temperature implausible

Diagnostic conditions
- Vehicle has NOT been and is NOT standing in the sun.
- Engine off > 9 hour(s)
- Engine coolant temperature cooling > 35 °C (95 °F), with:
  - Engine off
- then cold start, at:
  - Coolant temperature < 37 °C (98.6 °F)
  - Difference between intake air temperature <=> engine coolant temperature < 6 °C (42.8 °F)
- then driving, with:
  - Engine running > 23 minute(s)
  - Distance driven > 7 km (4 mi.)
  - Engine coolant temperature up to > 94 °C (201 °F)

Possible fault causes
- ♦ Intake air temperature sensor faulty (in intake manifold pressure sensor)
- ♦ Resistor installed (instead of intake air temperature sensor)

Fault setting condition(s)
- Change in intake air temperature < 1.5 °C (34.7 °F), at:
  - Diagnostic conditions

Fault effects
- ♦ Substitute coolant temperature value

P0112

Diagnostic information - DME (DFI) control unit

Intake air temperature sensor: electrical fault

Diagnostic conditions
- Engine running > 2 minute(s)
- Mass air flow < 150 kg/h

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Intake air temperature sensor faulty

Fault effects
- ♦ Substitute value from model

P0113

Diagnostic information - DME (DFI) control unit

Intake air temperature sensor: electrical fault

Diagnostic conditions
- Engine running > 2 minute(s)
- Mass air flow < 150 kg/h

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Intake air temperature sensor faulty

Fault effects
- ♦ Substitute value from model

P0114

Diagnostic information - DME (DFI) control unit

Intake air temperature sensor: electrical fault

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Intake air temperature sensor faulty

Diagnostic information - DME (DFI) control unit

Engine coolant temperature implausibly high

Diagnostic conditions
- Thermal management system test (if available)

or
- Driving with:
  - Engine start temperature > 35 °C (95 °F)
  - Engine speed > 1,300 rpm
  - Vehicle speed > 40 km/h (24 mph)
  - Cooling performance high and low
- Then vehicle standstill, with:
  - Idle speed > 75 second(s)
- None of the following faults stored: P0117, P0118, P0119, P3081, P3082

Possible fault causes
- ♦ Engine coolant temperature sensor faulty
- ♦ Resistor installed (instead of coolant temperature sensor)

Fault setting condition(s)
- Change in engine coolant temperature < setpoint value (See ⓘ)

ⓘ INFORMATION
Change in setpoint value = depending on engine start temperature

Diagnostic information - DME (DFI) control unit

Engine coolant temperature sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Engine coolant temperature sensor faulty

Fault setting condition(s)
- Engine coolant temperature (measured) < -40 °C (-40 °F) (P0117), with:
  - Ignition on or engine running

  and
  - Intake air temperature > -30 °C (-22 °F)

  or
  - Engine running > 300 second(s)

or
- Engine coolant temperature (measured) > +130 °C (266 °F) (P0118), with:
  - Ignition on or engine running

Diagnostic information - DME (DFI) control unit

Engine coolant temperature sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Engine coolant temperature sensor faulty

Fault setting condition(s)
- Engine coolant temperature (measured) < -40 °C (-40 °F) (P0117), with:
  - Ignition on or engine running

  and
  - Intake air temperature > -30 °C (-22 °F)

  or
  - Engine running > 300 second(s)

or
- Engine coolant temperature (measured) > +130 °C (266 °F) (P0118), with:
  - Ignition on or engine running

P0119

Diagnostic information - DME (DFI) control unit

Engine coolant temperature sensor: loose contact

Diagnostic conditions
- Ignition on
- None of the following faults stored: P0117, P0118

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Engine coolant temperature sensor faulty

Fault setting condition(s)
- Engine coolant temperature: Actual-value jumps > 3 °C (37 °F)

Fault effects
- Substitute value = last actual value that was detected as OK, with:
  - Actual-value jumps > 9.75 °C (49.5 °F)

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer implausible

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 1 or 2
- ♦ Accelerator pedal potentiometer 1 or 2 faulty

Fault setting condition(s)
- The two potentiometer values differ too greatly from each other.
- It is not clear which value is incorrect.

Fault effects
- ♦ Engine does not respond to throttle, engine speed 1,000 rpm

P0122

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer 1

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 1
- ♦ Accelerator pedal potentiometer 1 faulty

Fault effects
- ♦ The accelerator pedal angle is calculated from the remaining potentiometer signal.
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm)
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P0123

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer 1

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 1
- ♦ Accelerator pedal potentiometer 1 faulty

Fault effects
- ♦ The accelerator pedal angle is calculated from the remaining potentiometer signal.
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm)
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Idling > 3 second(s)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Idling > 3 second(s)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter bank 1, dynamic response

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Engine running > 2 minute(s) with:
  - Engine at operating temperature
  - All oxygen sensor(s) ready for operation
- then steady driving > 10 minute(s) at:
  - Engine speed < 800 ... 3,200 rpm
  - Mass air flow 120 … 520 mg/stroke
  - No overrun phase(s)

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Different air flow to oxygen sensor downstream of catalytic converter if:

  ♦ Catalytic converter is damaged

  ♦ Components modified or non-genuine components

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty (aged)

P0135

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater circuit upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running, with:
  - **Oxygen sensor heater** downstream of catalytic converter active > 180 second(s)
  - Lambda control active
- None of the following faults stored: P0030, P0031, P0032

Possible fault causes

♦ Contact resistance (power supply or activation)

♦ Shunt (high resistance) in heater circuit ⇒ Signal line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

P0138

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

P013A

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

P013B

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

P013D

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

P013E

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence

or

- Engine temperature > 60 °C (140 °F)
- Time since engine start > 10 second(s)
- Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
- Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
- Active carbon filter loading < 0.7
- Engine speed < 3,000 rpm
- Lambda control ahead of catalytic converter active
- Lambda control behind catalytic converter active
- None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

♦ Different air flow to oxygen sensor downstream of catalytic converter if:
  ♦ Catalytic converter is damaged
  ♦ Components modified or non-genuine components

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle.

P013F

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence

or

- Engine temperature > 60 °C (140 °F)
- Time since engine start > 10 second(s)
- Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
- Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
- Active carbon filter loading < 0.7
- Engine speed < 3,000 rpm
- Lambda control ahead of catalytic converter active
- Lambda control behind catalytic converter active
- None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

♦ Different air flow to oxygen sensor downstream of catalytic converter if:
  ♦ Catalytic converter is damaged
  ♦ Components modified or non-genuine components

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle.

P0140

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

P0141

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater circuit downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running, with:
  - **Oxygen sensor heater** downstream of catalytic converter active > 180 second(s)
  - Lambda control active
- None of the following faults stored: P0036, P0037, P0038

Possible fault causes

♦ Contact resistance (power supply or activation)

♦ Shunt (high resistance) in heater circuit ⇒ Signal line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

P014A

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Perform all short tests in sequence

or

● Engine temperature > 60 °C (140 °F)
● Time since engine start > 10 second(s)
● Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
● Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
● Active carbon filter loading < 0.7
● Engine speed < 3,000 rpm
● Lambda control ahead of catalytic converter active
● Lambda control behind catalytic converter active
● None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

♦ Different air flow to oxygen sensor downstream of catalytic converter if:
  ♦ Catalytic converter is damaged
  ♦ Components modified or non-genuine components

Fault setting condition(s)

● Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle.

P014B

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Perform all short tests in sequence

or

● Engine temperature > 60 °C (140 °F)
● Time since engine start > 10 second(s)
● Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
● Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
● Active carbon filter loading < 0.7
● Engine speed < 3,000 rpm
● Lambda control ahead of catalytic converter active
● Lambda control behind catalytic converter active
● None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

♦ Different air flow to oxygen sensor downstream of catalytic converter if:
  ♦ Catalytic converter is damaged
  ♦ Components modified or non-genuine components

Fault setting condition(s)

● Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle.

P0151

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Idling > 3 second(s)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

P0152

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Idling > 3 second(s)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter bank 2, dynamic response

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 2 minute(s) with:
  - Engine at operating temperature
  - All oxygen sensor(s) ready for operation
- then steady driving > 10 minute(s) at:
  - Engine speed < 800 ... 3,200 rpm
  - Mass air flow 120 … 520 mg/stroke
  - No overrun phase(s)

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Different air flow to oxygen sensor downstream of catalytic converter if:

♦ Catalytic converter is damaged

♦ Components modified or non-genuine components

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty (aged)

P0155

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater circuit upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running, with:
  - **Oxygen sensor heater** downstream of catalytic converter active > 180 second(s)
  - Lambda control active
- None of the following faults stored: P0050, P0051, P0052

Possible fault causes

♦ Contact resistance (power supply or activation)

♦ Shunt (high resistance) in heater circuit ⇒ Signal line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

P0157

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

P0158

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater circuit downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running, with:
  - **Oxygen sensor heater** downstream of catalytic converter active > 180 second(s)
  - Lambda control active
- None of the following faults stored: P0056, P0057, P0058

Possible fault causes

♦ Contact resistance (power supply or activation)

♦ Shunt (high resistance) in heater circuit ⇒ Signal line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

P0171

Diagnostic information - DME (DFI) control unit

Lambda control adaptation, bank 1: system too lean

Diagnostic conditions
- Short test

or:
- Lambda control active
- Lambda control adapted
- Engine temperature > 60 °C (140 °F)
- Intake air temperature < 80 °C (176 °F)
- Engine running > 45 second(s), at:
  - Engine speed < 800 rpm
- then drive with different operating conditions in the lower and upper load ranges with valve lift switchover from small lift to large lift (A220).

Possible fault causes
- ♦ Leak in exhaust system (engine ⇒ oxygen sensor upstream of catalytic converter)
- ♦ Exhaust system constricted/blocked
- ♦ Fuel injector faulty (mechanical fault)
- ♦ Timing set incorrectly
- ♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, Intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment

Fault setting condition(s)
The diagnostic function should indicate a deviation of more than 30% (3.5 mg/stroke in the range near idle) of the lambda control adaptation + 30% deviation of the lambda controller for longer than 30 seconds.
(positive deviation ⇒ enrichment)

ⓘ INFORMATION
Opposed adaptation values in connection with misfires indicate that the timing is out of adjustment.

P0172

Diagnostic information - DME (DFI) control unit

Lambda control adaptation, bank 1: system too rich

Diagnostic conditions
- Short test

or
- Lambda control active
- Lambda control adapted
- Engine temperature > 60 °C (140 °F)
- Intake air temperature < 80 °C (176 °F)
- Engine running > 45 second(s), at:
  - Engine speed < 800 rpm
- then drive with different operating conditions in the lower and upper load ranges with valve lift switchover from small lift to large lift (A220).

Possible fault causes
- ♦ High fuel content in engine oil.
- ♦ Leak in exhaust system (engine ⇒ oxygen sensor upstream of catalytic converter)
- ♦ Fuel injector faulty (mechanical fault)
- ♦ Timing set incorrectly
- ♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment

Fault setting condition(s)
The diagnostic function should indicate a deviation of more than 30% (3.5 mg/stroke in the range near idle) of the lambda control adaptation + 30% deviation of the lambda controller for longer than 30 seconds.
(negative deviation ⇒ leaning)

ⓘ INFORMATION
Opposed adaptation values in connection with misfires indicate that the timing is out of adjustment.

P0174

Diagnostic information - DME (DFI) control unit

Lambda control adaptation, bank 2: system too lean

Diagnostic conditions
- Short test

or
- Lambda control active
- Lambda control adapted
- Engine temperature > 60 °C (140 °F)
- Intake air temperature < 80 °C (176 °F)
- Engine running > 45 second(s), at:
  - Engine speed < 800 rpm
- then drive with different operating conditions in the lower and upper load ranges with valve lift switchover from small lift to large lift (A220).

Possible fault causes
- ♦ Leak in exhaust system (engine ⇒ oxygen sensor upstream of catalytic converter)
- ♦ Exhaust system constricted/blocked
- ♦ Fuel injector faulty (mechanical fault)
- ♦ Timing set incorrectly
- ♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment

Fault setting condition(s)
The diagnostic function should indicate a deviation of more than 30% (3.5 mg/stroke in the range near idle) of the lambda control adaptation + 30% deviation of the lambda controller for longer than 30 seconds.
(positive deviation ⇒ enrichment)

ⓘ INFORMATION
Opposed adaptation values in connection with misfires indicate that the timing is out of adjustment.

P0175

Diagnostic information - DME (DFI) control unit

Lambda control adaptation, bank 2: system too rich

Diagnostic conditions
- Short test

or
- Lambda control active
- Lambda control adapted
- Engine temperature > 60 °C (140 °F)
- Intake air temperature < 80 °C (176 °F)
- Engine running > 45 second(s), at:
  - Engine speed < 800 rpm
- then drive with different operating conditions in the lower and upper load ranges with valve lift switchover from small lift to large lift (A220).

Possible fault causes
- ♦ High fuel content in engine oil.
- ♦ Leak in exhaust system (engine ⇒ oxygen sensor upstream of catalytic converter)
- ♦ Fuel injector faulty (mechanical fault)
- ♦ Timing set incorrectly
- ♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment

Fault setting condition(s)
The diagnostic function should indicate a deviation of more than 30% (3.5 mg/stroke in the range near idle) of the lambda control adaptation + 30% deviation of the lambda controller for longer than 30 seconds.
(negative deviation ⇒ leaning)

ⓘ INFORMATION
Opposed adaptation values in connection with misfires indicate that the timing is out of adjustment.

P0190

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor

Diagnostic conditions
- Time since engine start > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Fuel high-pressure sensor faulty

P0192

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor

Diagnostic conditions
- Time since engine start > 5 second(s)

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Fuel high-pressure sensor faulty

P0195

Diagnostic information - DME (DFI) control unit

Oil temperature stuck (stuck low)

Diagnostic conditions
- Time since engine start > 10 second(s)
- Coolant temperature > 50 °C (122 °F) for > 60 second(s)
- None of the following faults stored: Coolant temperature or oil temperature sensor

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit between lines
- Oil cooler damaged or blocked
- Oil temperature sensor faulty

Fault setting condition(s)
- Oil temperature < -10 °C (14 °F), with:
  - Coolant temperature > 50 °C (122 °F) for > 60 second(s)

Diagnostic information - DME (DFI) control unit

Oil temperature sensor

Diagnostic conditions
- Time since engine start > 5 minute(s)
- Coolant temperature -15 ... 110 °C (5 … 230 °F)
- Oil temperature -39 ... 159 °C (-38 … 318 °F)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to ground or open circuit in the lines
- ♦ Oil temperature sensor faulty

Fault setting condition(s)

♦ **P0197:**
- Oil temperature (measured value) < -39 °C (-38 °F), with:
  - Engine running > 300 second(s)

or
- Ignition on or engine running

and
- Coolant temperature > -15 °C (5 °F)

♦ **P0198:**
- Oil temperature (measured value) > 159 °C (318 °F), with:
  - Ignition on or engine running

and
- Coolant temperature < 110 °C (230 °F)

Diagnostic information - DME (DFI) control unit

Oil temperature sensor

Diagnostic conditions
- Time since engine start > 5 minute(s)
- Coolant temperature -15 ... 110 °C (5 … 230 °F)
- Oil temperature -39 ... 159 °C (-38 … 318 °F)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to ground or open circuit in the lines
- ♦ Oil temperature sensor faulty

Fault setting condition(s)

♦ **P0197:**
- Oil temperature (measured value) < -39 °C (-38 °F), with:
  - Engine running > 300 second(s)

or
- Ignition on or engine running

and
- Coolant temperature > -15 °C (5 °F)

♦ **P0198:**
- Oil temperature (measured value) > 159 °C (318 °F), with:
  - Ignition on or engine running

and
- Coolant temperature < 110 °C (230 °F)

P0201

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 1

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 1 fuel injector faulty

P0202

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 2

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 2 fuel injector faulty

P0203

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 3

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 3 fuel injector faulty

P0204

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 4

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 4 fuel injector faulty

P0205

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 5

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 5 fuel injector faulty

P0206

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 6

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 6 fuel injector faulty

P0207

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 7

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 7 fuel injector faulty

P0208

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 8

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 8 fuel injector faulty

P0222

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer 2

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 2
- ♦ Accelerator pedal potentiometer 2 faulty

Fault effects
- ♦ The accelerator pedal angle is calculated from the remaining potentiometer signal.
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm)
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P0223

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer 2

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 2
- ♦ Accelerator pedal potentiometer 2 faulty

Fault effects
- ♦ The accelerator pedal angle is calculated from the remaining potentiometer signal.
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm)
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P0234

Diagnostic information - DME (DFI) control unit

Boost pressure control limit exceeded

Diagnostic conditions
- 3 full-load accelerations:
  - in 3rd gear (no gearshift)
  - Engine speed between 1,500 rpm and max. engine speed

Possible fault causes
- ♦ Insufficient vacuum supply due to leak in vacuum system or faulty vacuum pump (see ⓘ)
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve faulty (mechanical fault or leak)
- ♦ Wastegate faulty (mechanical fault or leak)

Fault setting condition(s)
- Boost pressure (measured) > setpoint value (depending on operating condition)
- Deviation of boost pressure (measured) with respect to ambient pressure too high > 2 second(s)

ⓘ INFORMATION

The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Boost pressure control cycle valve
  - ♦ Diverter solenoid valve
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

P0244

Diagnostic information - DME (DFI) control unit

Boost pressure control cycle valve driver

Diagnostic conditions
- Engine running
- Boost pressure control cycle valve activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+ or open circuit in the lines (power supply or boost pressure control cycle valve activation)
- Boost pressure control cycle valve faulty

Fault effects
- Only basic boost pressure is built up

P0245

Diagnostic information - DME (DFI) control unit

Boost pressure control cycle valve driver

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- Short circuit to ground (boost pressure control cycle valve activation)

Fault effects
- Only basic boost pressure is built up

P0246

Diagnostic information - DME (DFI) control unit

Boost pressure control cycle valve driver

Diagnostic conditions
- Engine running
- Boost pressure control cycle valve activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+ or open circuit in the lines (power supply or boost pressure control cycle valve activation)
- Boost pressure control cycle valve faulty

Fault effects
- Only basic boost pressure is built up

P025A

Diagnostic information - DME (DFI) control unit

Fuel pump control unit: activation

Diagnostic conditions
- Engine start (electric fuel pump activated)

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Open circuit in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- Faulty power supply or ground supply for fuel pump control unit
- Fuel pump control unit faulty

Diagnostic information - DME (DFI) control unit

Fuel pump control unit: activation

Diagnostic conditions
- Engine start (electric fuel pump activated)

Possible fault causes
- ♦ Short circuit to B+ in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- ♦ Short circuit to ground in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- ♦ Fuel pump control unit faulty

P025D

Diagnostic information - DME (DFI) control unit

Fuel pump control unit: activation

Diagnostic conditions
- Engine start (electric fuel pump activated)

Possible fault causes
- ♦ Short circuit to B+ in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- ♦ Short circuit to ground in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- ♦ Fuel pump control unit faulty

P0261

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 1

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 1 fuel injector faulty

P0262

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 1

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 1 fuel injector faulty

P0264

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 2

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 2 fuel injector faulty

P0265

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 2

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 2 fuel injector faulty

P0267

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 3

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 3 fuel injector faulty

P0268

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 3

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 3 fuel injector faulty

P0270

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 4

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 4 fuel injector faulty

P0271

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 4

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 4 fuel injector faulty

P0273

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 5

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 5 fuel injector faulty

P0274

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 5

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 5 fuel injector faulty

P0276

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 6

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 6 fuel injector faulty

P0277

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 6

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 6 fuel injector faulty

P0279

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 7

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 7 fuel injector faulty

P0280

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 7

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 7 fuel injector faulty

P0282

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 8

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 8 fuel injector faulty

P0283

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 8

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 8 fuel injector faulty

Diagnostic information - DME (DFI) control unit

Oil temperature implausibly high
- Panamera up to MY D
- Panamera GTS from MY E
- Cayenne up to MY E

Diagnostic conditions
- Time since engine start > 10 second(s)
- Coolant temperature < 70 °C (158 °F)
- None of the following faults stored: Coolant temperature or oil temperature sensor

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit between lines
- Oil cooler damaged or blocked
- Oil temperature sensor faulty

Fault setting condition(s)
- Coolant temperature < 70 °C (158 °F), with:
  - Oil temperature > 110 °C (230 °F)

P0299

Diagnostic information - DME (DFI) control unit

Boost pressure control deviation

Diagnostic conditions
- 3 full-load accelerations:
  - in 3rd gear (no gearshift)
  - Engine speed between 1,500 rpm and max. engine speed
- then steady driving

Possible fault causes
- ♦ Insufficient vacuum supply due to leak in vacuum system or faulty vacuum pump (see ⓘ)
- ♦ Leak between turbocharger (on pressure side) and intake valve (engine)
- ♦ Leak between diverter solenoid valve and turbocharger or engine
- ♦ Vacuum hose leaking at boost pressure control cycle valve or diverter solenoid valve
- ♦ Diverter solenoid valve not installed or installed incorrectly
- ♦ Diverter solenoid valve leaking or stuck
- ♦ Diverter valve not installed or installed incorrectly
- ♦ Diverter valve leaking or stuck
- ♦ Boost pressure control cycle valve stuck open electrically or mechanically
- ♦ Wastegate mechanical fault, leaking or stuck open
- ♦ Turbocharger (1 or 2) stiff or stuck

Fault setting condition(s)
- Boost pressure (measured) < setpoint value (depending on operating condition)

ⓘ INFORMATION

The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Boost pressure control cycle valve
  - ♦ Diverter solenoid valve
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

P0300

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

ⓘ INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION
♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0301

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

ⓘ INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION
♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0302

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

ⓘ INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION
♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0303

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

ⓘ INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION
♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0304

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION
♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0305

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

ⓘ INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION
♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0306

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

ⓘ INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0307

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

ⓘ INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0308

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

ⓘ INFORMATION

See also Workshop Manual ▶ 0 Entire vehicle - General ▶ 08 Symptoms ▶ 0820IN.

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression

(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

Diagnostic information - DME (DFI) control unit

Knock sensor 1

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Knock sensor 1 loose
- Knock sensor 1 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal does not change sufficiently, depending on the engine speed and load, and possibly also if it is too quiet (noise is less dynamic than expected).

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 1

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Knock sensor 1 loose or stuck
- Knock sensor 1 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal is too weak (noise is >quieter< than expected), depending on the engine speed and load.

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 3

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Knock sensor 3 loose
- Knock sensor 3 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal does not change sufficiently, depending on the engine speed and load, and possibly also if it is too quiet (noise is less dynamic than expected).

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 3

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Knock sensor 3 loose or stuck
- Knock sensor 3 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal is too weak (noise is >quieter< than expected), depending on the engine speed and load.

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 2

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Knock sensor 2 loose
- Knock sensor 2 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal does not change sufficiently, depending on the engine speed and load, and possibly also if it is too quiet (noise is less dynamic than expected).

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 2

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Knock sensor 2 loose or stuck
- Knock sensor 2 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal is too weak (noise is >quieter< than expected), depending on the engine speed and load.

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

P0335

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine running
- PDK only:
  - then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Phase sensor wheel faulty (damaged/bent)
- ♦ Crankshaft sensor not installed or installed incorrectly
- ♦ Crankshaft sensor faulty

Fault setting condition(s)
- Signal not OK (missing or implausible)

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine start
- then driving with overrun phase(s)
- PDK only:
  - then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- Starter battery flat at low ambient temperature
- Loose contact or corrosion on connectors or lines
- Phase sensor wheel faulty (damaged/bent)
- Crankshaft sensor loose
- Crankshaft sensor not installed or installed incorrectly
- Crankshaft sensor faulty

Fault setting condition(s)
- The crankshaft sensor detects too many or not enough tooth flanks on the sensor wheel:
  - Engine start
  - Engine running
  - Overrun phase(s)

P033B

Diagnostic information - DME (DFI) control unit

Knock sensor 4

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Knock sensor 4 loose
- Knock sensor 4 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal does not change sufficiently, depending on the engine speed and load, and possibly also if it is too quiet (noise is less dynamic than expected).

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 4

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Knock sensor 4 loose or stuck
- Knock sensor 4 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal is too weak (noise is >quieter< than expected), depending on the engine speed and load.

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

P0341

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0344

P0342

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0344

P0343

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0344

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0344

P0346

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0349

P0347

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0349

P0348

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0349

P0349

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0349

Diagnostic information - DME (DFI) control unit

Power supply, bar ignition module

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Fuse faulty
♦ Short circuit to ground or open circuit in the lines (power supply)

Fault setting condition(s)
The fault is detected only if there is no voltage present at ALL bar ignition modules at contact 3.

P0351

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 1

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 1 faulty

P0352

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 2

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 2 faulty

P0353

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 3

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 3 faulty

P0354

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 4

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 4 faulty

P0355

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 5

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 5 faulty

P0356

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 6

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 6 faulty

P0357

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 7

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 7 faulty

P0358

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 8

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 8 faulty

P0366

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0369

P0367

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0369

P0368

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0369

P0369

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0369

P0370

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine start
- then driving with overrun phase(s)
- then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- ♦ Crankshaft sensor faulty

Fault setting condition(s)
- Implausible direction of rotation signal

P0371

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine running
- PDK only:
  - then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Phase sensor wheel faulty (damaged/bent)
- Crankshaft sensor not installed or installed incorrectly
- Crankshaft sensor faulty

Fault setting condition(s)
- Signal not OK (missing or implausible)

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine start
- then driving with overrun phase(s)
- PDK only:
  - then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- Starter battery flat at low ambient temperature
- Loose contact or corrosion on connectors or lines
- Phase sensor wheel faulty (damaged/bent)
- Crankshaft sensor loose
- Crankshaft sensor not installed or installed incorrectly
- Crankshaft sensor faulty

Fault setting condition(s)
- The crankshaft sensor detects too many or not enough tooth flanks on the sensor wheel:
  - Engine start
  - Engine running
  - Overrun phase(s)

P0391

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ Only for P0394

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ Only for P0394

P0393

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ Only for P0394

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ Only for P0394

Diagnostic information - DME (DFI) control unit

Secondary-air system, bank 1 and bank 2

Diagnostic conditions
- Perform all short tests from top to bottom, up to and including secondary air.

or
- The diagnostic function starts under the following conditions:
  - Engine running, with:
    - Ambient temperature > 5 °C (41 °F)
    - Engine start temperature 5 ... 40 °C (41 … 90 °F)
    - Secondary-air injection active
  - None of the following faults stored: Oxygen sensor upstream of catalytic converter, engine coolant temperature sensor, camshaft adjustment, ambient pressure, ambient temperature
- Diagnostics is interrupted for as long as the following conditions exist:
  - Engine speed > 3,500 rpm
  - Mass air flow > 750 mg/stroke
  - Overrun phase(s)

ⓘ INFORMATION
♦ The diagnostic function ends with the end of secondary-air injection.
♦ A certain number of measurements must have taken place within diagnostics, between operational readiness of the oxygen sensors and the end of secondary-air injection.
♦ If this is not the case, diagnostics is ended without a result.

Possible fault causes
♦ Air intake duct (secondary pump) constricted/blocked
♦ Short circuit to B+/ground or open circuit in the secondary-air pump relay line (working current circuit)
♦ Secondary-air pump relay faulty
♦ Leak in secondary-air injection lines
♦ Secondary-air valve stuck/frozen
♦ Air intake duct (engine) constricted/coked
♦ Fuel/air mixture preparation not adapted
♦ Secondary air at oxygen sensor upstream of catalytic converter
♦ Catalytic converter faulty (broken)

Fault setting condition(s)
- Actual value <> setpoint lambda control deviation
  - The diagnostic function checks whether deviation of the lambda controllers is as expected upon activation.

P0418

Diagnostic information - DME (DFI) control unit

Secondary-air pump relay driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in lines for secondary-air pump relay activation
- Secondary-air pump relay faulty

P0421

Diagnostic information - DME (DFI) control unit

Primary catalytic converter, bank 1 - inadequate effect

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

Diagnostic conditions

- Perform the following short tests in sequence:
  1. All oxygen sensor short tests
  2. Tank vent valve short test
  3. Partial-load fuel supply short test
  4. Idle fuel supply short test
  5. Catalytic converter conversion short test

or:

- Engine temperature > 60 °C (140 °F)
- Time since engine start > 10 second(s)
- Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
- Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 ... 80 mph)
- Active carbon filter loading < 0.7
- Engine speed < 3,000 rpm
- Secondary-air injection not active (EU5 only)
- Lambda control ahead of catalytic converter active
- Lambda control behind catalytic converter active
- None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

- If an oxygen sensor fault is entered:
  - ♦ corresponding fault cause
    - ► Correct oxygen sensor fault according to instructions
      - ► then perform short test as described above

♦ Leak in exhaust system between engine and oxygen sensor downstream of catalytic converter

⇒ particularly with mass air flow < 400 mg/stroke

♦ Oxygen sensor upstream and downstream of catalytic converter bank 1 interchanged

♦ Oxygen sensor upstream of catalytic converter bank 1 and bank 2 interchanged

♦ Oxygen sensor downstream of catalytic converter bank 1 and bank 2 interchanged

♦ Catalytic converter bank 1 faulty

P0431

Diagnostic information - DME (DFI) control unit

Primary catalytic converter, bank 2 - inadequate effect

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

Diagnostic conditions

- Perform the following short tests in sequence:
  1. All oxygen sensor short tests
  2. Tank vent valve short test
  3. Partial-load fuel supply short test
  4. Idle fuel supply short test
  5. Catalytic converter conversion short test

or:

- Engine temperature > 60 °C (140 °F)
- Time since engine start > 10 second(s)
- Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
- Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
- Active carbon filter loading < 0.7
- Engine speed < 3,000 rpm
- Secondary-air injection not active (EU5 only)
- Lambda control ahead of catalytic converter active
- Lambda control behind catalytic converter active
- None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

- If an oxygen sensor fault is entered:
  - ♦ corresponding fault cause
    - ► Correct oxygen sensor fault according to instructions
      - ► then perform short test as described above

♦ Leak in exhaust system between engine and oxygen sensor downstream of catalytic converter

⇒ particularly with mass air flow < 400 mg/stroke

♦ Oxygen sensor upstream and downstream of catalytic converter bank 2 interchanged

♦ Oxygen sensor upstream of catalytic converter bank 1 and bank 2 interchanged

♦ Oxygen sensor downstream of catalytic converter bank 1 and bank 2 interchanged

♦ Catalytic converter bank 2 faulty

P0441

Diagnostic information - DME (DFI) control unit

Tank vent system
- **NOT** V6 Turbo

Diagnostic conditions
- Perform tank vent valve short test and tank leak short test

or
- Time since engine start > 2 minute(s)
- Idling > 15 second(s)
- Engine temperature > 40 °C (104 °F)
- Ambient temperature > 4 °C (39 °F)
- Ambient pressure > 730 hPa (= location below approx. 2,400 ... 2,700 m/7,874 ... 8,858 ft.) (A060)
- Vehicle speed = 0 km/h (0 mph)
- Selector-lever position P or N, or no gear engaged
- Steering wheel in center position
- Air conditioning switched off
- All loads switched off
- All oxygen sensor(s) ready for operation
- None of the following faults stored: Oxygen sensor(s), tank vent valve output stage

Possible fault causes
- ♦ Tank vent valve faulty (stuck open or closed)
- ♦ Tank vent valve not installed or installed incorrectly
- ♦ Line between active carbon filter and tank vent valve leaking/trapped/blocked
- ♦ Purge-air line between tank vent valve and intake manifold leaking/trapped/blocked

Diagnostic information - DME (DFI) control unit

Tank system - leak

Diagnostic conditions
- Perform tank leak short test

or:
- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 40 °C (41 … 104 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 7 ... 120 km/h (5 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes
- ♦ Tank cap loose/does not close (properly)
- ♦ Tank cap leaking/faulty
- ♦ Vacuum system leaking (See ⓘ 1)
- ♦ Vacuum pump faulty
- ♦ Tank vent valve (TEV) mechanically faulty (does not close (properly))
- ♦ Leakage diagnosis pump - fresh-air side constricted (dust/dirt)
- ♦ Internal (diaphragm) or external leak in leakage diagnosis pump
- ♦ Fuel tank system (with hoses) leaking

Fault setting condition(s)
- Total leakage in fuel tank system (See ⓘ 2):
  - ♦ Diameter approx. 0.5 - 1 mm - micro leak P0456
  - ♦ Diameter approx. 1 - 2 mm - minor leak P0442
  - ♦ Diameter > 2 mm - major leak P0455

ⓘ INFORMATION

1. The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Variable intake manifold (not Turbo)
  - ♦ Boost pressure control cycle valve (Turbo only)
  - ♦ Diverter solenoid valve (Turbo only)
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

2. There may be several small leaks, which correspond in total to the leak determined here.

P0444

Diagnostic information - DME (DFI) control unit

Tank vent valve driver

Diagnostic conditions
- Perform tank vent valve short test

or:
- Time since engine start > 10 second(s)
- Tank vent valve activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+ or open circuit in the lines (power supply or tank vent valve activation)
- Tank vent valve faulty

P0455

Diagnostic information - DME (DFI) control unit

Tank system - leak

Diagnostic conditions
- Perform tank leak short test

or:
- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 40 °C (41 … 104 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 7 ... 120 km/h (5 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes
- ♦ Tank cap loose/does not close (properly)
- ♦ Tank cap leaking/faulty
- ♦ Vacuum system leaking (See ⓘ 1)
- ♦ Vacuum pump faulty
- ♦ Tank vent valve (TEV) mechanically faulty (does not close (properly))
- ♦ Leakage diagnosis pump - fresh-air side constricted (dust/dirt)
- ♦ Internal (diaphragm) or external leak in leakage diagnosis pump
- ♦ Fuel tank system (with hoses) leaking

Fault setting condition(s)
- Total leakage in fuel tank system (See ⓘ 2):
  - ♦ Diameter approx. 0.5 - 1 mm - micro leak P0456
  - ♦ Diameter approx. 1 - 2 mm - minor leak P0442
  - ♦ Diameter > 2 mm - major leak P0455

ⓘ INFORMATION

1. The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Variable intake manifold (not Turbo)
  - ♦ Boost pressure control cycle valve (Turbo only)
  - ♦ Diverter solenoid valve (Turbo only)
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

2. There may be several small leaks, which correspond in total to the leak determined here.

Diagnostic information - DME (DFI) control unit

Tank system - leak

Diagnostic conditions
- Perform tank leak short test

or:
- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 40 °C (41 … 104 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 7 ... 120 km/h (5 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes
- ♦ Tank cap loose/does not close (properly)
- ♦ Tank cap leaking/faulty
- ♦ Vacuum system leaking (See ⓘ 1)
- ♦ Vacuum pump faulty
- ♦ Tank vent valve (TEV) mechanically faulty (does not close (properly))
- ♦ Leakage diagnosis pump - fresh-air side constricted (dust/dirt)
- ♦ Internal (diaphragm) or external leak in leakage diagnosis pump
- ♦ Fuel tank system (with hoses) leaking

Fault setting condition(s)
- Total leakage in fuel tank system (See ⓘ 2):
  - ♦ Diameter approx. 0.5 - 1 mm - micro leak P0456
  - ♦ Diameter approx. 1 - 2 mm - minor leak P0442
  - ♦ Diameter > 2 mm - major leak P0455

ⓘ INFORMATION

1. The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Variable intake manifold (not Turbo)
  - ♦ Boost pressure control cycle valve (Turbo only)
  - ♦ Diverter solenoid valve (Turbo only)
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

2. There may be several small leaks, which correspond in total to the leak determined here.

P0458

Diagnostic information - DME (DFI) control unit

Tank vent valve driver: below limit value

Diagnostic conditions
- Perform tank vent valve short test

or:
- Time since engine start > 10 second(s)
- Leakage diagnosis pump not activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground (tank vent valve activation)
- Tank vent valve faulty

P0459

Diagnostic information - DME (DFI) control unit

Tank vent valve driver

Diagnostic conditions
- Perform tank vent valve short test

or:
- Time since engine start > 10 second(s)
- Tank vent valve activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+ or open circuit in the lines (power supply or tank vent valve activation)
- Tank vent valve faulty

P0460

Diagnostic information - DME (DFI) control unit

Fuel level sensor

Diagnostic conditions
- Ignition on

Possible fault causes
♦ See Instrument cluster fault memory

P0461

Diagnostic information - DME (DFI) control unit

Fuel level sensor

Diagnostic conditions
- Ignition on

Possible fault causes
♦ See Instrument cluster fault memory

Diagnostic information - DME (DFI) control unit

Radiator fan control unit driver

⚠WARNING

Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!

- ♦ **ALWAYS** keep hair or clothing out of the rotating range of the fan.
- ♦ DO NOT reach into the rotating fan.
- ♦ **DO NOT** place tools or other items in the rotating range of the fan.
- ♦ Perform work on the fan only with the ignition switched off.
- ♦ Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE

Sensitive electronics!
Risk of irreparable damage to electronic components!

- ♦ **DO NOT** carry out electrical tests.
- ♦ **DO NOT** connect external power sources.

Diagnostic conditions

- ● Ignition on

Possible fault causes

- ♦ Short circuit to ground or open circuit in lines (power supply to radiator fan control unit terminal 30)
- ♦ Short circuit to B+/ground or open circuit in the line (radiator fan control unit activation)
- ♦ Radiator fan control unit faulty

P0491

Diagnostic information - DME (DFI) control unit

Bank 1 secondary-air system

Diagnostic conditions

- Perform all short tests from top to bottom, up to and including secondary air.

or

- The diagnostic function starts under the following conditions:
  - Engine running, with:
    - Ambient temperature > 5 °C (41 °F)
    - Engine start temperature 5 ... 32 °C (41 … 90 °F)
    - Secondary-air injection active
  - None of the following faults stored: Oxygen sensor upstream of catalytic converter, engine coolant temperature sensor, camshaft adjustment, ambient pressure, ambient temperature
- The diagnostic function ends under the following conditions:
  - Oxygen sensor upstream of catalytic converter not ready for operation
  - Total time period (diagnostics) exceeded (depending on: engine start temperature)
- Diagnostics is interrupted for as long as the following conditions exist:
  - Engine speed > 3,500 rpm
  - Mass air flow > 750 mg/stroke
  - Overrun phase(s)

ⓘ INFORMATION

♦ The diagnostic function ends with the end of secondary-air injection.
♦ A certain number of measurements must have taken place within diagnostics, between operational readiness of the oxygen sensors and the end of secondary-air injection.
♦ If this is not the case, diagnostics is ended without a result.

Possible fault causes

♦ Catalytic converter faulty (broken)
♦ Leak in secondary-air injection line
♦ Bank 1 secondary-air valve stuck/frozen
♦ Air intake duct (engine) constricted/coked
♦ Fuel/air mixture preparation not adapted

Fault setting condition(s)

- Actual value <> setpoint lambda control deviation
  - The diagnostic function checks whether deviation of the lambda controllers is as expected upon activation.

P0492

Diagnostic information - DME (DFI) control unit

Bank 2 secondary-air system

Diagnostic conditions

- Perform all short tests from top to bottom, up to and including secondary air.

or

- The diagnostic function starts under the following conditions:
  - Engine running, with:
    - Ambient temperature > 5 °C (41 °F)
    - Engine start temperature 5 ... 32 °C (41 ... 90 °F)
    - Secondary-air injection active
  - None of the following faults stored: oxygen sensor ahead of catalytic converter, engine coolant temperature sensor, camshaft adjustment, ambient pressure, ambient temperature
- The diagnostic function ends under the following conditions:
  - Oxygen sensor ahead of catalytic converter not ready for operation
  - Total time period (diagnostics) exceeded (depending on: engine start temperature)
- Diagnostics is interrupted for as long as the following conditions exist:
  - Engine speed > 3,500 rpm
  - Mass air flow > 750 mg/stroke
  - Overrun phase(s)

ⓘ INFORMATION

♦ The diagnostic function ends with the end of secondary-air injection.
♦ A certain number of measurements must have taken place within diagnostics, between operational readiness of the oxygen sensors and the end of secondary-air injection.
♦ If this is not the case, diagnostics is ended without a result.

Possible fault causes

♦ Catalytic converter faulty (broken)
♦ Leak in secondary-air injection line
♦ Bank 2 secondary-air valve stuck/frozen
♦ Air intake duct (engine) constricted/coked
♦ Fuel-air mixture preparation not adapted

Fault setting condition(s)

- Actual value <> setpoint lambda control deviation
  - The diagnostic function checks whether deviation of the lambda controllers is as expected upon activation.

P0501

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving with:
  - Brake pedal not pressed
- None of the following faults stored: U0129, P0503

Possible fault causes
- Fault in PSM area

Fault setting condition(s)
- Delay implausible, too long (measured value), with:
  - Brake pedal not pressed

P0502

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving with:
  - Engine temperature > 30 °C (86 °F)
  - Overrun phase(s) > 1.5 second(s)
  - Engine speed 1.408 .... 3,000 rpm
- None of the following faults stored: U0129, P0503

Possible fault causes
♦ Fault in PSM area

Fault setting condition(s)
- Vehicle speed < 3 km/h or 1 mph (measured value), with:
  - Diagnostic conditions

P0503

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving
- None of the following faults stored: U0129

Possible fault causes
- Fault in PSM area

Fault setting condition(s)
- Vehicle speed > 350 km/h or 218 mph (measured value)

Diagnostic information - DME (DFI) control unit

Idle speed control at stop, lower limit value

Diagnostic conditions
- Engine temperature > 60 °C (140 °F)
- Idling > 20 second(s)
- Vehicle standstill
- Engine without load (A/C system off, steering straight ahead)
- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  ⇒ See actual value A060-Ambient pressure from DME (measured)
- None of the following functions active: Tank ventilation, Secondary air injection
- None of the following faults stored: Speed, throttle potentiometer, engine temperature, intake air temperature, tank vent valve, tank ventilation system

Possible fault causes
- Fuel quality insufficient
- Air cleaner blocked/frozen
- Air guide ahead of throttle valve blocked
- Ancillary units sluggish
- Exhaust system blocked

Fault setting condition(s)
Idle speed deviation > 20 second(s)

Diagnostic information - DME (DFI) control unit

Idle speed control at stop, upper limit value

Diagnostic conditions
- Engine temperature > 60 °C (140 °F)
- Idling > 20 second(s)
- Vehicle standstill
- Engine without load (A/C system off, steering straight ahead)
- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  ⇒ See actual value A060-Ambient pressure from DME (measured)
- None of the following functions active: Tank ventilation, Secondary air injection
- None of the following faults stored: Speed, throttle potentiometer, engine temperature, intake air temperature, tank vent valve, tank ventilation system

Possible fault causes
- ♦ Intake manifold leaking
- ♦ Positive crankcase ventilation leaking
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
Idle speed deviation > 20 second(s)

P050A

Diagnostic information - DME (DFI) control unit

Idle speed control after cold start at stop, upper limit value

Diagnostic conditions
- Engine temperature -10 °C (14 °F)
- Cold start (catalytic converter heating measure)
- Idling > 20 second(s)
- Vehicle standstill
- Engine without load (A/C system off, steering straight ahead)
- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  ⇒ See actual value A060-Ambient pressure from DME (measured)
- None of the following functions active: Tank ventilation, Secondary air injection
- None of the following faults stored: Speed, throttle potentiometer, engine temperature, intake air temperature, tank vent valve, tank ventilation system

Possible fault causes
- ♦ Intake manifold leaking
- ♦ Positive crankcase ventilation leaking
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
- Idle speed deviation > 20 second(s) during cold start

P050B

Diagnostic information - DME (DFI) control unit

Ignition timing angle after cold start

Diagnostic conditions
- Cold start
- then driving

Possible fault causes
ⓘ This fault entry is used for information purposes only; the actual cause of the fault is in another area.
♦ Significant engine running problems force the engine control system to leave the permitted ignition timing range in order to keep the engine running.

Diagnostic information - DME (DFI) control unit

Engine coolant temperature stuck **(stuck low)**

Diagnostic conditions
- Thermal management system test (if available)

or
- Engine start temperature < 35 °C (95 °F)
- Engine running > 3 minute(s)
- Cooling performance high and low
- None of the following faults stored: P0116, P0117, P0118, P0119, P3081, P3082

Possible fault causes
- Engine coolant temperature sensor faulty
- Resistor installed (instead of engine coolant temperature sensor)
- Thermostat stuck open (faulty)

Fault setting condition(s)
- Increase in engine coolant temperature (measured) < 22.5 °C (72.5 °F), with:
  - Increase in engine coolant temperature model > 22.5 °C (72.5 °F)

P050D

Diagnostic information - DME (DFI) control unit

Idle speed control after cold start at stop, lower limit value

Diagnostic conditions
- Engine temperature -10 °C (14 °F)
- Cold start (catalytic converter heating measure)
- Idling > 20 second(s)
- Vehicle standstill
- Engine without load (A/C system off, steering straight ahead)
- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  ⇒ See actual value A060-Ambient pressure from DME (measured)
- None of the following functions active: Tank ventilation, Secondary air injection
- None of the following faults stored: Speed, throttle potentiometer, engine temperature, intake air temperature, tank vent valve, tank ventilation system

Possible fault causes
- Fuel quality insufficient
- Air cleaner blocked/frozen
- Air guide ahead of throttle valve blocked
- Ancillary units sluggish
- Exhaust system blocked

Fault setting condition(s)
Idle speed deviation > 20 second(s) during cold start

P0513

Diagnostic information - DME (DFI) control unit

Immobilizer code incorrect from front-end electronics

Diagnostic conditions
- Ignition on

Possible fault causes
- Immobilizer code incorrect from front-end electronics

Fault effects
- Engine cannot be started

Diagnostic information - DME (DFI) control unit

Oil pressure sensor

Diagnostic conditions
- Idling > 1 minute(s), then:
- Engine speed > 3,010 rpm, then:
- Switch off ignition and remove ignition key > 1 minute(s)

Possible fault causes
- Engine oil pressure too low
  (oil level, oil thinning, dirt in oil circuit, oil circuit faulty)
- Oil pressure sensor faulty (incorrect trimming compared with ambient pressure sensor)

Fault setting condition(s)
- Engine oil pressure > 6.2 bar at engine speed < 1,000 rpm

or
- Engine oil pressure < 1.5 bar at engine speed > 3,008 rpm

or
- Deviation between engine oil pressure and ambient pressure > 0.4 bar in control unit run-on (after ignition off)

P0522

Diagnostic information - DME (DFI) control unit

Oil pressure sensor

Diagnostic conditions
- Engine start detected

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Oil pressure sensor faulty

P0523

Diagnostic information - DME (DFI) control unit

Oil pressure sensor

Diagnostic conditions
- Engine start detected

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Oil pressure sensor faulty

P0524

Diagnostic information - DME (DFI) control unit

Engine oil pressure too low

ⓘ INFORMATION
Technical Information 29/10 (in repair group 1703) must be observed in case of vehicles that have been stationary for an extended period (> 150 days).

Diagnostic conditions
- Engine running
- None of the following faults stored: P0521, P0522, P0523

Possible fault causes
- ♦ Engine oil pressure too low (oil level, oil thinning, dirt in oil circuit, oil circuit faulty)

Fault setting condition(s)
- Engine oil pressure < setpoint value for longer than 3 second(s)

P052A

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment, bank 1 after cold start
- **during catalytic converter heating measure**

ⓘ INFORMATION
If only the fault for camshaft adjustment after cold start is entered, particular attention should be paid to causes such as viscous engine oil or components that stick when cold.

ⓘ INFORMATION
♦ The catalytic converter heating measures take place for a limited time under certain conditions (cold start).
♦ These include dual injection, timing retardation, additional camshaft adjustment, ...

Diagnostic conditions
- Cold start with catalytic converter heating measure
- then engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
♦ Engine oil pressure too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or oil pump sluggish/stuck)
♦ Solenoid valve for hydraulic camshaft adjustment sluggish/stuck
♦ Camshaft adjustment sluggish/stuck
♦ Intake camshaft sluggish/stuck

Fault setting condition(s)
- Intake camshaft actual value/setpoint value deviation too high

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment, bank 2 after cold start
- **during catalytic converter heating measure**

ⓘ INFORMATION
If only the fault for camshaft adjustment after cold start is entered, particular attention should be paid to causes such as viscous engine oil or components that stick when cold.

ⓘ INFORMATION
♦ The catalytic converter heating measures take place for a limited time under certain conditions (cold start).
♦ These include dual injection, timing retardation, additional camshaft adjustment, ...

Diagnostic conditions
- Cold start with catalytic converter heating measure
- then engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
♦ Engine oil pressure too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or oil pump sluggish/stuck)
♦ Solenoid valve for hydraulic camshaft adjustment sluggish/stuck
♦ Camshaft adjustment sluggish/stuck
♦ Intake camshaft sluggish/stuck

Fault setting condition(s)
- Intake camshaft actual value/setpoint value deviation too high

P053A

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

P053B

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

P053F

Diagnostic information - DME (DFI) control unit

Fuel high pressure after cold start

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

ⓘ INFORMATION

♦ The catalytic converter heating measures take place for a limited time under certain conditions after the engine is started.
♦ These include dual injection, timing retardation, additional camshaft adjustment, ...

Diagnostic conditions
- Engine start (cold start + catalytic converter heating measure)
- Engine temperature > -10 °C (14 °F)
- Engine running > 5 second(s)

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Quantity control valve faulty (in fuel high-pressure pump)
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
Fuel high pressure deviation > 20% (actual value - setpoint value) during catalytic converter heating measure.

Diagnostic information - DME (DFI) control unit

Brake vacuum sensor: implausible

Diagnostic conditions
- Brake pedal fully depressed 5 times with:
  - Engine off
- then engine running > 1 minute(s) with:
  - Brake pedal not actuated > 40 second(s)
- None of the following faults stored: P0557, P0558

Possible fault causes
- Vacuum system leaking
- Brake light switch faulty
- Brake light switch aligned incorrectly at brake pedal
- Brake vacuum sensor faulty

Fault setting condition(s)
- A specified vacuum value was not reached, during:
  - Engine start, then:
    - Engine running > 1 minute(s)

    and
    - Brake pedal not actuated (or apparently not actuated) > 40 second(s)

Fault effects
- Start/Stop system not active

Diagnostic information - DME (DFI) control unit

Brake vacuum sensor: implausible

Diagnostic conditions
- Under the following conditions 5x while driving:
  - Driving > 60 second(s) with:
    - Brake pedal not pressed
  - then driving with brake pedal pressed, at:
    - Vehicle speed > 50 km/h (31 mph)
    - Brake pressure > 10 bar
  - then driving > 30 second(s) with:
    - Brake pedal not pressed
  - then driving with brake pedal pressed, at:
    - Vehicle speed > 50 km/h (31 mph)
    - Brake pressure > 10 bar

Possible fault causes
- ♦ Vacuum system faulty
- ♦ Brake booster faulty
- ♦ Brake vacuum sensor faulty

Fault setting condition(s)
Vacuum is retained despite braking operations under diagnostic conditions

Fault effects
- ♦ Start/Stop system not active

P0557

Diagnostic information - DME (DFI) control unit

Brake vacuum sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- Short circuit to B+/ground/between lines or open circuit in the lines
- Brake vacuum sensor faulty

Fault effects
- Start/Stop system not active

P0558

Diagnostic information - DME (DFI) control unit

Brake vacuum sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- Short circuit to B+/ground/between lines or open circuit in the lines
- Brake vacuum sensor faulty

Fault effects
- Start/Stop system not active

P0562

Diagnostic information - DME (DFI) control unit

Supply voltage

Diagnostic conditions
- Engine running > 6 second(s)

Possible fault causes
- ♦ Vehicle electrical system supply voltage too high > 5 second(s), (e.g. jump-lead starting)
- ♦ Vehicle electrical system supply voltage too low
- ♦ Contact resistance, loose contact or corrosion on connectors or lines (DME (DFI) control unit)

Fault setting condition(s)
- Deviation in supply voltage :
  - ♦ < 10 V (P0562)

  or
  - ♦ > 16 V (P0563)

P0563

Diagnostic information - DME (DFI) control unit

Supply voltage

Diagnostic conditions
- Engine running > 6 second(s)

Possible fault causes
- ♦ Vehicle electrical system supply voltage too high > 5 second(s), (e.g. jump-lead starting)
- ♦ Vehicle electrical system supply voltage too low
- ♦ Contact resistance, loose contact or corrosion on connectors or lines (DME (DFI) control unit)

Fault setting condition(s)
- Deviation in supply voltage :
  - ♦ < 10 V (P0562)

  or
  - ♦ > 16 V (P0563)

P0564

Diagnostic information - DME (DFI) control unit

Cruise control operating stalk

Diagnostic conditions
- Ignition on

Possible fault causes
- Fault in steering wheel electronics area

Fault effects
- Cruise control does not work

P0568

Diagnostic information - DME (DFI) control unit

Cruise control operating stalk

Diagnostic conditions
- Ignition on

Possible fault causes
- Fault in steering wheel electronics area

Fault effects
- Cruise control does not work

P0571

Diagnostic information - DME (DFI) control unit

Brake light switch

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Fault in PSM control unit area

Fault setting condition(s)
- Brake light switch position implausible

P0597

Diagnostic information - DME (DFI) control unit

Thermostat driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Thermostat faulty

P0598

Diagnostic information - DME (DFI) control unit

Thermostat driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Thermostat faulty

P0599

Diagnostic information - DME (DFI) control unit

Thermostat driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Thermostat faulty

P0601

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P0603

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P0604

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P0605

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P0606

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Faults that lead to limp-home mode (See ⓘ)
- ♦ DME (DFI) control unit software error

  ► Re-programming (See ⓘ)

ⓘ INFORMATION
- ♦ When a serious fault is detected in the engine control system (control unit or parts such as the throttle valve, etc.), the control unit switches to a limp-home program and simultaneously stores a corresponding fault. The >Reduced engine power< warning message is displayed in the instrument cluster.
- ♦ This fault might not be detected again immediately away after a restart.
- ♦ Fault P0607 is therefore stored as well, and the control unit already switches to the limp-home program during the restart.
- ♦ If one or more **other faults** are entered in addition to fault P0607:
  - ♦ First correct the other faults,
  - ♦ then clear the fault memory and meet the diagnostic conditions (see above).
- ♦ If **only** fault P0607 is stored, there is an error in the software (DME (DFI) control unit).

P0611

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

Diagnostic information - DME (DFI) control unit

Sensor voltage 1

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- Short circuit to B+/ground or open circuit in the line
- Pedal sensor faulty
- Oil pressure sensor faulty
- Fuel high-pressure sensor faulty
- Boost pressure sensor faulty, with:
  - Turbocharger
- Clutch rpm sensor faulty , with:
  - Manual transmission

Fault setting condition(s)
- Deviation in sensor voltage:
  - < 4.7 V (P0642)

  or
  - > 5.3 V (P0643)

at:
  - Connector [A], contact 40

  or
  - Connector [A], contact 42

  or
  - Connector [B], contact 18

Diagnostic information - DME (DFI) control unit

Sensor voltage 1

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- Short circuit to B+/ground or open circuit in the line
- Pedal sensor faulty
- Oil pressure sensor faulty
- Fuel high-pressure sensor faulty
- Boost pressure sensor faulty, with:
  - Turbocharger
- Clutch rpm sensor faulty , with:
  - Manual transmission

Fault setting condition(s)
- Deviation in sensor voltage:
  - < 4.7 V (P0642)

  or
  - > 5.3 V (P0643)

at:
- Connector [A], contact 40

  or
- Connector [A], contact 42

  or
- Connector [B], contact 18

P0650

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - DME (DFI) control unit

Sensor voltage 2

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line
- ♦ Pedal sensor faulty
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
- Deviation in sensor voltage:
  - ♦ < 4.7 V (P0652)

  or
  - ♦ > 5.3 V (P0653)

at:
- ♦ Connector [A], contact 53

  or
- ♦ Connector [B], contact 62

Diagnostic information - DME (DFI) control unit

Sensor voltage 2

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line
- ♦ Pedal sensor faulty
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
- Deviation in sensor voltage:
  - ♦ < 4.7 V (P0652)

  or
  - ♦ > 5.3 V (P0653)

at:
- ♦ Connector [A], contact 53

  or
- ♦ Connector [B], contact 62

Diagnostic information - DME (DFI) control unit

Variable intake manifold driver

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)
- ♦ Solenoid valve for intake manifold switch-over faulty

P0661

Diagnostic information - DME (DFI) control unit

Variable intake manifold driver

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)
- ♦ Solenoid valve for intake manifold switch-over faulty

P0662

Diagnostic information - DME (DFI) control unit

Variable intake manifold driver

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)
- ♦ Solenoid valve for intake manifold switch-over faulty

Diagnostic information - DME (DFI) control unit

Start delay due to undervoltage

Diagnostic conditions
- DME (DFI) control unit is viable (voltage > 5 V at A34 (terminal15) + ground)
- Ignition is switched on (voltage present at A34)

Possible fault causes
- If the actual value >A010-DME SUPPLY VOLTAGE< in the FreezeFrame of the fault entry P0685 was stored at **<** 8.0 V:
  - ♦ Voltage is too low or voltage will drop when the engine starts (see ⓘ).

- If the actual value >A010-DME SUPPLY VOLTAGE< in the FreezeFrame of the fault entry P0685 was stored at **>** 8.0 V:
  - ♦ Open circuit in power supply for main-relay control circuit
  - ♦ Short circuit to ground or open circuit in the lines between main relay and DME (DFI) control unit (DME (DFI) control unit power supply)
  - ♦ Short circuit to B+ or open circuit in the lines between DME (DFI) control unit and main relay (main relay activation)
  - ♦ Main relay faulty

Fault setting condition(s)
- A check is carried out once to determine whether the voltage at A3/A5/A6 has exceeded a minimum value:
  - ♦ Panamera
    > 6.0 V
  - ♦ Cayenne with program version up to WS5880
    > 6.0 V
  - ♦ Cayenne with program version WS5890 or higher (week 45/10)
    > 5.0 V
- Test duration 0.0 to approx. 0.5 seconds after ignition on, or after control unit reset.

Fault effects
♦ Fuel injection is blocked.

ⓘ INFORMATION
♦ According to specifications, the DME main relay must work only at 8.0 V or higher.
♦ There are also relays that work at a significantly lower voltage.
♦ The entire engine control system can work at 5.0 V or higher.
♦ If the start voltage drops, this can cause the diagnosis to detect the fault >START DELAY DUE TO UNDERVOLTAGE< and fuel injection will be blocked.
♦ The starter relay can also pick up at 3 V.
♦ This means that the starter might still turn, but the engine cannot start.
♦ The various software versions can result in various types of behavior and displays:

I. Possible behavior and displays in the Panamera and Cayenne with program version up to WS5880:

- Start voltage < 5 V:
  - Starter might turn
  - Engine does not start
  - NO DME fault entries because the DME (DFI) control unit is not viable.

- Start voltage < 5 V, but > 5 V … < 6 V before and after the start attempt
+ DME main relay does NOT work:
  - Starter might turn
  - Engine does not start
  - DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  - NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.
  - DME fault entry P1572 because the control unit voltage dropped to < 5 V and as a result, control unit run-on could not be completed.

- Start voltage < 5 V, but > 5 V … < 6 V before and after the start attempt
+ DME main relay is working:
  - Starter might turn
  - Engine does not start
  - DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< > 5 V … < 6 V
  - NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.
  - DME fault entry P1572 because the control unit voltage dropped to < 5 V and as a result, control unit run-on could not be completed.

- Start voltage > 5 V … < 6 V
+ DME main relay does NOT work:
  - Starter might turn
  - Engine does not start
  - DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  - NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.

- Start voltage > 5 V … < 6 V
+ DME main relay is working:
  - Starter turns
  - Engine does not start
  - DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< > 5 V … < 6 V
  - NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.

- Start voltage > 6V … < 8 V

+ DME main relay does NOT work:
  ♦ Starter turns
  ♦ Engine does not start
  ♦ DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  ♦ NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.

- Start voltage > 6V
+ DME main relay is working:
  ♦ Starter turns
  ♦ Engine starts
  ♦ NO DME fault entries

- Start voltage > 8 V
+ DME main relay does NOT work:
  ♦ Starter turns
  ♦ Engine does not start
  ♦ DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  ♦ DME fault entry P0686 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V

II. Behavior and displays in the E2 with WS5890 or higher:

- Start voltage < 5 V:
  ♦ Starter might turn
  ♦ Engine does not start
  ♦ NO DME fault entries because the DME (DFI) control unit is not viable.

- Start voltage > 5 V … < 8 V
+ DME main relay does NOT work:
  ♦ Starter turns
  ♦ Engine does not start
  ♦ DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  ♦ NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.

- Start voltage > 5 V … < 8 V
+ DME main relay is working:
  ♦ Starter turns
  ♦ Engine starts
  ♦ NO DME fault entries

- Start voltage > 8 V
+ DME main relay does NOT work:
  ♦ Starter turns

♦ Engine does not start
♦ DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
♦ DME fault entry P0686 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V

- Start voltage > 8 V

+ DME main relay is working:
♦ Starter turns
♦ Engine starts
♦ NO DME fault entries

P0686

Diagnostic information - DME (DFI) control unit

Main relay off

Diagnostic conditions
- Vehicle voltage > 8.0 V
- Ignition off
- Control unit run-on completed (See ⓘ)
- Then ignition on

Possible fault causes
♦ Main relay faulty (contact stuck)
♦ Short circuit to B+ in line between main relay and DME (DFI) control unit (DME (DFI) control unit power supply)
♦ Short circuit to ground in line between DME (DFI) control unit and main relay (main relay activation)

Fault setting condition(s)
- Power supply for DME (DFI) control unit > 4.0 V at connector [A], contact 3/5/6, with :
- Power supply for DME (DFI) control unit > 0.0 V at connector [A], contact 34 (terminal 15)

ⓘ INFORMATION
♦ After the ignition is switched off (terminal 15), the DME control unit switches to control unit run-on mode.
♦ The run-on period depends on many underlying conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P0687

Diagnostic information - DME (DFI) control unit

Main relay ON

Diagnostic conditions
- Vehicle voltage > 8.0 V
- Ignition on

Possible fault causes
♦ Main relay faulty
♦ Open circuit in power supply for main-relay control circuit
♦ Short circuit to ground or open circuit in the lines between main relay and DME (DFI) control unit (DME (DFI) control unit power supply)
♦ Short circuit to B+ or open circuit in the lines between DME (DFI) control unit and main relay (main relay activation)

Fault setting condition(s)
- Power supply for DME (DFI) control unit < 6.0 V at connector [A], contact 3/5/6, with :
  - Power supply for DME (DFI) control unit > 8.0 V at connector [A], contact 34 (terminal 15)

P0700

Diagnostic information - DME (DFI) control unit

Transmission control unit fault

Diagnostic conditions

Engine running

Possible fault causes

♦ Fault entry in PDK control unit (see ⓘ)

ⓘ INFORMATION

Different fault healing strategies in the engine and transmission control units can lead to a situation in which the original transmission fault no longer exists in the transmission fault memory (healed) but the note (P0700) nevertheless remains entered in the engine control unit (not yet healed).

P0701

Diagnostic information - DME (DFI) control unit

Torque intervention from transmission control unit implausible

Diagnostic conditions
- Drive with gear changes

Possible fault causes
- ♦ Shifting in PDK takes too long

Fault setting condition(s)
- The torque intervention by the PDK control unit takes too long; it is therefore implausible for the DME control unit.

P0716

Diagnostic information - DME (DFI) control unit

Manual transmission speed sensor

Diagnostic conditions
- Time since engine start > 5 second(s)
- Clutch closed

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Manual transmission speed sensor faulty

Fault effects
- Reduced engine torque

P0717

Diagnostic information - DME (DFI) control unit

Manual transmission speed sensor

Diagnostic conditions
- Time since engine start > 5 second(s)
- Clutch closed

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Manual transmission speed sensor faulty

Fault effects
- Reduced engine torque

P0850

Diagnostic information - DME (DFI) control unit

P/N input signal, open circuit/short circuit to B+

Diagnostic conditions
- Ignition on > 3 second(s)
- then start engine, with:
  - Brake pressed
  - Selector-lever position P or N

Possible fault causes
♦ Open circuit/short circuit to B+ in signal line

Fault setting condition(s)
Deviation in signal for P/N input signal and signal via CAN

Fault effects
♦ Starter does not turn

Diagnostic information - DME (DFI) control unit

P/N input signal, short circuit to ground

Diagnostic conditions
- Ignition on > 3 second(s)
- then start engine, with:
  - Brake pressed
  - Selector-lever position P or N

Possible fault causes
♦ Short circuit to ground in signal line

Fault setting condition(s)
Deviation in signal for P/N input signal and signal via CAN

Fault effects
♦ Engine start possible, with:
- Selector-lever position R or D or M

Diagnostic information - DME (DFI) control unit

Torque request from PSM implausible

Diagnostic conditions
● Drive with PSM intervention for vehicle stabilization

Possible fault causes
♦ Fault in PSM control unit area

Fault setting condition(s)
● Torque request from PSM is implausibly high compared to driver setpoint torque (via accelerator pedal).

Fault effects
♦ All torque requests from the PSM are ignored for this trip ⇒ PSM interventions restricted.

P1001

Diagnostic information - DME (DFI) control unit

Fuel level sensor

Diagnostic conditions
- Ignition on

Possible fault causes
♦ See Instrument cluster fault memory

Diagnostic information - DME (DFI) control unit

Fuel high pressure quantity

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Engine speed 450 .... 4,000 rpm
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Driving with different operating conditions

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Quantity control valve faulty (in fuel high-pressure pump)
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
Deviation in quantity control actual value (fuel high pressure)

Diagnostic information - DME (DFI) control unit

Fuel pressure/quantity too low at start

ⓘ INFORMATION 1

This fault entry can be caused by various reasons.
♦ If the fault was **NOT entered while the engine was starting**, but while the engine was running normally, a check must be carried out in the **crankshaft sensor** area (**See** ⓘ **2**).
♦ Fault finding in the fuel area must only be carried out if a customer complains that starting times are too long AND if the fault was entered while the engine was starting.
♦ If there is no such customer complaint, however, the only measure to be taken is to clear the fault memory.

Diagnostic conditions
● Engine start
● Engine temperature - 10 ... +100 °C (14 … 212 °F)
● Engine running > 5 second(s)

Possible fault causes
♦ Short-term failure of the engine speed signal as a result of a crankshaft sensor fault with or without a corresponding fault entry
(See ⓘ 2)
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
(See ⓘ **3**)
♦ Quantity control valve faulty (in fuel high-pressure pump)
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
● The fuel pressure required for carrying out a high-pressure start was not reached or was not reached quickly enough
ⓘ Low-pressure start is enabled; starting takes considerably longer (up to 2 sec.).

ⓘ INFORMATION 2

● If engine speed = 0, a starting setpoint value is set for the fuel high pressure that is higher than the setpoint value at idle speed or at a low load.
● An engine start is detected if the engine speed increases from 0 to > 300 rpm.
● When an engine start is detected, a check determines whether the measured fuel high pressure reaches the setpoint value within a certain number of engine revolutions.
⇒ If the engine's speed signal fails briefly (e.g. 6/1,000 seconds) and is then restored, the following things happen:
1. Engine speed = 0 ▶ Starting setpoint value for the fuel high pressure is set.
2. Engine speed increases to over 300 rpm ▶ Engine start is detected.
3. Comparison of setpoint value and actual value of the fuel high pressure ▶ Fault entry P1023, although there was no actual engine start.
4. Entries in the extended fault memory for P1023 are as follows:
♦ *40_Time after Start* > 5 s
♦ *40_Engine RPM* > 600 rpm

♦ *40_Vehicle Speed* > 0 km/h (0 mph)

ⓘ INFORMATION 3

Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

P1024

Diagnostic information - DME (DFI) control unit

Fuel high pressure too high after engine off

Diagnostic conditions
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Engine running > 5 second(s)
- then ignition off > 10 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines ▶ Fuel high-pressure sensor
- ♦ Quantity control valve faulty (in fuel high-pressure pump)

Fault setting condition(s)
- Fuel high pressure drops too slowly after engine off

Diagnostic information - DME (DFI) control unit

Fuel high pressure adaptation

ⓘ INFORMATION 1

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Engine speed 450 .... 4,000 rpm
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Driving with different operating conditions

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure adaptation required (See ⓘ 2)
♦ Fuel high-pressure pump faulty

ⓘ INFORMATION 2

♦ The old values must be deleted prior to a new adaptation of the fuel high-pressure ranges.
♦ The fuel high-pressure adaptation values can be deleted using >PIWIS Tester II< as follows: >DME< ⇒ >Maintenance/repairs< ⇒ >Delete adaptation values<

P1026

Diagnostic information - DME (DFI) control unit

Fuel high pressure implausible

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Time since engine start > 5 second(s)
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Engine running/driving

Possible fault causes (See Fault setting condition(s))
- Below limit value:
  - ♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
  - ♦ Fuel tank (driven) empty
    - ► See Extended fault memory
    - ⇒ Actual value **40-Fuel Level Input** [**0%**]

- Below limit value or above limit value :
  - ♦ Quantity control valve faulty (in fuel high-pressure pump)
  - ♦ Fuel high-pressure pump faulty

Fault setting condition(s) (See ⓘ)
♦ Below limit value:
- Continuous average fuel high pressure < 10 bar

♦ Above limit value:
- Continuous average fuel high pressure > 135 bar

ⓘ INFORMATION

► See Extended fault memory
⇒ 21-Environmental condition for first fault occurrence /B070-Fuel high pressure actual value
⇒ 21-Environmental condition for first fault occurrence /B060-Fuel high pressure setpoint value

Conversion:
♦ 10,000 hPa = 10 bar = 10,000 mbar
♦ 1,000 kPa = 10 bar = 10,000 mbar
♦ 1 MPa = 10 bar = 10,000 mbar

P1027

Diagnostic information - DME (DFI) control unit

Fuel high pressure fluctuates

Diagnostic conditions
- Engine speed 450 .... 4,000 rpm
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Driving with different operating conditions

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines ▶ Fuel high-pressure sensor
- ♦ Quantity control valve sluggish (in fuel high-pressure pump)

Fault setting condition(s)
The fuel high pressure fluctuates by +/- 25 bar from the setpoint fuel pressure.

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor stuck

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Engine running (driving)
- Engine temperature - 10 ... +100 °C (14 … 212 °F)

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure sensor faulty

Fault setting condition(s)
No change in the fuel high-pressure sensor voltage line, with:
- Engine running

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor stuck at engine start

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Engine start
- Engine temperature - 10 ... +100 °C (14 … 212 °F)

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure sensor faulty

Fault setting condition(s)
No change in the **fuel high-pressure sensor** voltage line, at:
- Engine start

P1036

Diagnostic information - DME (DFI) control unit

Fuel high pressure: too low/too high

Diagnostic conditions
- Engine running
- Fuel high-pressure pump operates normally, i.e.:
  - no engine stop
  - no overrun phase

Possible fault causes
- Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
- Loose contact or corrosion on connectors or lines ▶ **Fuel high-pressure sensor**
- **Quantity control valve** sluggish (in **fuel high-pressure pump**)
- **Fuel high-pressure pump** faulty

Fault setting condition(s)
- The actual fuel high-pressure value deviates from the setpoint fuel pressure by more than 20 bar for longer than 5 seconds.
  - Actual value too low ⇒ P1036
  - Actual value too high ⇒ P1037

ⓘ INFORMATION
•V6 Turbo engines ONLY
The >Fuel high-pressure pump< system tests can be used for testing
⇒ See Diagnostics ▶ DME ▶ Maintenance/repairs ▶ System tests
ⓘ See F1 Help there!

Diagnostic information - DME (DFI) control unit

Fuel high pressure: too low/too high

Diagnostic conditions
- Engine running
- Fuel high-pressure pump operates normally, i.e.:
  - no engine stop
  - no overrun phase

Possible fault causes
- Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
- Loose contact or corrosion on connectors or lines ▶ **Fuel high-pressure sensor**
- **Quantity control valve** sluggish (in **fuel high-pressure pump**)
- **Fuel high-pressure pump** faulty

Fault setting condition(s)
- The actual fuel high-pressure value deviates from the setpoint fuel pressure by more than 20 bar for longer than 5 seconds.
  - Actual value too low ⇒ P1036
  - Actual value too high ⇒ P1037

ⓘ INFORMATION
•V6 Turbo engines ONLY
The >Fuel high-pressure pump< system tests can be used for testing
⇒ See Diagnostics ▶ DME ▶ Maintenance/repairs ▶ System tests
ⓘ See F1 Help there!

P1038

Diagnostic information - DME (DFI) control unit

Fuel high-pressure pump: bank 1 adaptation faulty

Diagnostic conditions
● Perform system test >Fuel high-pressure pump, bank 1<

ⓘ INFORMATION
If the system test takes longer than approx. 5 minutes, it will be canceled without a result.
● This is the case if the tested fuel high-pressure pump can no longer build up high pressure, i.e. can no longer pump fuel
(e.g. low-pressure supply blocked, pump tappets broken, pump faulty, ...).

Possible fault causes
♦ Fuel high-pressure pump, bank 1 faulty

Fault setting condition(s)
ⓘ During the >Fuel high-pressure pump, bank 1< system test, the fuel high-pressure pump for bank 2 is adjusted to zero quantity (switched off) and the fuel high-pressure pump for bank 1 is adapted.
● A fault is entered if the result is not within the permissible adaptation range.

P1039

Diagnostic information - DME (DFI) control unit

Fuel high-pressure pump: bank 2 adaptation faulty

Diagnostic conditions
● Perform system test >Fuel high-pressure pump, bank 2<

ⓘ INFORMATION
If the system test takes longer than approx. 5 minutes, it will be canceled without a result.
● This is the case if the tested fuel high-pressure pump can no longer build up high pressure, i.e. can no longer pump fuel
(e.g. low-pressure supply blocked, pump tappets broken, pump faulty, ...).

Possible fault causes
♦ Fuel high-pressure pump, bank 2 faulty

Fault setting condition(s)
ⓘ During the >Fuel high-pressure pump, bank 2< system test, the fuel high-pressure pump for bank 1 is adjusted to zero quantity (switched off) and the fuel high-pressure pump for bank 2 is adapted.
● A fault is entered if the result is not within the permissible adaptation range.

P1041

Diagnostic information - DME (DFI) control unit

Air cleaner flap solenoid valve driver

Diagnostic conditions
- Engine start

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Air cleaner flap solenoid valve faulty

ⓘ INFORMATION
The air cleaner flap solenoid valve is briefly switched on and is then switched off again after the engine start.

Diagnostic information - DME (DFI) control unit

Air cleaner flap solenoid valve driver

Diagnostic conditions
- Engine start

Possible fault causes
- Short circuit to B+/ground/between lines or open circuit in the lines
- Air cleaner flap solenoid valve faulty

ⓘ INFORMATION
The air cleaner flap solenoid valve is briefly switched on and is then switched off again after the engine start.

P1043

Diagnostic information - DME (DFI) control unit

Air cleaner flap solenoid valve driver

Diagnostic conditions
- Engine start

Possible fault causes
- Short circuit to B+/ground/between lines or open circuit in the lines
- Air cleaner flap solenoid valve faulty

ⓘ INFORMATION
The air cleaner flap solenoid valve is briefly switched on and is then switched off again after the engine start.

P1044

Diagnostic information - DME (DFI) control unit

Acoustic simulator solenoid valve driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground or open circuit in the line (power supply or activation)
- Acoustic simulator solenoid valve faulty

P1045

Diagnostic information - DME (DFI) control unit

Acoustic simulator solenoid valve driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground or open circuit in the line (power supply or activation)
- Acoustic simulator solenoid valve faulty

P1046

Diagnostic information - DME (DFI) control unit

Acoustic simulator solenoid valve driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground or open circuit in the line (power supply or activation)
- Acoustic simulator solenoid valve faulty

P1053

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Tank vent pressure sensor faulty

P1054

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Tank vent pressure sensor faulty

P1055

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Tank vent pressure sensor faulty

P1056

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Tank vent pressure sensor faulty

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor implausible

Diagnostic conditions
● Drive with different operating conditions (idling, full-load acceleration, uniform partial-load operation and overrun phases)
then
♦ Switch off engine and wait for control unit run-on (approx. 90 seconds)
then
♦ Switch on ignition
then
♦ Engine start

Possible fault causes
♦ Tank vent pressure sensor faulty
♦ Tank vent valve stuck closed (see P0441)
♦ Both check valves stuck closed or installed backward (see P0441)

Fault setting condition(s)
Diagnostics part 1:
♦ In the area of the tank vent pressure sensor, a vacuum exists between the tank vent valve and the check valves when the engine is switched off.
♦ Immediately after the engine is switched off, the tank vent valve is opened briefly so that ambient pressure exists there.
♦ After the ignition is switched on, the pressure in the tank vent system is compared with the ambient pressure.
♦ The fault is set if the two pressure values differ by too much from each other.
♦ A deviation of the ambient pressure due to weather changes between the time when the engine is switched off and the time when the ignition is switched on again is taken into account.
♦ Diagnostics is rejected if the differences in the ambient pressure are too high.

Diagnostics part 2:
♦ When the engine is started, the pressure in the tank vent system must decrease by a certain amount due to the vacuum in the intake manifold.
♦ If this does not happen, a check is performed to determine whether the pressure in the tank vent system now decreases when the boost pressure is sufficient.
♦ The fault is set if the pressure does not change sufficiently in both cases.

P1069

Diagnostic information - DME (DFI) control unit

Mass air flow implausibly high (leakage adaptation)

Diagnostic conditions
- Idling > 2 minute(s)
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Oil filler cap leaking
- Positive crankcase ventilation hose leaking (see ⓘ 1)
- Leak in intake system - between throttle valve and engine (intake valve)
- Tank vent valve faulty - closed
- Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow , with:
- increasing deviation over an extended time period (see ⓘ 2)

ⓘ INFORMATION

1. (Turbo only)
The following components are **NOT** tested when an overpressure test is carried out on the intake duct:
- Ventilation check valve (intake-air distributor)
- Ventilation check valve (turbocharger suction hose)
- Positive crankcase ventilation hose between ventilation check valve and crankcase
- Crankcase

2.
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

Diagnostic information - DME (DFI) control unit

Mass air flow implausibly low (leakage adaptation)

Diagnostic conditions
- Idling > 2 minute(s)
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Throttle valve adjusting unit soiled
- Exhaust system blocked/cross-section constricted
- Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- Tank vent valve faulty (mechanical/electrical fault)
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow , with:
- increasing deviation over an extended time period (see ⓘ)

ⓘ INFORMATION
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

P1071

Diagnostic information - DME (DFI) control unit

Mass air flow in near idle speed range, implausibly high

Diagnostic conditions
- Idling > 30 s,
  - then engine speed > 1,500 rpm > 1 s,
    - then idling > 30 s
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Oil filler cap lost
- Positive crankcase ventilation hose leaking (see ⓘ **1**)
- Leak in intake system - between throttle valve and engine (intake valve)
- Tank vent valve faulty - open
- Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Excessive deviation of the throttle valve position during the current engine idling phase compared to the most recent and the penultimate engine idling phases (see ⓘ **2**)

ⓘ INFORMATION

1. (Turbo only)
The following components are NOT tested when an overpressure test is carried out on the intake duct:
- Ventilation check valve (intake-air distributor)
- Ventilation check valve (turbocharger suction hose)
- Positive crankcase ventilation hose between ventilation check valve and crankcase
- Crankcase

2.
The diagnostic function checks whether the value >H040-Mass air flow correction factor< recorded during the current engine idling phase deviates too much from the value during the last engine idling phase:
- If NO, the new value is used as the next reference value, and diagnostics begins again in the next engine idling phase.
- If YES, the test is repeated in the next engine idling phase and compared with the value of the penultimate engine idling phase:
  - If NO relevant deviation still exists, the new value is used as the next reference value.
- The fault is entered if a relevant deviation exists AGAIN. The following information, among other data, is stored in the extended fault memory:

1. XX-Correction value after throttle valve adaptation

This percentage is determined from a characteristic, depending on the intake air temperature, during every throttle valve adaptation.
It serves to prevent incorrect diagnoses that can occur due to adaptation taking place when the throttle valve is too warm or cold.

2. XX-Correction value for mass air flow at idle

Snapshot of the actual value H040 approx. 3 sec. after idling begins (= stabilized state). It is used for comparison with the same value of the most recent (or penultimate if a fault is suspected) idling phase.

3. XX-Difference between the correction values of two idling phases

Difference in the snapshot of actual value H040 between the current idling phase and the same value of the most recent (or penultimate if a fault is suspected) idling phase.

4. XX-Throttle value taught in case of violated environmental conditions

1=YES / 0=NO

Diagnostic information - DME (DFI) control unit

Mass air flow in lower partial-load range, implausibly high

Diagnostic conditions
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Variable intake manifold - mechanical fault (if fitted)
- Intake manifold pressure sensor - electric plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ)

ⓘ INFORMATION
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

Diagnostic information - DME (DFI) control unit

Mass air flow in lower partial-load range, implausibly low

Diagnostic conditions
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Throttle valve adjusting unit soiled

ⓘ A thin film of dirt in the closing area of the throttle valve in the throttle housing suffices, especially if engine adaptation values were reset previously.
- Air cleaner dirty/blocked/frozen
- Air intake (ahead of air cleaner) constricted
- Air guide ahead of throttle valve blocked/cross-section constricted
- Exhaust system blocked/cross-section constricted
- Variable intake manifold - mechanical fault (if fitted)
- Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- Tank vent valve faulty - closed (mechanical/electrical fault)
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ)

ⓘ INFORMATION
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

P1076

Diagnostic information - DME (DFI) control unit

Mass air flow in upper partial-load range, implausibly high

Diagnostic conditions
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Variable intake manifold - mechanical fault (if fitted)
- Intake manifold pressure sensor - electric plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ)

ⓘ INFORMATION
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

P1077

Diagnostic information - DME (DFI) control unit

Mass air flow in upper partial-load range, implausibly low

Diagnostic conditions
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Air cleaner dirty/blocked/frozen
- Air intake (ahead of air cleaner) constricted
- Air guide ahead of throttle valve blocked/cross-section constricted
- Exhaust system blocked/cross-section constricted
- Variable intake manifold - mechanical fault (if fitted)
- Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ)

ⓘ INFORMATION
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

P1147

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: power supply

ⓘ INFORMATION

♦ The oil pressure control valve is supplied with 12 V while the engine is running.
♦ A short circuit to B+ can be detected only during control unit run-on.

Diagnostic conditions

- Engine running, then:
- Ignition off > 1 minute(s)

Possible fault causes

♦ Short circuit to B+ (power supply to oil pressure control valve)
♦ Oil pressure control valve faulty

P1148

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: power supply

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Open circuit/short circuit to ground (power supply to oil pressure control valve)
- ♦ Short circuit to B+/ground or open circuit in the line (oil pressure control valve activation)
- ♦ Oil pressure control valve faulty

P1149

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: power supply

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Open circuit/short circuit to ground (power supply to oil pressure control valve)
- ♦ Short circuit to B+/ground or open circuit in the line (oil pressure control valve activation)
- ♦ Oil pressure control valve faulty

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Short circuit to B+ (oil pressure control valve activation)
♦ Open circuit/short circuit to B+ (power supply to oil pressure control valve)
♦ Oil pressure control valve faulty

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.
♦ The oil pressure is reduced to the minimum pressure in the event of a short circuit to ground.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Short circuit to ground (oil pressure control valve activation)
♦ Open circuit/short circuit to ground (power supply to oil pressure control valve)
♦ Oil pressure control valve faulty

Fault effects
♦ Power supply to oil pressure control valve - is switched off

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Open circuit (oil pressure control valve activation)
♦ Open circuit/short circuit to ground (power supply to oil pressure control valve)
♦ Oil pressure control valve faulty

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

P1182

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

P1183

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234, P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Intake manifold pressure sensor faulty

- **Turbo only**
  - Only if fault P1189 or P1190 (boost pressure sensor) is entered at the same time:
- Leak in vacuum hose at boost pressure control cycle valve or wastegate
- Boost pressure control cycle valve leaking
- Wastegate leaking

Fault setting condition(s)
- The actual value exceeds the defined upper or lower limit (H065)

Fault effects
- Substitute value from model

P1184

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234, P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

- **Turbo only**
  - Only if fault P1189 or P1190 (boost pressure sensor) is entered at the same time:
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve leaking
- ♦ Wastegate leaking

Fault setting condition(s)
- The actual value exceeds the defined upper or lower limit (H065)

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- Fault P0069 also entered:
  - ♦ Intake manifold pressure sensor fault

- No fault P0069 entered:
  - ♦ DME (DFI) control unit faulty

Fault effects
- ♦ Substitute value from model

P1187

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
♦ DME (DFI) control unit faulty

Fault setting condition(s)
- The actual value exceeds the defined upper or lower limit.
  > *A060-Ambient pressure from DME (measured)* <

Fault effects
♦ Substitute value from model

P1188

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
♦ DME (DFI) control unit faulty

Fault setting condition(s)
- The actual value exceeds the defined upper or lower limit.
  > *A060-Ambient pressure from DME (measured)* <

Fault effects
♦ Substitute value from model

P1189

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve): electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234, P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Ground supply faulty
- ♦ Boost pressure sensor faulty

- **Only if fault P1183 or P1184** (intake manifold pressure sensor) **is entered at the same time**:
  - ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
  - ♦ Boost pressure control cycle valve leaking
  - ♦ Wastegate leaking

Fault setting condition(s)
The actual value exceeds the defined upper or lower limit (H210).

Fault effects
- ♦ Substitute value from model

P1190

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve): electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234, P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Boost pressure sensor faulty

- **Only if fault P1183 or P1184** (intake manifold pressure sensor) **is entered at the same time**:
  - Leak in vacuum hose at boost pressure control cycle valve or wastegate
  - Boost pressure control cycle valve leaking
  - Wastegate leaking

Fault setting condition(s)
The actual value exceeds the defined upper or lower limit (H210).

Fault effects
- Substitute value from model

P1265

Diagnostic information - DME (DFI) control unit

Crash signal

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the wiring for the signal line (airbag triggering unit)

P1280

Diagnostic information - DME (DFI) control unit

Fuel pump control unit

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
♦ Fuel pump control unit implausible

Fault effects
♦ The control unit attempts to bring the fuel pump to the setpoint value.

P1281

Diagnostic information - DME (DFI) control unit

Fuel pump control unit: overtemperature

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- Overloading of fuel pump control unit

Fault effects
- The control unit attempts to bring the fuel pump to the setpoint value.

P1282

Diagnostic information - DME (DFI) control unit

Electric fuel pump: sluggish

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- Foreign body in electric fuel pump
- Fuel line blocked
- Electric fuel pump faulty

Fault setting condition(s)
- Current draw max. 30% > setpoint value

Fault effects
- The control unit attempts to bring the fuel pump to the setpoint value.

P1283

Diagnostic information - DME (DFI) control unit

Electric fuel pump: blocked

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- Foreign body in electric fuel pump
- Electric fuel pump faulty

Fault setting condition(s)
- Current draw at least 30% > setpoint value

Fault effects
- The control unit attempts to bring the fuel pump to the setpoint value.

P1284

Diagnostic information - DME (DFI) control unit

Electric fuel pump: electrical fault

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- ♦ Short circuit in lines for fuel pump control unit ⇒ Electric fuel pump
- ♦ Electric fuel pump faulty

Fault effects
- ♦ Electric fuel pump switched off
- ♦ Electric fuel pump activated and tested after 50 ... 150 millisecond(s)

P1285

Diagnostic information - DME (DFI) control unit

Electric fuel pump: electrical fault

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Open circuit in lines for fuel pump control unit ⇒ Electric fuel pump
- ♦ Open circuit in ground line for electric fuel pump
- ♦ Electric fuel pump faulty

Fault effects
- ♦ Electric fuel pump switched off
- ♦ Electric fuel pump activated and tested after 50 ... 150 millisecond(s)

P1286

Diagnostic information - DME (DFI) control unit

Speed deviation

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- Supply voltage for fuel pump control unit too low
- Loose contact or corrosion on connectors or lines
- Leak in fuel line
- Fuel line blocked
- Foreign body in electric fuel pump
- Electric fuel pump sluggish

Fault setting condition(s)
- Speed of electric fuel pump deviates from setpoint speed, at:
  - Supply voltage for fuel pump control unit < 12.5 V
  - Fuel counter-pressure too high
  - Fuel counter-pressure too low
  - Electric fuel pump sluggish

Fault effects
- The control unit attempts to bring the fuel pump to the setpoint value.

P1287

Diagnostic information - DME (DFI) control unit

Electric fuel pump: brief failure

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines

Fault setting condition(s)
- Electric fuel pump failed briefly while driving

Fault effects
♦ The control unit attempts to bring the fuel pump to the setpoint value.

P12A1

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor implausible

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Time since engine start > 250 second(s)
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Engine speed 450 .... 4,000 rpm
- Lambda control active

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure system leaking
♦ Fuel high-pressure sensor faulty
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
Long-term deviation in fuel high-pressure actual value - setpoint value
(The setpoint value is calculated using several variables, e.g. lambda control, quantity control valve, ...).

P12A2

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor implausible

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Time since engine start > 250 second(s)
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Engine speed 450 .... 4,000 rpm
- Lambda control active

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure system leaking
♦ Fuel high-pressure sensor faulty
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
Long-term deviation in fuel high-pressure actual value - setpoint value
(The setpoint value is calculated using several variables, e.g. lambda control, quantity control valve, ...).

P1324

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft timing

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- ♦ Timing wrong (chain jump)
- ♦ Camshaft sensor loose
- ♦ Timing set incorrectly (after repairs)
- ♦ Hall sender rotor (camshaft) wrong or damaged

Fault setting condition(s)
Current timing <> stored timing (last engine run)

P1340

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft timing

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- ♦ Timing wrong (chain jump)
- ♦ Camshaft sensor loose
- ♦ Timing set incorrectly (after repairs)
- ♦ Hall sender rotor (camshaft) wrong or damaged

Fault setting condition(s)
Current timing <> stored timing (last engine run)

P1346

Diagnostic information - DME (DFI) control unit

Valve lift control, bank 1
- All V8 Turbo
- Cayenne V8S

Diagnostic conditions
- Valve lift system short test (if available)

or
- Driving with slight acceleration (See ⓘ), with:
  - Large lift (actual value A220 = 1):
    - Time since engine start > 5 minute(s)
    - Engine speed 1,250 ... 2,200 rpm (actual value A020)
    - Mass air flow 300 … 600 mg/stroke (actual value A050)

- then driving with slight acceleration, with:
  - Small lift (actual value A220 = 0):
    - Time since engine start > 5 minute(s)
    - Engine speed 1,250 ... 2,200 rpm (actual value A020)
    - Mass air flow 180 … 350 mg/stroke (actual value A050)

Possible fault causes
♦ Engine oil pressure too high or too low
♦ Loose contact or corrosion on connectors or lines (power supply for solenoid valve for hydraulic valve lift control)

Fault setting condition(s)
Based on the oscillation behavior of the camshafts, the diagnostic function detects that all the valves have either not switched to the other lift or have not switched quickly enough during valve lift switchover.

ⓘ INFORMATION

A drive with the aforementioned conditions can be performed as follows, for example:
- Engine at operating temperature
- Level route
- Driving in 5th gear (manual)
- Vehicle rolls at approx. 50 km/h or 30 mph (approx. 1,000 rpm)
- This is followed by steady acceleration up to 2200 rpm, with:
  - Acceleration not too high (mass air flow < 600 mg/stroke - actual value A050)

and
  - Acceleration not too low (large lift - actual value A220 = 1)

P1347

Diagnostic information - DME (DFI) control unit

Valve lift control, bank 2
- All V8 Turbo
- Cayenne V8S

Diagnostic conditions
- Valve lift system short test (if available)

or
- Driving with slight acceleration (See ⓘ), with:
  - Large lift (actual value A220 = 1):
    - Time since engine start > 5 minute(s)
    - Engine speed 1,250 ... 2,200 rpm (actual value A020)
    - Mass air flow 300 … 600 mg/stroke (actual value A050)

- then driving with slight acceleration, with:
  - Small lift (actual value A220 = 0):
    - Time since engine start > 5 minute(s)
    - Engine speed 1,250 ... 2,200 rpm (actual value A020)
    - Mass air flow 180 … 350 mg/stroke (actual value A050)

Possible fault causes
♦ Engine oil pressure too high or too low
♦ Loose contact or corrosion on connectors or lines (power supply for solenoid valve for hydraulic valve lift control)

Fault setting condition(s)
Based on the oscillation behavior of the camshafts, the diagnostic function detects that all the valves have either not switched to the other lift or have not switched quickly enough during valve lift switchover.

ⓘ INFORMATION

A drive with the aforementioned conditions can be performed as follows, for example:
- Engine at operating temperature
- Level route
- Driving in 5th gear (manual)
- Vehicle rolls at approx. 50 km/h or 30 mph (approx. 1,000 rpm)
- This is followed by steady acceleration up to 2200 rpm, with:
  - Acceleration not too high (mass air flow < 600 mg/stroke - actual value A050)

and
  - Acceleration not too low (large lift - actual value A220 = 1)

P1359

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder 1 - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder 6 - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder 2 - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder 4 - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder 3 - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder 5 - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

P1372

Diagnostic information - DME (DFI) control unit

Valve lift control, bank 1
- Not V6 Turbo

Diagnostic conditions
- Perform a short test

or
- Engine oil temperature < 111 °C (232 °F) (actual value T030)
- Air conditioning [OFF]

- Small lift:
  - Engine speed 1,200 .... 3,000 rpm (actual value A020)
  - Mass air flow (actual value A050)
    - > 300 … > 175 mg/stroke (depending on: engine speed)
    - < 600 mg/stroke
  - Intake camshaft adjustment > 11° (actual value N060)

- Large lift:
  - Engine speed 1,500 .... 5,000 rpm (actual value A020)
  - Mass air flow (actual value A050)
    - > 800 … > 325 mg/stroke (depending on: engine speed)

Possible fault causes
♦ Oil supply too low
⇒ (e.g. dirty (oil circuit), scavenging restrictor faulty (cylinder head), ...)
♦ Large differences in exhaust backpressure between banks (e.g. due to constricted or blocked passage of an exhaust branch).
♦ Wrong timing, one bank (intake camshaft or exhaust camshaft)
♦ Solenoid valve for hydraulic valve lift control faulty
⇒ (mechanical fault or electrical fault in circuit)

Fault setting condition(s)
Based on the lambda controllers, the diagnostic function detects that all the valves on this bank have either not switched to the other lift or have not switched quickly enough during valve lift switchover.

P1373

Diagnostic information - DME (DFI) control unit

Valve lift control, bank 2
- Not V6 Turbo

Diagnostic conditions
- Perform a short test

or
- Engine oil temperature < 111 °C (232 °F) (actual value T030)
- Air conditioning [OFF]

- Small lift:
  - Engine speed 1,200 .... 3,000 rpm (actual value A020)
  - Mass air flow (actual value A050)
    - > 300 … > 175 mg/stroke (depending on: engine speed)
    - < 600 mg/stroke
  - Intake camshaft adjustment > 11° (actual value N060)

- Large lift:
  - Engine speed 1,500 .... 5,000 rpm (actual value A020)
  - Mass air flow (actual value A050)
    - > 800 … > 325 mg/stroke (depending on: engine speed)

Possible fault causes
♦ Oil supply too low
⇒ (e.g. dirty (oil circuit), scavenging restrictor faulty (cylinder head), ...)
♦ Large differences in exhaust backpressure between banks (e.g. due to constricted or blocked passage of an exhaust branch).
♦ Wrong timing, one bank (intake camshaft or exhaust camshaft)
♦ Solenoid valve for hydraulic valve lift control faulty
⇒ (mechanical fault or electrical fault in circuit)

Fault setting condition(s)
Based on the lambda controllers, the diagnostic function detects that all the valves on this bank have either not switched to the other lift or have not switched quickly enough during valve lift switchover.

P1375

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder 7 - large lift

Diagnostic conditions

- Short test for valve lift of individual cylinders (if available)

or

- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Bar ignition module faulty
♦ Leak in intake-air distributor
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)

- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

P1376

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder 8 - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

P1380

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

Diagnostic information - DME (DFI) control unit

Bank 1 misfire after cold start

Diagnostic conditions
- Cold start (catalytic converter heating measure)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)

● The diagnostic function detects uneven running for the specified cylinder.

● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.

● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Bank 2 misfire after cold start

Diagnostic conditions
- Cold start (catalytic converter heating measure)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)

● The diagnostic function detects uneven running for the specified cylinder.

● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.

● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Ignition timing angle after cold start

Diagnostic conditions
- Cold start
- then driving

Possible fault causes
ⓘ This fault entry is used for information purposes only; the actual cause of the fault is in another area.
♦ Significant engine running problems force the engine control system to leave the permitted ignition timing range in order to keep the engine running.

P1460

Diagnostic information - DME (DFI) control unit

Radiator fan: overtemperature

⚠WARNING
Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!
♦ **ALWAYS** keep hair or clothing out of the rotating range of the fan.
♦ DO NOT reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.

ⓘ INFORMATION
♦ The control unit is activated by the DME control unit via a signal line.
♦ In the opposite direction, the control unit can report faults to the DME control unit.

Diagnostic conditions
● Radiator fan activated > 5 minute(s)

Possible fault causes
♦ Radiator air intake covered (car cover)
♦ Radiator fan control unit faulty

Fault setting condition(s)
● Overtemperature in radiator fan control unit

Fault effects
● 1st threshold exceeded:
  ♦ Radiator fan speed = 1,800 rpm (lowest power loss)
● 2nd threshold exceeded:
  ♦ Radiator fan switched off

P1461

Diagnostic information - DME (DFI) control unit

Radiator fan: electrical fault

⚠WARNING
Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!
♦ **ALWAYS** keep hair or clothing out of the rotating range of the fan.
♦ DO NOT reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.

ⓘ INFORMATION
♦ The control unit is activated by the DME control unit via a signal line.
♦ In the opposite direction, the control unit can report faults to the DME control unit.

Diagnostic conditions
● Radiator fan activated > 5 minute(s)

Possible fault causes
♦ Radiator fan faulty
♦ Radiator fan control unit faulty

Fault effects
♦ Radiator fan switched off

P1462

Diagnostic information - DME (DFI) control unit

Radiator fan: internal power supply

⚠WARNING

Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!

- **ALWAYS** keep hair or clothing out of the rotating range of the fan.
- DO NOT reach into the rotating fan.
- **DO NOT** place tools or other items in the rotating range of the fan.
- Perform work on the fan only with the ignition switched off.
- Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE

Sensitive electronics!
Risk of irreparable damage to electronic components!

- **DO NOT** carry out electrical tests.
- **DO NOT** connect external power sources.

ⓘ INFORMATION

- The control unit is activated by the DME control unit via a signal line.
- In the opposite direction, the control unit can report faults to the DME control unit.

Diagnostic conditions

- Radiator fan activated > 5 minute(s)

Possible fault causes

- Radiator fan faulty
- Radiator fan control unit faulty

P1466

Diagnostic information - DME (DFI) control unit

Radiator fan: mechanical fault

⚠WARNING

Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!

- ♦ **ALWAYS** keep hair or clothing out of the rotating range of the fan.
- ♦ DO NOT reach into the rotating fan.
- ♦ **DO NOT** place tools or other items in the rotating range of the fan.
- ♦ Perform work on the fan only with the ignition switched off.
- ♦ Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE

Sensitive electronics!
Risk of irreparable damage to electronic components!

- ♦ **DO NOT** carry out electrical tests.
- ♦ **DO NOT** connect external power sources.

ⓘ INFORMATION

- ♦ The control unit is activated by the DME control unit via a signal line.
- ♦ In the opposite direction, the control unit can report faults to the DME control unit.

Diagnostic conditions

- ● Radiator fan activated > 5 minute(s)

Possible fault causes

- ♦ Radiator fan sluggish or blocked
- ♦ Radiator fan faulty

Fault setting condition(s)

- ● Radiator fan current draw too high

Fault effects

- ● Sluggish:
  - ♦ Radiator fan speed reduced to 0 rpm
- ● Blocked:
  - ♦ Engine shakes loose

P1502

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1506

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1507

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1508

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- Power supply or ground supply faulty ⇒ See P1559
- DME (DFI) control unit software error ▶ Re-program

ⓘ INFORMATION
- All calculations for functions in the control unit are monitored by a higher-level unit.
- A fault is entered if monitoring detects implausible calculations.

P1509

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Power supply or ground supply faulty ⇒ See P1559
- ♦ DME (DFI) control unit software error ▶ Re-program

ⓘ INFORMATION
- ♦ All calculations for functions in the control unit are monitored by a higher-level unit.
- ♦ A fault is entered if monitoring detects implausible calculations.

P1517

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - adaptation aborted due to environmental condition

Diagnostic conditions

- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes

♦ Adaptation aborted due to environmental condition

Fault setting condition(s)

One or more of the stated conditions were not met (see ⓘ)

Fault effects

♦ Engine **cannot** be started

ⓘ INFORMATION

Forced adaptation can be performed using the PIWIS Tester.

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN
- Panamera up to MY D
- Panamera GTS from MY E
- Cayenne up to MY E

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
♦ Wrong gateway control unit (See ⓘ)
♦ Message via CAN faulty or missing

Fault setting condition(s)
- No time information from the gateway control unit (0.5 ... 5 second(s))

and
- There is also no other time information available via satellite (e.g. no reception in garage)

Fault effects
♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

ⓘ INFORMATION
- **This affects only the following vehicles:**

♦ **Model year 2010**

The 2 digits in the 10th + 11th places of the 11-digit part number are relevant:
- 970.618.115.**04** ⇒ Wrong gateway control unit
- 970.618.115.**05** (or higher) ⇒ Correct gateway control unit

Diagnostic information - DME (DFI) control unit

Switch-off time fault

Diagnostic conditions
- Engine running
- then switch off ignition
- immediately afterwards: ignition on > 10 minute(s), with:
  - Instrument cluster ready for operation

Possible fault causes
- ♦ Wrong gateway control unit (See ⓘ **1**)
- ♦ Wrong software version in DME (DFI) control unit
- ♦ Wrong software version in gateway control unit
- ♦ Wrong software version in instrument cluster
- ♦ Fault in CAN drive or CAN comfort area
- ♦ Instrument cluster failed or faulty

Fault setting condition(s)
- No or implausible time pulse from the gateway control unit (via instrument cluster) within 60 seconds with:
  - Ignition on

ⓘ INFORMATION 1
- **This affects only the following vehicles:**

♦ **Model year 2010**

The 2 digits in the 10th + 11th places of the 11-digit part number are relevant:
- 970.618.115.**04** ⇒ Wrong gateway control unit
- 970.618.115.**05** (or higher) ⇒ Correct gateway control unit

ⓘ INFORMATION 2
1. The DME control unit receives time information from the instrument cluster at regular intervals (approx. 4 sec.) when the ignition is on.

2. For Panamera up to MY 2013:
The switch-off time A145_Time since engine stop (manual via ignition lock) is calculated in the gateway using its own function from the time signals from the instrument cluster.

3. For Panamera from MY 2014:
The switch-off time A145_Time since engine stop (manual via ignition lock) comes from the instrument cluster. The gateway routes this to the DME control unit.

P1531

Diagnostic information - DME (DFI) control unit

Switch-off time fault

Diagnostic conditions
- Engine running
- then switch off ignition
- immediately afterwards: ignition on > 10 minute(s), with:
  - Instrument cluster ready for operation

Possible fault causes
- ♦ Wrong gateway control unit (See ⓘ **1**)
- ♦ Wrong software version in DME (DFI) control unit
- ♦ Wrong software version in gateway control unit
- ♦ Wrong software version in instrument cluster
- ♦ Fault in CAN drive or CAN comfort area
- ♦ Instrument cluster failed or faulty

Fault setting condition(s)
- No or implausible time pulse from the gateway control unit (via instrument cluster) within 60 seconds with:
  - Ignition on

ⓘ INFORMATION 1
- **This affects only the following vehicles:**

♦ **Model year 2010**

The 2 digits in the 10th + 11th places of the 11-digit part number are relevant:
- 970.618.115.**04** ⇒ Wrong gateway control unit
- 970.618.115.**05** (or higher) ⇒ Correct gateway control unit

ⓘ INFORMATION 2
1. The DME control unit receives time information from the instrument cluster at regular intervals (approx. 4 sec.) when the ignition is on.

2. For Panamera up to MY 2013:
The switch-off time A145_Time since engine stop (manual via ignition lock) is calculated in the gateway using its own function from the time signals from the instrument cluster.

3. For Panamera from MY 2014:
The switch-off time A145_Time since engine stop (manual via ignition lock) comes from the instrument cluster. The gateway routes this to the DME control unit.

P1532

Diagnostic information - DME (DFI) control unit

Switch-off time fault

Diagnostic conditions
- Engine running
- then switch off ignition
- immediately afterwards: ignition on > 10 minute(s), with:
  - Instrument cluster ready for operation

Possible fault causes
- ♦ Wrong gateway control unit (See ⓘ **1**)
- ♦ Wrong software version in DME (DFI) control unit
- ♦ Wrong software version in gateway control unit
- ♦ Wrong software version in instrument cluster
- ♦ Fault in CAN drive or CAN comfort area
- ♦ Instrument cluster failed or faulty

Fault setting condition(s)
- No or implausible time pulse from the gateway control unit (via instrument cluster) within 60 seconds with:
  - Ignition on

ⓘ INFORMATION 1
- **This affects only the following vehicles:**

♦ **Model year 2010**

The 2 digits in the 10th + 11th places of the 11-digit part number are relevant:
- 970.618.115.**04** ⇒ Wrong gateway control unit
- 970.618.115.**05** (or higher) ⇒ Correct gateway control unit

ⓘ INFORMATION 2
1. The DME control unit receives time information from the instrument cluster at regular intervals (approx. 4 sec.) when the ignition is on.

2. For Panamera up to MY 2013:
The switch-off time A145_Time since engine stop (manual via ignition lock) is calculated in the gateway using its own function from the time signals from the instrument cluster.

3. For Panamera from MY 2014:
The switch-off time A145_Time since engine stop (manual via ignition lock) comes from the instrument cluster. The gateway routes this to the DME control unit.

P1533

Diagnostic information - DME (DFI) control unit

Switch-off time fault

Diagnostic conditions
- Engine running
- then switch off ignition
- immediately afterwards: ignition on > 10 minute(s), with:
  - Instrument cluster ready for operation

Possible fault causes
- ♦ Wrong gateway control unit (See ⓘ **1**)
- ♦ Wrong software version in DME (DFI) control unit
- ♦ Wrong software version in gateway control unit
- ♦ Wrong software version in instrument cluster
- ♦ Fault in CAN drive or CAN comfort area
- ♦ Instrument cluster failed or faulty

Fault setting condition(s)
- No or implausible time pulse from the gateway control unit (via instrument cluster) within 60 seconds with:
  - Ignition on

ⓘ INFORMATION 1
- **This affects only the following vehicles:**

♦ **Model year 2010**

The 2 digits in the 10th + 11th places of the 11-digit part number are relevant:
- 970.618.115.**04** ⇒ Wrong gateway control unit
- 970.618.115.**05** (or higher) ⇒ Correct gateway control unit

ⓘ INFORMATION 2
1. The DME control unit receives time information from the instrument cluster at regular intervals (approx. 4 sec.) when the ignition is on.

2. For Panamera up to MY 2013:
The switch-off time A145_Time since engine stop (manual via ignition lock) is calculated in the gateway using its own function from the time signals from the instrument cluster.

3. For Panamera from MY 2014:
The switch-off time A145_Time since engine stop (manual via ignition lock) comes from the instrument cluster. The gateway routes this to the DME control unit.

P1536

Diagnostic information - DME (DFI) control unit

Oil pump activation

ⓘ INFORMATION

♦ The measured oil pressure is compared with the setpoint oil pressure.
♦ The setpoint oil pressure depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine …
♦ A fault is detected if the PWM signal is outside a defined range for > 30 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Dynamic driving style when oil level is near minimum (oil foaming)
♦ Engine oil pressure too low (oil level, oil quality, oil thinning, dirt in oil circuit, oil circuit faulty - increased leakage inside the engine)
♦ Engine oil pressure too high (oil quality, oil thickening, dirt in oil circuit, oil circuit faulty)
♦ Oil pressure sensor faulty (incorrect trimming)
♦ Oil pressure control valve faulty
♦ Oil pump faulty

P1537

Diagnostic information - DME (DFI) control unit

Oil pump activation

ⓘ INFORMATION

♦ The measured oil pressure is compared with the setpoint oil pressure.
♦ The setpoint oil pressure depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine …
♦ A fault is detected if the PWM signal is outside a defined range for > 30 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Dynamic driving style when oil level is near minimum (oil foaming)
♦ Engine oil pressure too low (oil level, oil quality, oil thinning, dirt in oil circuit, oil circuit faulty - increased leakage inside the engine)
♦ Engine oil pressure too high (oil quality, oil thickening, dirt in oil circuit, oil circuit faulty)
♦ Oil pressure sensor faulty (incorrect trimming)
♦ Oil pressure control valve faulty
♦ Oil pump faulty

P1538

Diagnostic information - DME (DFI) control unit

Oil pump activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Engine oil pressure too low (oil level, oil quality, oil thinning, dirt in oil circuit, oil circuit faulty)
♦ Engine oil pressure too high (oil quality, oil thickening, dirt in oil circuit, oil circuit faulty)
♦ Oil pressure sensor faulty
♦ Oil pressure control valve faulty
♦ Oil pump faulty

P1539

Diagnostic information - DME (DFI) control unit

Oil pump activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Engine oil pressure too low (oil level, oil quality, oil thinning, dirt in oil circuit, oil circuit faulty)
♦ Engine oil pressure too high (oil quality, oil thickening, dirt in oil circuit, oil circuit faulty)
♦ Oil pressure sensor faulty
♦ Oil pressure control valve faulty
♦ Oil pump faulty

P1540

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1541

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1542

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - start test

Diagnostic conditions
- **Throttle valve adjusting unit** adapted
- Switch on ignition , then
  - Switch off ignition for > 1 **min.**
    - Switch on ignition

Possible fault causes
♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
The start test was faulty twice in a row (See ⓘ).

ⓘ INFORMATION
Start test: When the ignition is switched on , the throttle valve is opened by a certain value, and must then close on its own.

P1543

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - start test

Diagnostic conditions
- **Throttle valve adjusting unit** adapted
- Switch on ignition , then
  - Switch off ignition for > 1 **min.**
    - Switch on ignition

Possible fault causes
♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
The start test was faulty twice in a row (See ⓘ).

ⓘ INFORMATION
Start test: When the ignition is switched on , the throttle valve is opened by a certain value, and must then close on its own.

P1544

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit stuck

Diagnostic conditions
- Throttle valve adjusting unit adapted
- Vehicle standstill
- No gear engaged or selector-lever position P or N
- Intake air temperature > 5 °C (41 °F)
- Idle speed
- then short acceleration
- then engine speed > 2,200 rpm

Possible fault causes
- Throttle valve adjusting unit frozen
- Throttle valve adjusting unit faulty

P1550

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Power supply or ground supply faulty ⇒ See P1559
- ♦ DME (DFI) control unit software error ▶ Re-program

ⓘ INFORMATION
- ♦ All calculations for functions in the control unit are monitored by a higher-level unit.
- ♦ A fault is entered if monitoring detects implausible calculations.

P1552

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Power supply or ground supply faulty ⇒ See P1559
- ♦ DME (DFI) control unit software error ▶ Re-program

ⓘ INFORMATION
- ♦ All calculations for functions in the control unit are monitored by a higher-level unit.
- ♦ A fault is entered if monitoring detects implausible calculations.

Diagnostic information - DME (DFI) control unit

Control unit function monitoring, wake-up

ⓘ INFORMATION

♦ The entered fault code P1553 or P1555 is merely an indication that the DME control unit performed a reboot in its internal monitoring unit.
♦ This normally remains unnoticed by the driver.
♦ If a **customer complaint** stating that manual engine starting (**starting with the key**) was refused, was aborted or took too long, the DME control unit is faulty.
♦ If **no such customer complaint** exists, the **DME control unit is OK!**

Diagnostic conditions
● Vehicle voltage > 11 V
● Switch the ignition on and then start the engine

Possible fault causes
● If a customer complaint stating that manual engine starting (starting with the key) was refused, was aborted or took too long, the DME control unit is faulty.
● If **no such customer complaint** exists, the **DME control unit is OK!** ► Erase fault memory.

Fault effects
♦ None if this is only a once-off occurrence.
or
♦ Starting with the key was refused or aborted or took too long.

Diagnostic information - DME (DFI) control unit

Control unit function monitoring, wake-up

ⓘ INFORMATION

♦ The entered fault code P1553 or P1555 is merely an indication that the DME control unit performed a reboot in its internal monitoring unit.
♦ This normally remains unnoticed by the driver.
♦ If a **customer complaint** stating that manual engine starting (**starting with the key**) was refused, was aborted or took too long, the DME control unit is faulty.
♦ If **no such customer complaint** exists, the **DME control unit is OK!**

Diagnostic conditions
● Vehicle voltage > 11 V
● Switch the ignition on and then start the engine

Possible fault causes
● If a customer complaint stating that manual engine starting (starting with the key) was refused, was aborted or took too long, the DME control unit is faulty.
● If **no such customer complaint** exists, the **DME control unit is OK!** ► Erase fault memory.

Fault effects
♦ None if this is only a once-off occurrence.
or
♦ Starting with the key was refused or aborted or took too long.

P1556

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1557

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1558

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1559

Diagnostic information - DME (DFI) control unit

Control unit restart during operation (warm reset)

Diagnostic conditions
- Engine start

Possible fault causes
♦ Vehicle electrical system voltage < 6 V during starting process (e.g. battery discharged or faulty), e.g. due to contact resistance in the lines to the DME control unit.
♦ Excessive difference in internal monitoring processes in the control unit, e.g. in case of reversal of the engine's direction of rotation due to inadvertent shifting into reverse gear when the vehicle is driving forward.

Fault setting condition(s)
This fault is entered if the DME control unit performs a restart during operation (soft reboot/warm reset).

P1561

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving with:
  - Engine temperature > 30 °C (86 °F)
  - Overrun phase(s) > 1.5 second(s)
  - Engine speed 1.408 .... 3,000 rpm
- None of the following faults stored: U0129, P0503

Possible fault causes
♦ Fault in PSM area

Fault setting condition(s)
- Vehicle speed < 3 km/h or 1 mph (measured value), with:
  - Diagnostic conditions

P1563

Diagnostic information - DME (DFI) control unit

Cruise control coding

Diagnostic conditions
- Ignition on

Possible fault causes
- Vehicle data incorrect
  (See PIWIS Tester II ▶ Additional menu [F7] ▶ Maintenance of vehicle data)
- Vehicle equipment wrong
- DME (DFI) control unit coded incorrectly - The data record does not match the vehicle.
- Steering wheel electronics control unit coded incorrectly

P1565

Diagnostic information - DME (DFI) control unit

Adaptive cruise control (ACC) implausible

Diagnostic conditions
- Driving

Possible fault causes
- ♦ Fault in adaptive cruise control (ACC) area

Fault setting condition(s)
- Simultaneous detection of
  - ♦ Request: Acceleration - adaptive cruise control (ACC)

  and
  - ♦ Input signal: Brake light switch

Diagnostic information - DME (DFI) control unit

Internal power supply (R/C)

Diagnostic conditions
- Vehicle voltage > 11 V
- Engine compartment and engine cold
- Engine running, then:
  - Switch off ignition
  - Switch on ignition after approx. 1 minute

Possible fault causes
- ♦ Power supply to the DME (DFI) control unit was interrupted (See ⓘ)
- ♦ R/C component in the DME (DFI) control unit faulty

ⓘ INFORMATION
This fault can be entered if the power supply to the DME (DFI) control unit is interrupted within the first 45 seconds after switching ignition off (discharge time of the R/C) and is then restored again immediately afterwards and the ignition is switched on.
- After the ignition is switched off (terminal 15), the DME control unit switches to control unit run-on mode.
- The run-on period depends on many underlying conditions (e.g. engine temperature for fan operation).

The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

Diagnostic information - DME (DFI) control unit

Control unit run-on not ended correctly

ⓘ INFORMATION

♦ The entered P-code 1572 merely indicates that the DME control unit did not have enough time to end all sequences properly between the time when the ignition was switched off and the power supply was interrupted (See ⓘ).
♦ **The control unit itself is OK.**

Diagnostic conditions
- Vehicle voltage > 11 V
- Engine compartment and engine cold
- Engine running, then:
  - Switch off ignition
  - Switch on ignition after approx. 1 minute

Possible fault causes
♦ Supply voltage too low when starting engine
♦ DME (DFI) control unit re-programmed
♦ During control unit operation (engine on, ignition on or control unit run-on):
  ♦ Connector B unlocked or unplugged from DME (DFI) control unit
  ♦ Power supply to DME (DFI) control unit interrupted
♦ Power supply to DME (DFI) control unit faulty

Fault setting condition(s)
- Control unit run-on was not ended properly (See ⓘ).

ⓘ INFORMATION

♦ After the ignition is switched off (terminal 15), the DME control unit switches to control unit run-on mode.
♦ The run-on period depends on many underlying conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P1575

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer implausible

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 1 and 2
- Accelerator pedal potentiometer 1 and 2 faulty

Fault setting condition(s)
- Both potentiometers detected as faulty.
- Individual faults are also entered in most cases.

Fault effects
- Engine does not respond to throttle, engine speed 1,000 rpm

P1576

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

P1577

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

P1581

Diagnostic information - DME V8 DFI

Kickdown adaptation

INFORMATION

♦ A fault is detected if an adaptation process is terminated unsuccessfully 20 times.

Diagnostic conditions

- Ignition switched on
- Adaptation requested via Tester
- Accelerator pedal pressed down fully

Possible fault causes

♦ Adaptation requested, but started too late (max. 10 sec.)
♦ Accelerator pedal not kept constantly pressed down fully for at least 1 sec.
♦ Accelerator pedal not pressed down fully
♦ Accelerator pedal module loose

P1582

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1583

Diagnostic information - DME (DFI) control unit

Sport mode not available

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Premature fault entry (See ⓘ)
- ♦ Sport mode button faulty (See Air-conditioning system regulator)
- ♦ Fault relevant for Sport mode in one of the following systems:
  - ♦ DME (DFI) control unit
  - ♦ PDK control unit
  - ♦ PSM control unit
  - ♦ Leveling system control unit (PASM)
  - ♦ PDCC control unit
  - ♦ Spoiler drive

ⓘ INFORMATION

♦ If there is NO customer complaint about the availability of Sport mode, this information must be ignored.
♦ In most cases, the fault is entered in the fault memory without justification if one of the control units from the Sport mode system (DFI, PDK, PSM, leveling system, PDCC) does NOT report readiness or does this too late during initialization of the air-conditioning system regulator.
♦ The air-conditioning system regulator sends this information to the DME (DFI).

P1600

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving
- None of the following faults stored: U0129

Possible fault causes
- Fault in PSM area

Fault setting condition(s)
- Vehicle speed > 350 km/h or 218 mph (measured value)

P1603

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

P1604

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

P1606

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

P1616

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

P1620

Diagnostic information - DME (DFI) control unit

Crash signal monitoring

Diagnostic conditions
- Engine start

Possible fault causes
- Airbag drive link test
- Engine switch-off following:
  - Accident detection

P1626

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

P1627

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

P1628

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

P1629

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

P1632

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

P1637

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve) implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Boost pressure sensor faulty

Fault effects
- Substitute value from model

P1638

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve): electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Ground supply faulty
- ♦ Boost pressure sensor faulty

- **Only if fault P0107 or P0108** (intake manifold pressure sensor) **is entered at the same time**:
  - ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
  - ♦ Boost pressure control cycle valve leaking
  - ♦ Wastegate leaking

Fault effects
- ♦ Substitute value from model

P1639

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve): electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Ground supply faulty
- ♦ Boost pressure sensor faulty

- **Only if fault P0107 or P0108** (intake manifold pressure sensor) **is entered at the same time**:
  - ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
  - ♦ Boost pressure control cycle valve leaking
  - ♦ Wastegate leaking

Fault effects
- ♦ Substitute value from model

P1641

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1642

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1657

Diagnostic information - DME (DFI) control unit

Diverter solenoid valve

Diagnostic conditions
- Driving with 1 full-load acceleration and 1 overrun phase

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Diverter solenoid valve faulty

P1658

Diagnostic information - DME (DFI) control unit

Diverter solenoid valve

Diagnostic conditions
- Driving with 1 full-load acceleration and 1 overrun phase

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Diverter solenoid valve faulty

P1659

Diagnostic information - DME (DFI) control unit

Diverter solenoid valve

Diagnostic conditions
- Driving with 1 full-load acceleration and 1 overrun phase

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Diverter solenoid valve faulty

P1666

Diagnostic information - DME (DFI) control unit

Diverter solenoid valve

Diagnostic conditions
- Driving with 1 full-load acceleration and 1 overrun phase

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Diverter solenoid valve faulty

P1691

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

P1692

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

P1696

Diagnostic information - DME (DFI) control unit

Generator - electrical fault

Diagnostic conditions
- Engine running

Fault setting condition(s)
- Fault in gateway control unit

P1699

Diagnostic information - DME (DFI) control unit

Generator - no communication

Diagnostic conditions
- Engine running

Fault setting condition(s)
- Fault in gateway control unit

P169A

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

P2088

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 1

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2089

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 1

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2090

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2091

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2092

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 2

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2093

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 2

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2094

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2095

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2096

Diagnostic information - DME (DFI) control unit

Lambda correction behind catalytic converter bank 1 - control limit exceeded (too lean)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active
- None of the following faults stored: P2270, P2271, P0041

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 1

♦ Camshaft adjustment fault

♦ Valve lift control fault

♦ Mechanical fault in valve drive

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty (aged)

Fault setting condition(s)

♦ Adaptation limit (4%) exceeded

P2097

Diagnostic information - DME (DFI) control unit

Lambda correction behind catalytic converter bank 1 - control limit exceeded (too rich)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active
- None of the following faults stored: P2270, P2271, P0041

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 1

♦ Camshaft adjustment fault

♦ Valve lift control fault

♦ Mechanical fault in valve drive

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty (aged)

Fault setting condition(s)

♦ Adaptation limit (4%) exceeded

P2098

Diagnostic information - DME (DFI) control unit

Lambda correction behind catalytic converter bank 2 - control limit exceeded (too lean)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active
- None of the following faults stored: P2272, P2273, P0041

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 2

♦ Camshaft adjustment fault

♦ Valve lift control fault

♦ Mechanical fault in valve drive

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty (aged)

Fault setting condition(s)

♦ Adaptation limit (4%) exceeded

P2099

Diagnostic information - DME (DFI) control unit

Lambda correction behind catalytic converter bank 2 - control limit exceeded (too rich)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active
- None of the following faults stored: P2272, P2273, P0041

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 2

♦ Camshaft adjustment fault

♦ Valve lift control fault

♦ Mechanical fault in valve drive

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty (aged)

Fault setting condition(s)

♦ Adaptation limit (4%) exceeded

P2100

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Short circuit between lines (servo motor)
- Throttle valve adjusting unit faulty

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2101

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - position deviation/control range

Diagnostic conditions
- Throttle valve adjusting unit adapted
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit between lines (servo motor)
- Throttle valve adjusting unit faulty

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2103

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - position deviation/control range

Diagnostic conditions
- Throttle valve adjusting unit adapted
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit between lines (servo motor)
- Throttle valve adjusting unit faulty

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2121

Diagnostic information - DME (DFI) control unit

Throttle valve potentiometer 1 implausible

Diagnostic conditions
- Engine running
- None of the following faults stored: P2127 or P2128 (throttle valve potentiometer 2)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (potentiometer)
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
- Throttle valve potentiometer 1 (measured) - mass air flow (calculated)
  ⇒ Deviation too high

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2122

Diagnostic information - DME (DFI) control unit

Throttle potentiometer 1

Diagnostic conditions
- Ignition on > 5 second(s)
- then engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (**potentiometer**)
- ♦ **Throttle valve adjusting unit** faulty

Fault effects
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm).
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P2123

Diagnostic information - DME (DFI) control unit

Throttle potentiometer 1

Diagnostic conditions
- Ignition on > 5 second(s)
- then engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (**potentiometer**)
- ♦ **Throttle valve adjusting unit** faulty

Fault effects
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm).
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P2126

Diagnostic information - DME (DFI) control unit

Throttle valve potentiometer 2 implausible

Diagnostic conditions
- Engine running
- None of the following faults stored: P2122 or P2123 (throttle valve potentiometer 1)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (potentiometer)
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
- Throttle valve potentiometer 2 (measured) - mass air flow (calculated)
  ⇒ Deviation too high

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2127

Diagnostic information - DME (DFI) control unit

Throttle potentiometer 2

Diagnostic conditions
- Ignition on > 5 second(s)
- then engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (**potentiometer**)
- ♦ **Throttle valve adjusting unit** faulty

Fault effects
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm).
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P2128

Diagnostic information - DME (DFI) control unit

Throttle potentiometer 2

Diagnostic conditions
- Ignition on > 5 second(s)
- then engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (**potentiometer**)
- ♦ **Throttle valve adjusting unit** faulty

Fault effects
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm).
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P2138

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - channel comparison

Diagnostic conditions
- Throttle valve adjusting unit adapted
- Idling and short acceleration
- then driving with different operating conditions

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Throttle valve adjusting unit faulty

Fault setting condition(s)
- The two potentiometer values differ too greatly from each other.
- It is not clear which value is incorrect.

Fault effects
- No throttle response
- Increased idle speed (approx. 1,000 .... 1,600 rpm)
- Electronic throttle emergency mode (see ⓘ)

ⓘ INFORMATION

Electronic throttle emergency mode

During electronic throttle emergency mode, no power is supplied to the throttle valve, which then drops to emergency air position.
- Idle speed increases to approx. 1,000 .... 1,200 rpm.
- If the accelerator pedal is pressed, the engine will run at max. 1,600 rpm (set via ignition, injection, ...). ▶ **Limp home**.
- If the accelerator and brake are pressed at the same time, the engine will run at idle speed.
- If the engine speed exceeds 1,600 rpm, cylinders will be deactivated.
- If cylinder deactivation is not sufficient, the DME control unit performs a reset and fault code **P1559** is stored in the fault memory (the original faults were previously stored as reset-resistant faults in the fault memory).

P2146

Diagnostic information - DME (DFI) control unit

Power supply for fuel injectors

ⓘ INFORMATION

The power supply for the fuel injectors is switched in pairs in the control unit.

- V8 engine:
  - ♦ Cylinder 1 + 6 (P2146)
  - ♦ Cylinder 2 + 8 (P2149)
  - ♦ Cylinder 3 + 5 (P2152)
  - ♦ Cylinder 4 + 7 (P2155)

- V6 engine:
  - ♦ Cylinder 1 + 6 (P2146)
  - ♦ Cylinder 2 + 4 (P2149)
  - ♦ Cylinder 3 + 5 (P2152)

Diagnostic conditions

- Engine running

Possible fault causes

- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (power supply)
- ♦ Fuel injector faulty

P2149

Diagnostic information - DME (DFI) control unit

Power supply for fuel injectors

ⓘ INFORMATION

The power supply for the fuel injectors is switched in pairs in the control unit.

- V8 engine:
  - ♦ Cylinder 1 + 6 (P2146)
  - ♦ Cylinder 2 + 8 (P2149)
  - ♦ Cylinder 3 + 5 (P2152)
  - ♦ Cylinder 4 + 7 (P2155)

- V6 engine:
  - ♦ Cylinder 1 + 6 (P2146)
  - ♦ Cylinder 2 + 4 (P2149)
  - ♦ Cylinder 3 + 5 (P2152)

Diagnostic conditions

- Engine running

Possible fault causes

- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (power supply)
- ♦ Fuel injector faulty

P2152

Diagnostic information - DME (DFI) control unit

Power supply for fuel injectors

ⓘ INFORMATION

The power supply for the fuel injectors is switched in pairs in the control unit.

- V8 engine:
  - ♦ Cylinder 1 + 6 (P2146)
  - ♦ Cylinder 2 + 8 (P2149)
  - ♦ Cylinder 3 + 5 (P2152)
  - ♦ Cylinder 4 + 7 (P2155)

- V6 engine:
  - ♦ Cylinder 1 + 6 (P2146)
  - ♦ Cylinder 2 + 4 (P2149)
  - ♦ Cylinder 3 + 5 (P2152)

Diagnostic conditions

- Engine running

Possible fault causes

- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (power supply)
- ♦ Fuel injector faulty

P2155

Diagnostic information - DME (DFI) control unit

Power supply for fuel injectors

ⓘ INFORMATION

The power supply for the fuel injectors is switched in pairs in the control unit.

- V8 engine:
  - ♦ Cylinder 1 + 6 (P2146)
  - ♦ Cylinder 2 + 8 (P2149)
  - ♦ Cylinder 3 + 5 (P2152)
  - ♦ Cylinder 4 + 7 (P2155)

- V6 engine:
  - ♦ Cylinder 1 + 6 (P2146)
  - ♦ Cylinder 2 + 4 (P2149)
  - ♦ Cylinder 3 + 5 (P2152)

Diagnostic conditions

- Engine running

Possible fault causes

- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (power supply)
- ♦ Fuel injector faulty

P215A

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - DME (DFI) control unit

Thermostat stuck open

Diagnostic conditions

- Thermal management system test (if available)

or

- Drive > 10 minute(s) with:
  - Engine start temperature -10° ... +60 °C (14 … 140 °F)
  - Ambient temperature > -10 °C (14 °F)
  - Average vehicle speed > 35 ... 60 km/h (21 … 37 mph) (depending on outside temperature > +60 °C ... < +20 °C/> 140 °F ... < 68 °F)
  - Max. vehicle speed 100 km/h (62 mph)
  - as few overrun phases as possible (< 100 second(s) in total)
  - Average mass air flow > 25 ... 35 kg/h (depending on outside temperature > +30 °C ... < -10 °C/> 86 °F ... < 14 °F)
  - With heating until engine coolant temperature > 80 °C (176 °F)

Possible fault causes

- ♦ Affected by block heater
- ♦ 3/2-way valve faulty, with:
  - Original auxiliary heater
- ♦ Seal in thermostat housing faulty
- ♦ Thermostat housing faulty
- ♦ Thermostat faulty
- ♦ Engine coolant temperature sensor faulty or loose contact or corrosion on connectors or lines

Fault setting condition(s)

- Engine coolant temperature < setpoint value 80 °C (176 °F) at end of diagnostics (see ⓘ)

ⓘ INFORMATION

- ♦ Diagnostics has ended when the calculated temperature model has reached 80 °C (176 °F).
- ♦ Diagnostics is evaluated only if the aforementioned diagnostic conditions were met.

P2183

Diagnostic information - DME (DFI) control unit

Coolant temperature at radiator outlet implausible
- **NOT** for Panamera V6S up to MY D

Diagnostic conditions
- Thermal management system test (if available)

or
- Engine start, with:
  - Coolant temperature < 70 °C (158 °F)
- None of the following faults stored: P0116, P0117, P0118, P0119, P050C, P3081, P3082

Possible fault causes
- ♦ Engine coolant temperature sensor
- ♦ Radiator air intake covered
- ♦ Radiator outlet coolant temperature sensor faulty

Fault setting condition(s)
Coolant temperature at radiator outlet > 25 °C (77 °F) warmer than engine temperature at engine start

Diagnostic information - DME (DFI) control unit

Radiator outlet coolant temperature sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Radiator outlet coolant temperature sensor faulty

Fault setting condition(s)
- Coolant temperature at radiator outlet (measured) < -40 °C (-40 °F) (P2184), with:
  - Ignition on or engine running

  and
  - Intake air temperature > -30 °C (-22 °F)

  or
  - Engine running > 31 minute(s)

or
- Coolant temperature at radiator outlet (measured) > +140 °C (284 °F) (P2185), with:
  - Ignition on or engine running

Diagnostic information - DME (DFI) control unit

Radiator outlet coolant temperature sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Radiator outlet coolant temperature sensor faulty

Fault setting condition(s)
- Coolant temperature at radiator outlet (measured) < -40 °C (-40 °F) (P2184), with:
  - Ignition on or engine running
  - and
  - Intake air temperature > -30 °C (-22 °F)
  - or
  - Engine running > 31 minute(s)

or
- Coolant temperature at radiator outlet (measured) > +140 °C (284 °F) (P2185), with:
  - Ignition on or engine running

P2186

Diagnostic information - DME (DFI) control unit

Radiator outlet coolant temperature sensor: loose contact

Diagnostic conditions
- Ignition on
- None of the following faults stored: P2184, P2185

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Radiator outlet coolant temperature sensor faulty

Fault setting condition(s)
Coolant temperature at radiator outlet: actual-value jumps > 3 °C (37 °F)

Fault effects
- Substitute value = last actual value that was detected as OK, with:
  - Actual-value jumps > 9.75 °C (49.5 °F)

P2195

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Engine running > 3 minute(s) with:
  - No overrun phase(s)
  - All oxygen sensor(s) ready for operation
  - Lambda control active
  - Engine speed 640 .... 4,000 rpm
  - Load 15 ... 70%
  - Catalytic converter temperature > 400 °C (752 °F)
  - Mass air flow 10 ... 520 kg/h
- None of the following faults stored: P2270, P2271, P0041

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time. (Significant deviation occurs suddenly)

P2196

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Engine running > 3 minute(s) with:
  - No overrun phase(s)
  - All oxygen sensor(s) ready for operation
  - Lambda control active
  - Engine speed 640 .... 4,000 rpm
  - Load 15 ... 70%
  - Catalytic converter temperature > 400 °C (752 °F)
  - Mass air flow 10 ... 520 kg/h
- None of the following faults stored: P2270, P2271, P0041

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time. (Significant deviation occurs suddenly)

P2197

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 3 minute(s) with:
  - No overrun phase(s)
  - All oxygen sensor(s) ready for operation
  - Lambda control active
  - Engine speed 640 .... 4,000 rpm
  - Load 15 ... 70%
  - Catalytic converter temperature > 400 °C (752 °F)
  - Mass air flow 10 ... 520 kg/h
- None of the following faults stored: P2272, P2273, P0041

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time. (Significant deviation occurs suddenly)

P2198

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 3 minute(s) with:
  - No overrun phase(s)
  - All oxygen sensor(s) ready for operation
  - Lambda control active
  - Engine speed 640 .... 4,000 rpm
  - Load 15 ... 70%
  - Catalytic converter temperature > 400 °C (752 °F)
  - Mass air flow 10 ... 520 kg/h
- None of the following faults stored: P2272, P2273, P0041

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time. (Significant deviation occurs suddenly)

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- Fault P0069 also entered:
  - ♦ Intake manifold pressure sensor fault

- No fault P0069 entered:
  - ♦ DME (DFI) control unit faulty

Fault effects
- ♦ Substitute value from model

P2228

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- DME (DFI) control unit faulty

Fault effects
- Substitute value from model

P2229

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- DME (DFI) control unit faulty

Fault effects
- Substitute value from model

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1: open circuit in pumping current (APE)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in pumping current line (APE - contact 1)

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2: open circuit in pumping current (APE)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in pumping current line (APE - contact 1)

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1: open circuit in signal (RE+/IPN)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in signal line (RE+/IPN - contact 6/contact 2)

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2: open circuit in signal (RE+/IPN)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in line (RE+/IPN - contact 6/contact 2)

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

P2257

Diagnostic information - DME (DFI) control unit

Secondary-air pump relay driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in lines for secondary-air pump relay activation
- Secondary-air pump relay faulty

P2258

Diagnostic information - DME (DFI) control unit

Secondary-air pump relay driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in lines for secondary-air pump relay activation
- Secondary-air pump relay faulty

P2263

Diagnostic information - DME (DFI) control unit

Basic boost pressure too low

Diagnostic conditions
- 3 full-load accelerations:
  - in 3rd gear (no gearshift)
  - Engine speed between 1,500 rpm and max. engine speed
- then steady driving

Possible fault causes
- ♦ Insufficient vacuum supply due to leak in vacuum system or faulty vacuum pump (see ⓘ)
- ♦ Leak between turbocharger (on pressure side) and intake valve (engine)
- ♦ Vacuum hose leaking at boost pressure control cycle valve or diverter solenoid valve
- ♦ Diverter solenoid valve not installed or installed incorrectly
- ♦ Diverter solenoid valve leaking or stuck
- ♦ Diverter valve not installed or installed incorrectly
- ♦ Diverter valve leaking or stuck
- ♦ Boost pressure control cycle valve stuck open electrically or mechanically
- ♦ Wastegate mechanical fault, leaking or stuck open
- ♦ Turbocharger (1 or 2) stiff or stuck

Fault setting condition(s)
- Boost pressure (calculated) < setpoint value (depending on operating condition)

ⓘ INFORMATION
The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Boost pressure control cycle valve
  - ♦ Diverter solenoid valve
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 1

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Fault setting condition(s)

♦ The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

P2271

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 1

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Fault setting condition(s)

♦ The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

P2272

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 2

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Fault setting condition(s)

♦ The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

P2273

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 2

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Fault setting condition(s)

♦ The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

P2294

Diagnostic information - DME (DFI) control unit

Bank 2 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 2 fuel high-pressure pump)

P2295

Diagnostic information - DME (DFI) control unit

Bank 2 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 2 fuel high-pressure pump)

P2296

Diagnostic information - DME (DFI) control unit

Bank 2 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 2 fuel high-pressure pump)

P2297

Diagnostic information - DME (DFI) control unit

Implausible signal for oxygen sensor ahead of bank 1 catalytic converter (during overrun shutoff)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor ahead of the catalytic converter with the sensor behind the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Exhaust temperature > 200 °C (392 °F)
  - Overrun phase(s) > 8 second(s)

Possible fault causes

♦ Unintentional fuel supply, e.g. due to:
  ♦ dripping fuel injector
  ♦ high fuel content in engine oil
  ♦ large quantity of evaporating engine oil

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor ahead of bank 1 catalytic converter faulty (aged)

P2298

Diagnostic information - DME (DFI) control unit

Implausible signal for oxygen sensor ahead of bank 1 catalytic converter (during overrun shutoff)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor ahead of the catalytic converter with the sensor behind the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Exhaust temperature > 200 °C (392 °F)
  - Overrun phase(s) > 8 second(s)

Possible fault causes

♦ Unintentional fuel supply, e.g. due to:
  ♦ dripping fuel injector
  ♦ high fuel content in engine oil
  ♦ large quantity of evaporating engine oil

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor ahead of bank 2 catalytic converter faulty (aged)

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 1

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 1 faulty

P2301

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 1

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 1 faulty

P2302

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 1 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2302:
  - ♦ Bar ignition module on cylinder 1 faulty

- P2302 + P0351 or P2300 or P2301:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 1 faulty

P2303

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 2

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 2 faulty

P2304

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 2

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 2 faulty

P2305

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 2 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2305:
  - ♦ Bar ignition module on cylinder 2 faulty

- P2305 + P0352 or P2303 or P2304:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 2 faulty

P2306

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 3

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 3 faulty

P2307

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 3

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 3 faulty

P2308

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 3 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2308:
  - ♦ Bar ignition module on cylinder 3 faulty

- P2308 + P0353 or P2306 or P2307:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 3 faulty

P2309

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 4

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 4 faulty

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
♦ This takes place in sequence for each cylinder a total of 3 times.
♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

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♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
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  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

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♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
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♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
♦ This takes place in sequence for each cylinder a total of 3 times.
♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
♦ This takes place in sequence for each cylinder a total of 3 times.
♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
♦ This takes place in sequence for each cylinder a total of 3 times.
♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

P2310

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 4

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 4 faulty

P2311

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 4 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2311:
  - ♦ Bar ignition module on cylinder 4 faulty

- P2311 + P0354 or P2309 or P2310:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 4 faulty

P2312

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 5

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 5 faulty

P2313

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 5

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 5 faulty

P2314

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 5 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2314:
  - ♦ Bar ignition module on cylinder 5 faulty

- P2314 + P0355 or P2312 or P2313:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 5 faulty

P2315

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 6

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 6 faulty

P2316

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 6

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 6 faulty

P2317

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 6 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2317:
  - ♦ Bar ignition module on cylinder 6 faulty

- P2317 + P0356 or P2315 or P2316:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 6 faulty

P2318

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 7

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 7 faulty

P2319

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 7

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 7 faulty

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 7 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2320:
  - ♦ Bar ignition module on cylinder 7 faulty

- P2320 + P0357 or P2318 or P2319:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 7 faulty

P2321

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 8

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 8 faulty

P2322

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 8

⚠WARNING

High voltage !

Risk of death or serious injury due to high voltage or high current!

♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE

Sensitive electronics!

Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.

♦ **DO NOT** connect external power sources.

♦ Check ground supply.

Diagnostic conditions

- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+ or open circuit in the lines (ground supply)

♦ Short circuit to ground or open circuit in the lines (power supply)

♦ Short circuit to B+/ground or open circuit in the line (activation)

♦ Bar ignition module on cylinder 8 faulty

P2323

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 8 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2323:
  - ♦ Bar ignition module on cylinder 8 faulty

- P2323 + P0358 or P2321 or P2322:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 8 faulty

Diagnostic information - DME (DFI) control unit

Leakage diagnosis pump driver

Diagnostic conditions

- Perform tank vent valve and tank leak short tests

or:

- Time since engine start > 10 second(s)
- Leakage diagnosis pump activated
- No fault entered for: P1556, P1557, P1558

Possible fault causes

- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Short circuit to B+ or open circuit in the lines (power supply or leakage diagnosis pump activation)
- Leakage diagnosis pump faulty

ⓘ INFORMATION

The vacuum system includes:

- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Leakage diagnosis pump driver: below limit value

Diagnostic conditions
- Perform tank vent valve and tank leak short tests

or:
- Time since engine start > 10 second(s)
- Leakage diagnosis pump not activated
- No fault entered for: P1556, P1557, P1558

Possible fault causes
- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Short circuit to ground (leakage diagnosis pump activation)
- Leakage diagnosis pump faulty

ⓘ INFORMATION
The vacuum system includes:
- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Leakage diagnosis pump driver

Diagnostic conditions

- Perform tank vent valve and tank leak short tests

or:

- Time since engine start > 10 second(s)
- Leakage diagnosis pump activated
- No fault entered for: P1556, P1557, P1558

Possible fault causes

- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Short circuit to B+ or open circuit in the lines (power supply or leakage diagnosis pump activation)
- Leakage diagnosis pump faulty

ⓘ INFORMATION

The vacuum system includes:

- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Reed switch for leakage diagnosis pump

Diagnostic conditions

- Perform tank leak short test

or

- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 50 °C (41 … 122 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
    ⇒ See actual value > A060-Ambient pressure from DME (measured) <
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 0 ... 120 km/h (0 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes

- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Open circuit/short circuit to B+ (signal line)
- Leakage diagnosis pump faulty (reed switch)

Fault setting condition(s)

- Reed switch signal missing

ⓘ INFORMATION

The vacuum system includes:

- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Reed switch for leakage diagnosis pump

Diagnostic conditions

- Perform tank leak short test

or

- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 50 °C (41 … 122 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
    ⇒ See actual value > A060-Ambient pressure from DME (measured) <
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 0 ... 120 km/h (0 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes

- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Tank vent valve stuck closed
- Purge-air line between tank vent valve and intake manifold trapped/blocked
- Short circuit to ground (signal line)
- Leakage diagnosis pump faulty (reed switch)

Fault setting condition(s)

- Reed switch signal permanently present

ⓘ INFORMATION

The vacuum system includes:

- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1 - sensor in air

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Lambda control active
- Driving > 10 second(s) with:
  - No overrun phase(s)
- No fault entered for: oxygen sensor(s) or mixture preparation

Possible fault causes

♦ Fuel injector mechanical fault/blocked
(e.g. due to chip in the fuel rail)

♦ Oxygen sensor upstream of catalytic converter bank 1 not installed (only electrically connected)

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

P2415

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2 - sensor in air

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Lambda control active
- Driving > 10 second(s) with:
  - No overrun phase(s)
- No fault entered for: oxygen sensor(s) or mixture preparation

Possible fault causes

♦ Fuel injector mechanical fault/blocked
(e.g. due to chip in the fuel rail)

♦ Oxygen sensor upstream of catalytic converter bank 2 not installed (only electrically connected)

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oil level sensor

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Oil level sensor faulty

P250D

Diagnostic information - DME (DFI) control unit

Oil level sensor

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Oil level sensor faulty

P2539

Diagnostic information - DME (DFI) control unit

Fuel low-pressure sensor: electrical fault

Diagnostic conditions
- Ignition on

or
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Fuel low-pressure sensor faulty

P2541

Diagnostic information - DME (DFI) control unit

Fuel low-pressure sensor: electrical fault

Diagnostic conditions
- Ignition on

or
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Fuel low-pressure sensor faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1: open circuit in compensating current (RT)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - Exhaust temperature > 200 °C (392 °F)
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in compensating current line (RT - contact 5)

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

P2629

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2: open circuit in compensating current (RT)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - Exhaust temperature > 200 °C (392 °F)
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in line (RT - contact 5)

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

P2A00

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1 - electrical fault

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 30 second(s), at:
  - Exhaust temperature > 100 °C (212 °F)
  - Oxygen sensor upstream of catalytic converter ready for operation
  - No overrun phase(s)

Possible fault causes

♦ Fault in oxygen sensor upstream of catalytic converter, bank 1 area

Fault setting condition(s)

♦ Temperature implausible (oxygen sensor upstream of catalytic converter)

Fault effects

♦ Since oxygen sensing is interrupted the moment a fault is detected, the DME (DFI) control unit stores this fault as information.

♦ Further faults are entered

ⓘ The vehicle must be driven in the same driving cycle (without ignition reset) for this purpose.

P2A01

Diagnostic information - DME (DFI) control unit

Mixture behind catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 90 seconds with:
  - No overrun phases
  - All **oxygen sensors** ready for operation

Possible fault causes

♦ Mixture preparation fault

♦ Exhaust line fault

♦ Exhaust gas measurement fault

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

Fault effects

♦ Since oxygen sensing is interrupted the moment a fault is detected, the DME (DFI) control unit stores this fault as information.

♦ Further faults are entered

ⓘ The vehicle must be driven in the same driving cycle (without ignition reset) for this purpose.

P2A03

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2 - electrical fault

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 30 second(s), at:
  - Exhaust temperature > 100 °C (212 °F)
  - Oxygen sensor upstream of catalytic converter ready for operation
  - No overrun phase(s)

Possible fault causes

♦ Fault in oxygen sensor upstream of catalytic converter, bank 2 area

Fault setting condition(s)

♦ Temperature implausible (oxygen sensor upstream of catalytic converter)

Fault effects

♦ Since oxygen sensing is interrupted the moment a fault is detected, the DME (DFI) control unit stores this fault as information.

♦ Further faults are entered

ⓘ The vehicle must be driven in the same driving cycle (without ignition reset) for this purpose.

P2A04

Diagnostic information - DME (DFI) control unit

Mixture behind catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 90 seconds with:
  - No overrun phases
  - All **oxygen sensors** ready for operation

Possible fault causes

♦ Mixture preparation fault

♦ Exhaust line fault

♦ Exhaust gas measurement fault

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

Fault effects

♦ Since oxygen sensing is interrupted the moment a fault is detected, the DME (DFI) control unit stores this fault as information.

♦ Further faults are entered

ⓘ The vehicle must be driven in the same driving cycle (without ignition reset) for this purpose.

Diagnostic information - DME (DFI) control unit

Starter relay activation

Diagnostic conditions
- **PDK only**: Brake pressed + selector-lever position P or N
- **Manual transmission only**: Clutch pressed down fully
- Ignition on > 3 second(s)
- then start the engine

Possible fault causes
♦ Open circuit or short circuit to B+/ground in the activation line between the DME control unit and relay
♦ Starter relay faulty

Fault effects
♦ Starter does not turn (if there is an open circuit or short circuit to B+)

P3081

Diagnostic information - DME (DFI) control unit

Engine coolant temperature implausible

Diagnostic conditions
- Thermal management system test (if available)

or
- Intake air temperature at engine start < 70 °C (158 °F) or coolant temperature at engine start < 70 °C (158 °F) (See ⓘ 1)
- Engine running > 3 minute(s) (with no overrun phase(s))
- None of the following faults stored: Coolant temperature sensor or intake air temperature sensor

Possible fault causes
- ♦ Affected by block heater
- ♦ 3/2-way valve faulty, with:
  - Original auxiliary heater
- ♦ Seal in thermostat housing faulty
- ♦ Thermostat housing faulty
- ♦ Thermostat faulty
- ♦ Air in the cooling system

Fault setting condition(s)
- Engine coolant temperature < 70 °C (158 °F), at:
  - End of diagnostics (See ⓘ 2)

Fault effects
- ♦ Engine temperature = temperature model (as substitute value for engine coolant temperature)
- ♦ The fault can be healed only if the thermostat has been tested and found to be OK.

ⓘ INFORMATION

1.

The diagnostic function starts under the following conditions:
- If the system was free of faults before
  - Engine coolant temperature at engine start < 70 °C (158 °F)
- If fault has been previously detected in the system
  - Intake air temperature at engine start < 70 °C (158 °F) (engine temperature substitute value only for engine start)

2.

Diagnostics is ended,
- after engine running > 3 minute(s) (with no overrun phase(s)),

and if:
- the calculated temperature model reaches 70 °C (158 °F) before the measured coolant temperature has reached 70 °C (158 °F) (fault entry),

or
- the measured coolant temperature reaches 70 °C (158 °F) before the calculated temperature model has reached 70 °C (158 °F) (NO fault entry).

Diagnostic information - DME (DFI) control unit

Engine coolant temperature stuck

Diagnostic conditions

- Thermal management system test (if available)

or

- Time since ignition off > 6 hour(s)
- Intake air temperature at engine start < 45 °C (113 °F)
- Intake air temperature at engine start = ambient temperature +/- 20 °C (68 °F)
- Engine running > 30 second(s)

Possible fault causes

- Switch-off time incorrect = gateway control unit faulty (See ⓘ 1)
- 3/2-way valve faulty, with:
  - Original auxiliary heater
- Loose contact or corrosion on connectors or lines
- Engine coolant temperature sensor faulty
- Affected by block heater

Fault setting condition(s)

- Engine start temperature > 35 ... > 65 °C (95 … 149 °F) (See ⓘ 2)

ⓘ INFORMATION

1.

If the engine switch-off time (formed in the gateway control unit) that is output is greater than the actual value, the engine does not appear to have cooled down sufficiently.
This can be checked by switching the vehicle off - with the engine at operating temperature - for longer than 6 hours (ignition off). After this time:

- Switch on ignition and connect the PIWIS Tester.
- Select the following actual values: T020, T030, T040.
- Compare the actual values:
  - The engine temperature (T020) deviates significantly
  ⇒ Check and repair the temperature sensor and wiring.
  - The values are similar
  ⇒ If an auxiliary heater is installed in the vehicle,
    - switch on the auxiliary heater and leave it on for at least 15 minutes, then:
    - Compare the actual values again:
      - The engine temperature (T020) deviates significantly
      ⇒ Replace 3/2-way directional-control valve
      - The values are similar. The calculation of the shut-off time is probably incorrect
      ⇒ Replace gateway control unit.
  ⇒ If no auxiliary heater is installed in the vehicle:
    - the switch-off time calculation is probably incorrect
      ⇒ Replace gateway control unit.

2.

Setpoint value depends on:

- Time since ignition off

and

- Intake air temperature at engine start

Example: Engine start temperature setpoint value: max. 65 °C (149 °F)

- Time since ignition off: 6.1 hour(s)

and

- Intake air temperature at engine start: 44 °C (111 °F)

U0073

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0101

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0111

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0112

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0114

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0121

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0126

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0128

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0129

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0133

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0137

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0141

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0142

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0146

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0147

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0148

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0149

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0155

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0164

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0166

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0167

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0168

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0199

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0200

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0201

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0202

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0212

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0235

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnosis information DME control module

U0300 Programming

Diagnostic conditions

- Diagnostics runs continuously

The data/programming version does not match the vehicle equipment.
► Program the **DME control unit** using the correct data record.

U0302

Diagnostic information - CAN

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions
The control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- Ignition on

Possible fault causes

- Incorrect control unit coding
- The peripheral equipment connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- The stated control unit sends only substitute values via the CAN
- Other control units detect these substitute values and set this fault code

U0318

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0402

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0412

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0414

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0415

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0417

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0418

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0421

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Wrong gateway control unit (See ⓘ)
- ♦ Message via CAN faulty or missing

Fault setting condition(s)
- No time information from the gateway control unit (0.5 ... 5 seconds).

and
- There is also no other time information available via satellite (e.g. no reception in garage).

Fault effects
- ♦ Substitute value from model
- ♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

ⓘ INFORMATION

- **This only affects model year 2010 vehicles**

The 2 digits in the 10th + 11th places of the 11-digit part number are relevant:
- 970.618.115.**04** or **.05** ⇒ Wrong gateway control unit
- 970.618.115.**11** (or higher) ⇒ Correct gateway control unit

U0423

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0424

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0425

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0428

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0429

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0431

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0433

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0434

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0438

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0443

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0447

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0449

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U049A

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U300A

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Cayenne, MY 2015-

Diagnosis information - DME VR6

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P000B00..... 2
P001000..... 3
P001100..... 4
P001400..... 5
P001600..... 6
P001700..... 7
P003000..... 8
P003100..... 9
P003200..... 10
P003600..... 11
P003700..... 12
P003800..... 13
P004000..... 14
P005000..... 15
P005100..... 16
P005200..... 17
P005600..... 18
P005700..... 19
P005800..... 20
P006800..... 21
P007000..... 22
P007100..... 23
P007200..... 24
P008700..... 25
P008800..... 26
P008A00..... 27
P008B00..... 28
P010000..... 29
P010100..... 30
P010200..... 31
P010300..... 32
P011100..... 33
P011200..... 34
P011300..... 35
P011600..... 36
P011700..... 37
P011800..... 38
P012100..... 39

P012200 40
P012300 41
P013000 42
P013100 43
P013200 44
P013300 45
P013500 46
P013700 47
P013800 48
P013900 49
P013A00 50
P013B00 51
P013C00 52
P013D00 53
P013E00 54
P013F00 55
P014000 56
P014A00 57
P014B00 58
P015000 59
P015100 60
P015200 61
P015300 62
P015500 63
P015700 64
P015800 65
P015900 66
P016000 67
P016900 68
P017000 69
P017100 70
P017200 71
P017300 72
P017400 73
P017500 74
P017B00 75
P017C00 77
P017D00 78
P019000 79

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P019200..... 81
P019600..... 82
P019700..... 83
P019800..... 84
P020100..... 85
P020200..... 86
P020300..... 87
P020400..... 88
P020500..... 89
P020600..... 90
P021900..... 91
P022100..... 92
P022200..... 93
P022300..... 94
P025A00..... 95
P025C00..... 96
P025D00..... 97
P026100..... 98
P026200..... 99
P026400..... 100
P026500..... 101
P026700..... 102
P026800..... 103
P027000..... 104
P027100..... 105
P027300..... 106
P027400..... 107
P027600..... 108
P027700..... 109
P030000..... 110
P030100..... 112
P030200..... 114
P030300..... 116
P030400..... 118
P030500..... 120
P030600..... 122
P032100..... 124
P032200..... 126

P032700 127
P032800 128
P033200 129
P033300 130
P034100 131
P034200 132
P034300 133
P035100 134
P035200 135
P035300 136
P035400 137
P035500 138
P035600 139
P036600 140
P036700 141
P036800 142
P042000 143
P043000 144
P044100 145
P044200 147
P044400 149
P045500 150
P045600 152
P045700 154
P045800 156
P045900 157
P046100 158
P048000 159
P050100 160
P050200 161
P050600 162
P050700 163
P050A00 164
P050B00 165
P052A00 166
P053A00 167
P053B00 168
P053C00 169
P053F00 170

P054A00 171
P055500 172
P055600 173
P055700 174
P056000 175
P056200 176
P056300 177
P056800 178
P057100 179
P05A000 180
P05A200 181
P05A300 182
P05A400 183
P05A500 184
P05C000 185
P060600 186
P060700 187
P060A00 188
P061500 189
P061600 190
P061700 191
P062B00 192
P063400 193
P064100 194
P065100 195
P066000 196
P066100 197
P066200 198
P068600 199
P068A00 200
P068B00 201
P069100 202
P069200 203
P069700 204
P06D100 205
P070400 206
P071600 207
P085000 208
P085100 209

P091900 210
P105700 211
P109300 212
P111400 213
P114000 214
P119A00 215
P125000 216
P12A100 217
P12A200 218
P130A00 219
P133500 220
P133600 221
P138600 222
P138700 223
P138800 224
P13EA00 225
P150300 226
P150A00 227
P154500 228
P155800 229
P155900 230
P156400 231
P156500 232
P157000 233
P157900 234
P159D00 235
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P160300 239
P160400 240
P160900 241
P160A00 242
P161200 243
P162400 244
P163D00 245
P163E00 246
P164000 247
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P164700 249
P164C00 250
P164D00 251
P167E00 252
P168200 253
P169800 254
P169A00 255
P172300 256
P172400 257
P172900 258
P188A00 259
P191B00 260
P193600 261
P193700 262
P194400 263
P194500 264
P194600 265
P194800 266
P195000 267
P195100 268
P198700 269
P208800 270
P208900 271
P209000 272
P209100 273
P209600 274
P209700 275
P209800 276
P209900 277
P210600 278
P211900 279
P212200 280
P212300 281
P212700 282
P212800 283
P213800 284
P214600 285
P214900 286
P215200 287

P215500 288
P217700 289
P217800 290
P217900 291
P218000 292
P218100 293
P218700 294
P218800 295
P218900 296
P219000 297
P219500 298
P219600 299
P219700 300
P219800 301
P223700 302
P224000 303
P224300 304
P224700 305
P225100 306
P225400 307
P227000 308
P227100 309
P227200 310
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P229400 313
P229500 314
P229600 315
P230000 316
P230100 317
P230300 318
P230400 319
P230600 320
P230700 321
P230900 322
P231000 323
P231200 324
P231300 325
P231500 326

P231600 327
P233600 328
P233700 329
P233800 330
P233900 331
P234000 332
P234100 333
P240000 334
P240100 335
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P253500 344
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P304400 357
P304500 358
P304600 359
P304700 360
P304800 361
P304900 362
P305000 363
P305200 364
P305300 365
P305400 366
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P307800 368
P308800 369
P308D00 370
P308E00 371
P309600 372
P309700 373
P310B00 374
P325500 375
P325600 376
P325700 377
P326600 378
P326700 379
U000100 380
U000200 381
U010100 382
U011100 383
U011400 384
U012100 385
U012600 386
U012800 387
U013200 388
U014000 389
U014100 390
U014600 391
U015100 392
U015500 393
U015900 394
U016400 395
U016600 396
U019900 397
U020000 398
U020100 399
U020200 400
U021200 401
U023500 402
U030200 403
U032300 404
U040200 405
U041400 406

U041500 407
U041600 409
U041700 410
U042100 411
U042200 412
U042300 413
U042400 414
U042500 415
U042800 416
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U043100 418
U043300 419
U044700 420
U045200 421
U100300 422
U100400 423
U100800 424
U100A00 425
U101000 426
U101600 427
U101700 428
U101900 429
U102500 430
U102600 431
U110300 432
U110400 433
U111200 434
U111300 436
U140A00 437

P000A00

Diagnosis information DME control module

P000A00 Bank 1 intake camshaft adjustment too slow

Diagnostic conditions

- No camshaft adjuster output stage fault
- No rpm or phase sender fault
- Time after engine start > 3 sec.
- With engine running

Fault setting condition(s)

- The fault is set if the camshaft adjuster cannot follow the defined setpoint fast enough or cannot follow it at all due to it being stuck
- Camshaft has adjusted, but (permanently or repeatedly) not in the adjustment time to be observed

Monitored component or system

♦ Bank 1 intake camshaft adjuster

P000B00

Diagnosis information DME control module

P000B00 Bank 1 exhaust camshaft adjustment too slow

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Camshaft adjuster diagnostics: camshaft does not adjust fast enough

Monitored component or system

♦ Bank 1 exhaust camshaft adjuster

Diagnosis information DME control module

P001000 Bank 1 intake camshaft adjustment - open circuit

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Activation voltage higher than diagnostic threshold 4.4...5.6 V
- Output stage diagnostics, line open circuit

Monitored component or system

♦ Bank 1 intake camshaft adjuster output stage

Diagnosis information DME control module

P001100 Bank 1 intake camshaft retardation setpoint not reached

Diagnostic conditions

- No camshaft adjuster output stage fault
- No rpm or phase sender fault
- Time after engine starts >3 sec
- With engine running

Fault setting condition(s)

- The fault is set if the camshaft adjuster cannot follow the defined setpoint fast enough or cannot follow it at all due to it being stuck
- Camshaft stuck (permanently or repeatedly)

Monitored component or system

♦ Bank 1 intake camshaft adjuster

Diagnosis information DME control module

P001400 Bank 1 exhaust camshaft retardation setpoint not reached

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Camshaft adjuster diagnostics: camshaft adjustment does not reach the required position

Monitored component or system

♦ Bank 1 exhaust camshaft adjuster

Diagnosis information DME control module

P001600 Bank 1 camshaft position/crankshaft position sensor - incorrect allocation

Diagnostic conditions

- No fault of the crankshaft sensor
- No fault of the camshaft adjuster
- No other faults present in the camshaft sensor and in the sensor supply voltage
- Engine start
- Switch ignition off and then on again
- With engine running

Fault setting condition(s)

- If the camshaft is moved to the reference position (stop) during the driving cycle, a camshaft-to-crankshaft allocation test is performed
- Edges of the camshaft sensor signal when the camshaft is in reference position (stop) do not match the crankshaft signal (camshaft impermissibly turned out of position)

Monitored component or system

♦ Bank 1 intake camshaft sensor

Fault finding notes

♦ Check camshaft timing (camshaft position) via the Tester
♦ Check chain drive to determine whether the chain is out of place
♦ Check the camshaft adjuster function (check control valves, shaft adjusters, oil pressure)
♦ Check wiring of the camshaft adjusters
♦ Check sensor wiring
♦ Check camshaft sender wheel

Function restrictions

♦ Camshaft adjustment not possible
♦ Loss of power possible
♦ Engine rough running and even "engine stall" possible if the chain is out of position by several teeth

Diagnosis information DME control module

P001700 Bank 1 camshaft position/crankshaft position sensor - incorrect allocation

Diagnostic conditions

- No fault of the crankshaft sensor
- No fault of the camshaft adjuster
- No other faults of the camshaft sensor present
- With engine running

Fault setting condition(s)

- If the camshaft is moved to the reference position (stop) during the driving cycle, a camshaft-to-crankshaft allocation test is performed
- Edges of the camshaft sensor signal when the camshaft is in reference position (stop) do not match the crankshaft signal (camshaft impermissibly turned out of position)

Monitored component or system

♦ Bank 1 exhaust camshaft sensor

Fault finding notes

♦ Check camshaft timing (camshaft position) via the Tester
♦ Check chain drive to determine whether the chain is out of place
♦ Check the camshaft adjuster function (check control valves, shaft adjusters, oil pressure)
♦ Check wiring of the camshaft adjusters
♦ Check sensor wiring
♦ Check camshaft sender wheel

Function restrictions

♦ Camshaft adjustment not possible
♦ Loss of power possible
♦ Engine rough running and even "engine stall" possible if the chain is out of position by several teeth

Diagnosis information DME control module

P003000 Bank 1 sensor 1 - heating circuit open circuit

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Check wiring between the control unit and component for open circuit. Depending on the output stage, the internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check power supply of the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P003100 Bank 1 sensor 1 - heating circuit short circuit to ground

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 2.15...3.25 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to ground. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P003200 Bank 1 sensor 1 - heating circuit short circuit to B+

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater current > 3 A

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to B+. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

P003600

Diagnosis information DME control module

P003600 Bank 1 sensor 2 - heating circuit open circuit

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Check wiring between the control unit and component for open circuit. The internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check component for continuity
♦ Check power supply of the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P003700 Bank 1 sensor 2 - heating circuit short circuit to ground

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 2.15...3.25 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to ground. If this is OK, then pull the component off and clear the fault memory
♦ If an open circuit or electrical fault is detected upon unplugging, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P003800 Bank 1 sensor 2 - heating circuit short circuit to B+

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater current > 3 A

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to B+. If this is OK, then pull the component off and clear the fault memory
♦ If an open circuit or electrical fault is detected upon unplugging, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P004000 Bank 1 sensor 1/bank 2 sensor 1 interchanged

Diagnostic conditions

- Oxygen sensor heating completed
- Diagnostics runs continuously

Fault setting condition(s)

- The lambda controllers of the two banks run in the opposite direction: bank 1 at rich limit and bank 2 at lean limit or bank 1 at lean limit and bank 2 at rich limit
- Observation of the controller outputs of the pre-catalytic converters of the two banks

Monitored component or system

♦ Oxygen sensors ahead of the catalytic converter

Fault finding notes

♦ Oxygen sensors ahead of the catalytic converters interchanged

Function restrictions

♦ Rough-running engine

Diagnosis information DME control module

P005000 Bank 2 sensor 1 - heating circuit electrical fault

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Check wiring between the control unit and component for open circuit. Depending on the output stage, the internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check power supply of the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P005100 Bank 2 sensor 1 - heating circuit short circuit to ground

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 2.15...3.25 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to ground. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P005200 Bank 2 sensor 1 - heating circuit short circuit to B+

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater current > 3 A

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to B+. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P005600 Bank 2 sensor 2 - heating circuit electrical fault

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Check wiring between the control unit and component for open circuit. The internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check component for continuity
♦ Check power supply of the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P005700 Bank 2 sensor 2 - heating circuit short circuit to ground

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 2.15...3.25 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to ground. If this is OK, then pull the component off and clear the fault memory
♦ If an open circuit or electrical fault is detected upon unplugging, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P005800 Bank 2 sensor 2 - heating circuit short circuit to B+

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater current > 3 A

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to B+. If this is OK, then pull the component off and clear the fault memory
♦ If an open circuit or electrical fault is detected upon unplugging, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P006800 Intake manifold pressure/mass air flow to throttle valve angle, deviation

Diagnostic conditions

- With engine running
- Lambda closed-loop control circuit closed
- Tank vent closed
- Diagnostics runs continuously

Monitored component or system

♦ Mass air flow sensor MAF 6

P007000

Diagnosis information DME control module

P007000 Outside-temperature sensor - electrical fault

Monitored component or system

♦ Ambient temperature sensor

Fault finding notes

♦ See air conditioner fault memory

P007100

Diagnosis information DME control module

P007100 Outside temperature sensor - implausible signal

Diagnostic conditions

- Cold start detected
- No block heater operation detected
- No solar irradiation detected

Fault setting condition(s)

- Temperature cross-check after engine start in the conditioned vehicle state
- Comparison of intake-air temperature, engine temperature and ambient temperature

Monitored component or system

♦ Ambient temperature sensor

Fault finding notes

♦ See air conditioner fault memory

P007200

Diagnosis information DME control module

P007200 Outside-temperature sensor - signal too low

Monitored component or system

♦ Ambient-temperature sensor

Fault finding notes

♦ See air conditioner fault memory

Diagnostic information - DME V6 DFI

Fuel high pressure too low
● From MY 2015 =>

Diagnostic conditions
● Battery voltage 10 V ... 16 V
● Engine start detected > 5 sec.
● Engine temperature -10 °C ... + 100 °C (14 … 212 °F)
● Driving with different load and engine speed ranges

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Pressure-relief valve in high-pressure circuit faulty
♦ Quantity control valve faulty (in fuel high-pressure pump)
♦ Fuel high-pressure pump faulty

Fault setting conditions
● When the engine is starting under the diagnostic conditions specified above, the plausibility of the value of the fuel high-pressure sensor is checked.
● When the engine is running at idle speed and in the near idle speed range, a suspected fault is set if the actual value of the fuel high-pressure control system differs from the setpoint value.
● The plausibility of the fuel high-pressure sensor **AND also** the value of the fuel/air mixture adaptation is now evaluated:
⇒ If the fuel high-pressure sensor shows plausible values **AND** if this adaptation value is close to 0, the fault code P008700 or P008800 will be entered.
⇒ If the fuel high-pressure sensor shows implausible values **AND** if the adaptation value is significantly different, the fault code P12A100 or P12A200 will be entered.
ⓘ A significant deviation in the fuel adaptation value does not necessarily result in a fault entry for mixture adaptation because another fault limit is decisive for this.

Diagnostic information - DME V6 DFI

Fuel high pressure too high
● From MY 2015 =>

Diagnostic conditions
● Battery voltage 10 V ... 16 V
● Engine start detected > 5 sec.
● Engine temperature -10 °C ... + 100 °C (14 … 212 °F)
● Driving with different load and engine speed ranges

Possible fault causes
♦ Pressure-relief valve in high-pressure circuit faulty
♦ Quantity control valve faulty (in fuel high-pressure pump)
♦ Fuel high-pressure pump faulty

Fault setting conditions
● When the engine is starting under the diagnostic conditions specified above, the plausibility of the value of the fuel high-pressure sensor is checked.
● When the engine is running at idle speed and in the near idle speed range, a suspected fault is set if the actual value of the fuel high-pressure control system differs from the setpoint value.
● The plausibility of the fuel high-pressure sensor **AND also** the value of the fuel/air mixture adaptation is now evaluated:
⇒ If the fuel high-pressure sensor shows plausible values **AND** if this adaptation value is close to 0, the fault code P008700 or P008800 will be entered.
⇒ If the fuel high-pressure sensor shows implausible values **AND** if the adaptation value is significantly different, the fault code P12A100 or P12A200 will be entered.
ⓘ A significant deviation in the fuel adaptation value does not necessarily result in a fault entry for mixture adaptation because another fault limit is decisive for this.

P008A00

Diagnosis information DME control module

P008A00 Fuel low pressure system - pressure too low

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The measured fuel low pressure deviates significantly from the setpoint pressure

Monitored component or system

♦ Fuel low pressure system

Fault finding notes

♦ Check fuel lines (tightness)
♦ Check fuel filter (soiled/clogged)
♦ Check pressure retaining valve
♦ Checking pressure limiting valve
♦ Check activation of electric fuel pump (low pressure)
♦ Check low pressure sensor (in the high pressure pump)
♦ Check electric fuel pump (low pressure) (pressure, delivery quantity)

P008B00

Diagnosis information DME control module

P008B00 Fuel low pressure system - pressure too high

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The measured fuel low pressure deviates significantly from the setpoint pressure

Monitored component or system

♦ Fuel low pressure system

Fault finding notes

♦ Check fuel lines (tightness)
♦ Check fuel filter (soiled/clogged)
♦ Check pressure retaining valve
♦ Check pressure limiting valve
♦ Check activation of electric fuel pump (low pressure)
♦ Check low pressure sensor (in the high pressure pump)
♦ Check electric fuel pump (low pressure) (pressure, delivery quantity)

Diagnosis information DME control module

P010000 Mass air flow sensor - supply voltage

Diagnostic conditions

- Ignition on
- Engine turning
- Vehicle electrical system voltage greater than 11 V
- Diagnostics runs several times per driving cycle

Fault setting condition(s)

- The hot-film mass air flow sensor transmits the measured air mass to the control unit in the form of a frequency signal. The control unit evaluates the period as a measured value for the mass air flow

Monitored component or system

♦ Hot-film mass air flow sensor (MAF)

Fault finding notes

♦ Check power supply of the hot-film mass air flow sensor
♦ Line test
♦ Contact test
♦ Replace sensor
♦ In designs with two hot-film mass air flow sensors, interchange these sensors. If the fault moves over too, then replace the sensor. If the fault stays in the same place, then the plug, line or DME control unit is faulty

Diagnosis information DME control module

P010100 Mass air flow sensor - implausible signal

Diagnostic conditions

- With engine running
- Diagnostics runs several times per driving cycle
- Drive with low and high engine load (diagnostics runs continuously)
- Drive with the most constant driving conditions possible for mixture adaptation procedure (diagnostics runs continuously)

Fault setting condition(s)

- Mass air flow > 1,100 kg/h
- Comparison with theoretically possible mass air flow upper limit
- Mass air flow < -10 kg/h
- Comparison with theoretically possible mass air flow lower limit
- Monitoring of the mass air flow for plausibility depending on the throttle valve position, taking all essential component tolerances into account

Monitored component or system

♦ Hot-film mass air flow sensor (MAF 6)

Fault finding notes

♦ Check hoses between the throttle valve and the hot-film mass air flow sensor
♦ Check hot-film mass air flow sensor (for drift)
♦ Check throttle valve for drift and soiling

Diagnosis information DME control module

P010200 Mass air flow sensor signal too low

Diagnostic conditions

- Ignition on
- Engine turning
- Vehicle electrical system voltage greater than 11 V
- Diagnostics runs several times per driving cycle

Fault setting condition(s)

- The hot-film mass air flow sensor transmits the measured air mass to the control unit in the form of a frequency signal. The control unit evaluates the period as a measured value for the mass air flow
- The period of the hot-film mass air flow sensor signal corresponds to a temperature correction factor and is monitored against a lower limit
- The fault is triggered if there is a short circuit to B+ or ground or a line open circuit
- The fault can also be caused by the signal drifting away to low values if the electronic components in the hot-film mass air flow sensor are faulty

Monitored component or system

♦ Hot-film mass air flow sensor (MAF)

Fault finding notes

♦ Line test
♦ Contact test
♦ Replace sensor
♦ In designs with two hot-film mass air flow sensors, interchange these sensors. If the fault moves over too, then replace the sensor. If the fault stays in the same place, then the plug, line or DME control unit is faulty
♦ Unplug the DME control unit and simulate a DME control unit to the hot-film mass air flow sensor by connecting a resistance circuit to the hot-film mass air flow sensor pins, ensure the power supply of the hot-film mass air flow sensor, measure hot-film mass air flow sensor signal
♦ Replace DME control unit

Diagnosis information DME control module

P010300 Mass air flow sensor signal too high

Diagnostic conditions

- Ignition on
- Engine turning
- Vehicle electrical system voltage greater than 11 V
- Diagnostics runs several times per driving cycle

Fault setting condition(s)

- The hot-film mass air flow sensor transmits the measured air mass to the control unit in the form of a frequency signal. The control unit evaluates the period as a measured value for the mass air flow
- The period of the hot-film mass air flow sensor signal corresponds to a temperature correction factor and is monitored against an upper limit
- If the electronic components in the hot-film mass air flow sensor are faulty, this can cause a drift to long periods

Monitored component or system

♦ Hot-film mass air flow sensor (MAF)

Fault finding notes

♦ Line test
♦ Contact test
♦ Replace sensor
♦ In designs with two hot-film mass air flow sensors, interchange these sensors. If the fault moves over too, then replace the sensor. If the fault stays in the same place, then the plug, line or DME control unit is faulty
♦ Unplug the DME control unit and simulate a DME control unit to the hot-film mass air flow sensor by connecting a resistance circuit to the hot-film mass air flow sensor pins, ensure the power supply of the hot-film mass air flow sensor, measure hot-film mass air flow sensor signal
♦ Replace DME control unit

Diagnosis information DME control module

P011100 Intake air temperature sender - implausible signal

Diagnostic conditions

- Cold start detected
- No block heater operation detected
- No solar irradiation detected

Fault setting condition(s)

- Temperature cross-check after engine start in the conditioned vehicle state
- Comparison of intake-air temperature, engine temperature and ambient temperature

Monitored component or system

♦ Intake air temperature sensor

Diagnosis information DME control module

P011200 Intake air temperature sender - signal too low

Diagnostic conditions

- Diagnostics runs several times

Fault setting condition(s)

- Intake air temperature > 129.8 °C (265.6 °F)

Monitored component or system

♦ Intake air temperature sensor

Diagnosis information DME control module

P011300 Intake air temperature sender - signal too high

Diagnostic conditions

- Time after engine starts > 240 sec
- Engine idling
- Injection suppression not active
- Diagnostics runs several times

Monitored component or system

♦ Intake air temperature sensor

Diagnosis information DME control module

P011600 Coolant temperature sender - implausible signal

Diagnostic conditions

- Time after engine starts > 3 sec
- Diagnostics runs once per driving cycle
- Cold start detected
- No block heater operation detected
- No solar irradiation detected

Fault setting condition(s)

- If no perceptible temperature change is recorded after driving states with low and high cooling power, it is assumed that the sensor is "stuck"
- Temperature cross-check after engine start in the conditioned vehicle state
- Comparison of intake-air temperature, engine temperature and ambient temperature

Monitored component or system

♦ Engine cooling system temperature sensor

Fault finding notes

♦ Engine temperature sensor probably faulty

Function restrictions

♦ Engine temperature too low or too high

Diagnosis information DME control module

P011700 Coolant temperature sender - signal too low

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Measured engine temperature > 137.3 °C (279.1 °F)
- Voltage drop at the NTC sensor is assigned to a corresponding temperature
- Fault detection when a maximum temperature threshold is exceeded

Monitored component or system

♦ Engine cooling system temperature sensor

Fault finding notes

♦ Measure voltage via sensor
♦ Fault case: if the voltage is near 0 V, the sensor or wiring is faulty

Function restrictions

♦ Engine temperature too high

Diagnosis information DME control module

P011800 Coolant temperature sender - signal too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Measured engine temperature < -44.3 °C (-47.7 °F)
- Voltage drop at the NTC sensor is assigned to a corresponding temperature
- Fault detection when a minimum temperature threshold is exceeded

Monitored component or system

♦ Engine cooling system temperature sensor

Fault finding notes

♦ Measure voltage via sensor
♦ Fault case: if the voltage is near 5 V, the sensor or wiring is faulty

Function restrictions

♦ Engine temperature too low

Diagnosis information DME control module

P012100 Throttle valve potentiometer - implausible signal

Diagnostic conditions

- Engine speed > 480 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The angles of throttle valve potentiometers 1 and 2 deviate by more than 6.3% from each other
- The angle of throttle valve potentiometer 1 and the calculated throttle valve angle deviate by more than 9.0% from each other

Monitored component or system

♦ Throttle valve sensor 1

Diagnosis information DME control module

P012200 Throttle valve potentiometer - signal too low

Diagnostic conditions

- Ignition on
- Run-on
- Diagnostics runs continuously

Fault setting condition(s)

- Throttle valve potentiometer voltage of sensor 1 < 0.176 V

Monitored component or system

♦ Throttle valve sensor 1

Diagnosis information DME control module

P012300 Throttle valve potentiometer - signal too high

Diagnostic conditions

- Ignition on
- Run-on
- Diagnostics runs continuously

Fault setting condition(s)

- Throttle valve potentiometer voltage of sensor 1 > 4.629 V

Monitored component or system

♦ Throttle valve sensor 1

Diagnosis information DME control module

P013000 Bank 1 sensor 1 - electrical fault in circuit

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Exhaust temperature > 249.998 °C (481.996 °F)
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Ceramic element temperature < 640.022 °C (1,184.040 °F)
- Internal resistance > 950 Ohm
- Heater fault
- Line open circuit
- A fault entry is made as soon as the ceramic element temperature is implausibly low, the internal resistance of the Nernst cell is implausibly high or a heater fault or a line open circuit is present
- This diagnostic test represents a quick test in order to deactivate lambda control as quickly as possible in the event of a fault. The exact fault cause is stored as the second fault memory entry

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ See description of the measure based on the parallel heater fault or line open circuit fault memory entry

P013100

Diagnosis information DME control module

P013100 Bank 1 sensor 1 - voltage too low

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Virtual ground < 2 V
- Nernst voltage < 1.75 V
- Comparison line < 0.9 V
- Collective fault: short circuit of the virtual ground to ground, short circuit of the Nernst voltage to ground or short circuit of the comparison line to ground

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P013200

Diagnosis information DME control module

P013200 Bank 1 sensor 1 - voltage too high

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Virtual ground > 3 V
- Nernst voltage > 4 V
- Comparison line > 6 V
- Collective fault: short circuit of the virtual ground to

B+, short circuit of the Nernst voltage to B+ or short circuit of the comparison line to B+

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

Diagnosis information DME control module

P013300 Bank 1 sensor 1 - signal too slow

Monitored component or system

- Oxygen sensor ahead of catalytic converter
- Dynamic response

Fault finding notes

- Short circuit to B+/ground/mutual short circuit or open circuit in the lines
- Different air flow to the oxygen sensor behind the catalytic converter in case of:
  - **catalytic converter** damaged
  - modified or non-genuine components
- **oxygen sensor ahead of catalytic converter**, bank 1, faulty (aged)

Diagnosis information DME control module

P005000 Bank 2 sensor 1 - heating circuit electrical fault

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Check wiring between the control unit and component for open circuit. Depending on the output stage, the internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check power supply of the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

Diagnosis information DME control module

P013700 Bank 1 sensor 2 - voltage too low

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● At start with cold sensor: The sensor voltage is below the minimum voltage (0.04 V)
● In warm operation: The sensor voltage is below a minimum voltage (0.04 V) and no reaction to closed-loop enrichment

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Test of the power supply: Important: The heating must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "signal plus" and "signal ground". U=0.4-0.5 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Check of the lines "signal plus" and "signal ground" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P013800

Diagnosis information DME control module

P013800 Bank 1 sensor 2 - voltage too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is above the maximum voltage (1.08 V)

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Test of the power supply: Important: The heating must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "signal plus" and "signal ground". U=0.4-0.5 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Check of the lines "signal plus" and "signal ground" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

Diagnosis information DME control module

P013900 Bank 1 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P013900 Bank 1 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P013900 Bank 1 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P015900 Bank 2 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P015900 Bank 2 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P013900 Bank 1 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P013900 Bank 1 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

P014000

Diagnosis information DME control module

P014000 Bank 1 sensor 2 - no activity

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● The sensor voltage is in the voltage range or the exhaust gas temperature is higher than the temperature threshold and the internal resistance is higher than the internal-resistance threshold

Monitored component or system

♦ Bank 1 oxygen sensor 2

Fault finding notes

♦ Test of the power supply: Important: The heating must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "signal plus" and "signal ground". U=0.4-0.5 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Check of the lines "signal plus" and "signal ground" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

Diagnosis information DME control module

P015900 Bank 2 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P015900 Bank 2 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P015000 Bank 2 sensor 1 - electrical fault in circuit

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Exhaust temperature > 249.998 °C (481.996 °F)
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Ceramic element temperature < 640.022 °C (1,184.040 °F)
- Internal resistance > 950 Ohm
- Heater fault
- Line open circuit
- A fault entry is made as soon as the ceramic element temperature is implausibly low, the internal resistance of the Nernst cell is implausibly high or a heater fault or a line open circuit is present
- This diagnostic test represents a quick test in order to deactivate lambda control as quickly as possible in the event of a fault. The exact fault cause is stored as the second fault memory entry

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ See description of the measure based on the parallel heater fault or line open circuit fault memory entry

P015100

Diagnosis information DME control module

P015100 Bank 2 sensor 1 - voltage too low

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Virtual ground < 2 V
- Nernst voltage < 1.75 V
- Comparison line < 0.9 V
- Collective fault: short circuit of the virtual ground to ground, short circuit of the Nernst voltage to ground or short circuit of the comparison line to ground

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P015200

Diagnosis information DME control module

P015200 Bank 2 sensor 1 - voltage too high

Diagnostic conditions

- Oxygen sensor 4.9/4.2
- Heater control active
- Diagnostics runs continuously

Fault setting condition(s)

- Virtual ground > 3 V
- Nernst voltage > 4 V
- Comparison line > 6 V
- Collective fault: short circuit of the virtual ground to

B+, short circuit of the Nernst voltage to B+ or short circuit of the comparison line to B+

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

Diagnosis information DME control module

P015300 Bank 2 sensor 1 - signal too slow

Monitored component or system

♦ Bank 2 oxygen sensor 1

Fault finding notes

♦ Short circuit to B+/ground/mutual short circuit or open circuit in the lines
♦ Different air flow to the oxygen sensor behind the catalytic converter in case of:
  ♦ **catalytic converter** damaged
  ♦ modified or non-genuine components
♦ **oxygen sensor ahead of catalytic converter**, bank 2, faulty (aged)

Diagnosis information DME control module

P005600 Bank 2 sensor 2 - heating circuit electrical fault

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- Heater voltage > 4.4...5.6 V

Monitored component or system

♦ Oxygen sensor heater ahead of catalytic converter 2

Fault finding notes

♦ Check wiring between the control unit and component for open circuit. The internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check component for continuity
♦ Check power supply of the component

Function restrictions

♦ Output stage inactive, failure of the sensor heater

P015700

Diagnosis information DME control module

P015700 Bank 2 sensor 2 - voltage too low

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● At start with cold sensor: The sensor voltage is below the minimum voltage (0.04 V)
● In warm operation: The sensor voltage is below a minimum voltage (0.04 V) and no reaction to closed-loop enrichment

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Test of the power supply: Important: The heating must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "signal plus" and "signal ground". U=0.4-0.5 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Check of the lines "signal plus" and "signal ground" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P015800

Diagnosis information DME control module

P015800 Bank 2 sensor 2 - voltage too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is above the maximum voltage (1.08 V)

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Test of the power supply: Important: The heating must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "signal plus" and "signal ground". U=0.4-0.5 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Check of the lines "signal plus" and "signal ground" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

Diagnosis information DME control module

P015900 Bank 2 sensor 2 - signal too slow

Diagnostic conditions

- Engine at operating temperature
- Time since engine start > 10 sec
- 60 seconds driving with slight acceleration at 25...130 km/h (16... 81 mph), engine speed < 3,000 rpm, lambda control ahead of catalytic converter active, lambda control behind catalytic converter active, overrun shutoff by accelerator pedal release

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Changed flow to the oxygen sensor behind the catalytic converter if the catalytic converter is damaged or if modified or non-genuine components are installed

Diagnosis information DME control module

P016000 Bank 2 sensor 2 - no activity

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● The sensor voltage is in the voltage range or the exhaust gas temperature is higher than the temperature threshold and the internal resistance is higher than the internal-resistance threshold

Monitored component or system

♦ Bank 2 oxygen sensor 2

Fault finding notes

♦ Test of the power supply: Important: The heating must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "signal plus" and "signal ground". U=0.4-0.5 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Check of the lines "signal plus" and "signal ground" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P016900

Diagnosis information DME control module

P109300 Bank 1 fuel metering system 2 - malfunction

Diagnostic conditions

- Engine speed > 1,200 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Error in the plausibility check of the predicted air flow (torque monitoring function)
- Error in the plausibility check of the mixture correction factors
- The lambda setpoint does not match the current operating mode
- Error in the plausibility check between injection time and fuel mass
- Error in the plausibility check of the relative fuel mass

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Processing of all faults relating to the air and fuel system (see fault memory). If there are no more faults, the DME control unit is faulty
♦ The fault might lie in the fuel metering system or intake system, otherwise the DME control unit must be replaced

Function restrictions

♦ A reset can be performed when the fault occurs once
♦ If the fault is still present, the injection quantity will be limited (no more injections will be permitted above 1,500 rpm)

P017000

Diagnosis information DME control module

P017000 Bank 1 fuel metering system - malfunction

Monitored component or system

♦ Mixture adaptation (short trip)

P017100

Diagnosis information DME control module

P017100 Bank 1 fuel metering system - system too lean

Fault setting condition(s)

- System too lean
- Adaptive value > 21%

Monitored component or system

♦ Mixture adaptation (short trip)

P017200

Diagnosis information DME control module

P017200 Bank 1 fuel metering system - system too rich

Fault setting condition(s)

- System too rich
- Adaptive value <- 21%

Monitored component or system

♦ Mixture adaptation (short trip)

P017300

Diagnosis information DME control module

P017300 Bank 1 fuel metering system - malfunction

Monitored component or system

♦ Mixture adaptation (short trip)

P017400

Diagnosis information DME control module

P017400 Bank 2 fuel metering system - system too lean

Fault setting condition(s)

- System too lean
- Adaptive value > 21%

Monitored component or system

♦ Mixture adaptation (short trip)

P017500

Diagnosis information DME control module

P017500 Bank 2 fuel metering system - system too rich

Fault setting condition(s)

- System too rich
- Adaptive value <- 21%

Monitored component or system

♦ Mixture adaptation (short trip)

Diagnosis information DME control module

P017B00 Cylinder head temperature sender - implausible signal

Diagnostic conditions

● Cold start detected
● Engine was shut off while hot
● Vehicle start with conditioned vehicle
● Diagnostics runs once per driving cycle with conditioned vehicle
● Enabling of "master cross-check" via ambient air temperature signal
● No electrical faults in the engine temperature sensor, no component faults justifying blockage, engine running and no block heater operation

Fault setting condition(s)

● The purpose of the high-stuck check is to detect a stuck sensor in the control range
● Each check is performed once after a correspondingly long engine-off time
● Subsequent temperature cross-check after engine start in the conditioned vehicle state (long off time)
● Comparison of the cylinder head temperature with the engine temperature that has already undergone a plausibility check (checked against intake air temperature and ambient air temperature)
● After a cold start, the measured cylinder head temperature undergoes a plausibility check compared to a modeled cylinder head reference temperature
● If no perceptible temperature change is recorded after driving states with low and high cooling power, it is assumed that the sensor is stuck

Monitored component or system

♦ Coolant temperature sensor

Fault finding notes

♦ Test of the temperature sensor with cold engine
♦ Check of the cylinder head temperature compared to the coolant temperature. Ideally, compare the measured values after the engine cooling phase (e.g. 2 hours)
♦ A fault exists if the cylinder head temperature value is 30 °C (54 °F) less than the coolant temperature
♦ If the connectors and wiring are OK, replace the sensor

Function restrictions

♦ Engine temperature too high
♦ Measured cylinder head temperature too high
♦ Measured cylinder head temperature too low

Diagnosis information DME control module

P017C00 Cylinder head temperature sender - short circuit to ground

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The temperature sensor for thermal management input signal falls below the minimum value

Fault finding notes

- ♦ Check for short circuit to ground
- ♦ Check sensor, electrical wiring and the plug
- ♦ If the fault is a sensor fault, a fault will be entered when the sensor is unplugged

Diagnosis information DME control module

P017D00 Cylinder head temperature sender - short circuit to B+

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The temperature sensor for thermal management input signal exceeds the maximum value

Fault finding notes

- ♦ Check for short circuit to B+/open line
- ♦ Check sensor, electrical wiring and the plug

Diagnosis information DME control module

P019000 Fuel pressure sender - electrical fault in circuit

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Sensor voltage > 4.8 V
● Monitoring of the electric signal from the pressure sensor for the high pressure/rail pressure fuel system
● The sensor voltage is read into the DME control unit via an AD channel; the voltage value is monitored for minimum and maximum limits

Monitored component or system

♦ Fuel high pressure sensor

Fault finding notes

♦ Check wiring, sensor and the DME control unit

Function restrictions

♦ Possibly power reduction/limp-home mode (with low pressure)

Diagnosis information DME control module

P019100 Fuel pressure sender - implausible signal

Diagnostic conditions

- Diagnostics runs continuously
- With engine running

Fault setting condition(s)

- By means of an upper and a lower pressure limit, it is possible to define a signal range in which the sensor provides plausible, variable values, but they cannot be identified as plausible because they lie outside the working range
- Voltage difference of the high pressure sensor < 0.0049 V (difference is formed over 4 injections)

Monitored component or system

♦ Fuel high pressure sensor

Fault finding notes

♦ High pressure sensor faulty (no electrical fault)
♦ Possibly faulty plug on sensor
♦ Check measured values

Function restrictions

♦ Engine shudders, possibly until it stalls at idle
♦ Acute lack of power
♦ Possibly breakdown

Diagnosis information DME control module

P019200 Fuel pressure sender - short circuit to ground

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Sensor voltage < 0.2 V
● Monitoring of the electric signal from the pressure sensor for the high pressure/rail pressure fuel system
● The sensor voltage is read into the DME control unit via an AD channel
● The voltage value is monitored for minimum and maximum limits

Monitored component or system

♦ Fuel high pressure sensor

Fault finding notes

♦ Check wiring, sensor and the DME control unit

Function restrictions

♦ Possibly power reduction/limp-home mode (with low pressure)

P019600

Diagnosis information DME control module

P019600 Oil temperature sender - implausible signal

Diagnostic conditions

- Ignition on

Monitored component or system

♦ Oil temperature signal

Fault finding notes

♦ Sensor faulty

P019700

Diagnosis information DME control module

P019700 Oil temperature sender - signal too low

Fault setting condition(s)

- Short circuit to B+

Monitored component or system

♦ Oil level/oil temperature sender

Fault finding notes

♦ Sensor or wiring faulty

P019800

Diagnosis information DME control module

P019800 Oil temperature sender - signal too high

Fault setting condition(s)

- Short circuit to ground

Monitored component or system

♦ Oil level/oil temperature sender

Fault finding notes

♦ Sensor or wiring faulty

Diagnosis information DME control module

P020100 Cylinder 1 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 1

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P020200 Cylinder 2 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 2

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P020300 Cylinder 3 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 3

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P020400 Cylinder 4 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 4

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P020500 Cylinder 5 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 5

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P020600 Cylinder 6 fuel injector - electrical fault in circuit

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side-sensing) > 0.45 A...0.85 A and < 2.05 A...2.55 A
- Current (high-side-sensing) < 2.4 A...3.4 A
- The fault is set in case of a booster timeout or open load of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 6

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P021900 Maximum engine speed exceeded

Fault setting condition(s)

● Engine ran at a speed exceeding the governed speed (7,100 rpm)
● The cause is probably a shifting mistake in case of a manual transmission; this is impossible in case of automatic transmissions in the field

Monitored component or system

♦ The engine is monitored for overspeed

Fault finding notes

♦ Possible cause in case of mechanical damage

Diagnosis information DME control module

P022100 Angle sender 2 for throttle valve drive - implausible signal

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The angles of throttle valve potentiometers 1 and 2 deviate by more than 6.3% from each other
- The angle of throttle valve potentiometer 2 and the calculated throttle valve angle deviate by more than 9.0% from each other

Monitored component or system

♦ Throttle valve sensor 2

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve adjuster when the ignition is on (throttle valve unplugged)

Function restrictions

♦ Limp-home mode (engine speed and torque limitation) maximum 110 km/h (68 mph)

Diagnosis information DME control module

P022200 Angle sender 2 for throttle valve drive - signal too low

Diagnostic conditions

- Ignition on, run-on
- Diagnostics runs continuously

Fault setting condition(s)

- Throttle valve potentiometer voltage of throttle valve 1 sensor 2 < 0.156 V

Monitored component or system

♦ Throttle valve sensor 2

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve adjuster when the ignition is on (throttle valve unplugged)

Function restrictions

♦ Limp-home mode (engine speed and torque limitation) maximum 110 km/h (68 mph)

Diagnosis information DME control module

P022300 Angle sender 2 for throttle valve drive - signal too high

Diagnostic conditions

- Ignition on, run-on
- Diagnostics runs continuously

Fault setting condition(s)

- Throttle valve potentiometer voltage of throttle valve 1 sensor 2 > 4.883 V

Monitored component or system

♦ Throttle valve sensor 2

Fault finding notes

♦ Electrical test of the sensor line, power supply, ground, plug
♦ A power supply of 5 V with respect to sensor ground (in the plug) must be measured on the wiring harness of the throttle valve adjuster when the ignition is on (throttle valve unplugged)

Function restrictions

♦ Limp-home mode (engine speed and torque limitation) maximum 110 km/h (68 mph)

P025A00

Diagnosis information DME control module

P025A00 Fuel pump module activation - electrical fault/open circuit

ⓘ Guided Fault Finding available.

Diagnostic conditions

- Ignition on
- If the low-side transistor is not conducting
- Diagnostics runs continuously

Fault setting condition(s)

- Voltage between 1.5 V and 2.5 V
- Direct current measurement in the output-stage driver (DME control unit); the output stage is switched off and a status is sent when the threshold is reached

Monitored component or system

♦ Control unit: fuel supply

Fault finding notes

♦ Check electrical connection to the fuel pump unit for open circuit.
♦ Unplug the fuel pump unit and connect signal line to ground
♦ If a short circuit to ground is detected, the fuel pump unit is faulty. Otherwise, the DME control unit is faulty

Function restrictions

♦ Engine failure

P025C00

Diagnosis information DME control module

P025C00 Fuel pump module activation - short circuit to ground

ⓘ Guided Fault Finding available.

Diagnostic conditions

- Ignition on
- If the low-side transistor is not conducting
- Diagnostics runs continuously

Fault setting condition(s)

- Voltage < 1.5 V
- Direct current measurement in the output-stage driver (DME control unit); the output stage is switched off and a status is sent when the threshold is reached

Monitored component or system

♦ Control unit: fuel supply

Fault finding notes

♦ Check electrical connection to the fuel pump unit for short circuit to ground
♦ Unplug the fuel pump unit
♦ If an open line is detected, the fuel pump unit is faulty. Otherwise, the DME control unit is faulty

Function restrictions

♦ Engine failure

P025D00

Diagnosis information DME control module

P025D00 Fuel pump module activation - short circuit to B+

ⓘ Guided Fault Finding available.

Diagnostic conditions

- Ignition on
- If the low-side transistor is conducting
- Diagnostics runs continuously

Fault setting condition(s)

- Current > 1.5 A
- Direct current measurement in the output-stage driver (DME control unit); the output stage is switched off and a status is sent when the threshold is reached

Monitored component or system

♦ Control unit: fuel supply

Fault finding notes

♦ Check electrical connection to the fuel pump unit for short circuit to B+
♦ Unplug the fuel pump unit
♦ If an open line is detected, the fuel pump unit is faulty. Otherwise, the DME control unit is faulty

Function restrictions

♦ Engine failure

Diagnosis information DME control module

P026100 Cylinder 1 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 1

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026200 Cylinder 1 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 1

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026400 Cylinder 2 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 2

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026500 Cylinder 2 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 2

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026700 Cylinder 3 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 3

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P026800 Cylinder 3 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 3

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P027000 Cylinder 4 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 4

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P027100 Cylinder 4 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 4

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P027300 Cylinder 5 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 5

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

P027400

Diagnosis information DME control module

P027400 Cylinder 5 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 5

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

P027600

Diagnosis information DME control module

P027600 Cylinder 6 fuel injector - short circuit to ground

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) < 2.05 A...2.55 A
- Current (high-side sensing) > 2.4 A...3.4 A
- The fault is set in case of short circuit to ground of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 6

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P027700 Cylinder 6 fuel injector - short circuit to B+

Diagnostic conditions

- Three engine revolutions took place
- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Current (low-side sensing) > 14.3 A...19.3 A
- The fault is set in case of short circuit to B+ of the high pressure fuel injector

Monitored component or system

♦ High pressure fuel injector, low side, cylinder 6

Fault finding notes

♦ Check injector resistance
♦ Check wiring

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

P030000

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm/ftlb.
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder X - misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030100

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm/ftlb.
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder X - misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030200

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm/ftlb.
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder X - misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030300

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm/ftlb.
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder X - misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030400

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm/ftlb.
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder X - misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030500

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm/ftlb.
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder X - misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

P030600

Diagnosis information DME control module

Misfiring detected
P030100 Cylinder 1
P030200 Cylinder 2
P030300 Cylinder 3
P030400 Cylinder 4
P030500 Cylinder 5
P030600 Cylinder 6

ⓘ Guided Fault Finding available.

Diagnostic conditions

- With engine running
- Engine speed between 400 and 6,500 rpm
- Engine torque >= 0 Nm/ftlb.
- Intake-air temperature > -48°C (-54 °F)
- Engine start temperature > -30 °C (-22 °F)
- Fuel shutoff not active
- Bad-road detection not active
- Internal CAN without fault
- Diagnostics runs continuously

Fault setting condition(s)

- Misfiring rate > 2% per 1,000 revolutions

Monitored component or system

♦ Misfire detection, cylinder X - misfiring detected

Fault finding notes

♦ Loose contact or corrosion on connectors or lines
♦ Power or ground supply faulty

♦ Spark plug(s) Oily due to oil entrainment in the cylinder
♦ Spark plug(s) incorrect
♦ Spark plug(s) Mechanical fault or Electrical fault
♦ **Ignition coil** Faulty
♦ Power or ground supply faulty

♦ Fuel quality incorrect
♦ Fuel tank empty
♦ Water in the Fuel tank
♦ Fuel line soiled / Blocked

♦ **Electric fuel pump** Mechanical fault
♦ **Fuel high-pressure pump** Mechanical fault

♦ **Injection valve** Faulty or Borderline
(opens too late / not long enough / not enough or leaks)
♦ **Oxygen sensor(s)** Faulty

♦ **Exhaust system** Narrowed / Blocked

♦ **Catalytic converter** Faulty

♦ **Intake distributor** leaks
♦ Foreign bodies in the **Intake distributor**
♦ Fault **Camshaft adjustment**
♦ Timing incorrect - **Exhaust camshaft**
♦ Valve lifter Faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault Valve drive
♦ Compression too low
(e.g. Cylinder lining damaged, Valve-seat ring Faulty ...)

Function restrictions

♦ Loss of power
♦ MIL on

Diagnosis information DME control module

P032100 Engine speed sender - implausible signal

Diagnostic conditions

● The intelligent speed sender is permanently supplied with power
● After synchronization via a safe run-out position and reaching the first reference mark (gap on sender wheel)
● No camshaft sender fault present
● No fault in the sensor supply voltage
● Engine stalling detection not active
● Engine start
● Switch ignition off and then on again
● Diagnostics runs continuously
● With engine running

Fault setting condition(s)

● After synchronization via a safe run-out position, a correction is of the angle basis is made at the first reference mark (gap on sender wheel). If a certain amount is exceeded in this process, the fault is set
● Disturbed signal from intelligent speed sender detected
● Incorrect shutoff position of the intelligent speed sender detected
● Several edges implausible with respect to each other in time
● Incorrect number of crankshaft gaps and/or crankshaft teeth detected

Monitored component or system

♦ Crankshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply (only with active sensor)
♦ Check sensor signal with engine running (oscilloscope)
♦ Check the wiring for short circuit to B+, short circuit to ground and line open circuit
♦ Check sender wheel
♦ Replace sensor

Function restrictions

♦ Possibly torque limitation through switch-off of the high-pressure pump

Diagnosis information DME control module

P032200 Engine speed sender - no signal

Diagnostic conditions

- No camshaft sender fault present
- No fault in the sensor supply voltage
- Engine stalling detection not active
- Engine start
- Switch ignition off and then on again
- Diagnostics runs continuously
- With engine running

Fault setting condition(s)

- No edge change of the crankshaft signal detected with camshaft signal present and engine turning

Monitored component or system

♦ Crankshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply (only with active sensor)
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Possibly torque limitation through switch-off of the high-pressure pump

Diagnosis information DME control module

P032700 Knock sensor 1 - signal too low

Diagnostic conditions

● Engine speed > 1,000 rpm
● Cyclical, except if fault or fault healing is suspected, in which case only this line is tested until the suspicion is no longer present
● Performed once per 100-ms grid

Fault setting condition(s)

● Knocking signal < -0.7 V
● Short circuit to ground
● Voltage too low

Monitored component or system

♦ Knock sensor 1

Fault finding notes

♦ Check of the sensor, the line, the connections for correct seating of the sensor

Diagnosis information DME control module

P032800 Knock sensor 1 - signal too high

Diagnostic conditions

● Engine speed > 1,000 rpm
● Cyclical, except if fault or fault healing is suspected, in which case only this line is tested until the suspicion is no longer present
● Performed once per 100-ms grid

Fault setting condition(s)

● Knocking signal > 1.0 V
● Short circuit to B+
● Voltage too high

Monitored component or system

♦ Knock sensor 1

Fault finding notes

♦ Check of the sensor, the line, the connections for correct seating of the sensor

Diagnosis information DME control module

P033200 Knock sensor 2 - signal too low

Diagnostic conditions

● Engine speed > 1,000 rpm
● Cyclical, except if fault or fault healing is suspected, in which case only this line is tested until the suspicion is no longer present
● Performed once per 100-ms grid

Fault setting condition(s)

● Knocking signal < -0.7 V
● Short circuit to ground
● Voltage too low

Monitored component or system

♦ Knock sensor 2

Fault finding notes

♦ Check of the sensor, the line, the connections for correct seating of the sensor

Diagnosis information DME control module

P033300 Knock sensor 2, signal too high

Diagnostic conditions

● Engine speed > 1,000 rpm
● Cyclical, except if fault or fault healing is suspected, in which case only this line is tested until the suspicion is no longer present
● Performed once per 100-ms grid

Fault setting condition(s)

● Knocking signal > 1.0 V
● Short circuit to B+
● Voltage too high

Monitored component or system

♦ Knock sensor 2

Fault finding notes

♦ Check of the sensor, the line, the connections for correct seating of the sensor

Diagnosis information DME control module

P034100 Camshaft position sensor - implausible signal

Diagnostic conditions

- No crankshaft sensor fault present
- No fault in the sensor supply voltage
- Switch ignition off and then on again
- Diagnostics at each start
- With engine running

Fault setting condition(s)

- The number of newly detected camshaft edges is evaluated once per camshaft revolution
- The camshaft signal is monitored for the number of edges actually present, their spacing and the signal level between the edges
- Number of edge changes, the signal level between the edges and the angular spacing of the camshaft sender edges deviate too far from the setpoints

Monitored component or system

♦ Bank 1 intake camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P034200 Camshaft position sensor - signal too low

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- No sensor edge change detected while engine is running
- Sensor signal is continuously at Low level

Monitored component or system

♦ Bank 1 intake camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P034300 Camshaft position sensor - signal too high

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- No sensor edge change detected while engine is running
- Sensor signal continuously at High level

Monitored component or system

♦ Bank 1 intake camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P035100 Cylinder 1 ignition control - malfunction

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- In case of idling, an internal register is set after a filtering time
- A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Diagnosis information DME control module

P035200 Cylinder 2 ignition control - malfunction

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- In case of idling, an internal register is set after a filtering time
- A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Diagnosis information DME control module

P035300 Cylinder 3 ignition control - malfunction

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- In case of idling, an internal register is set after a filtering time
- A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Diagnosis information DME control module

P035400 Cylinder 4 ignition control - malfunction

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- In case of idling, an internal register is set after a filtering time
- A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

P035500

Diagnosis information DME control module

P035500 Cylinder 5 ignition control - malfunction

Diagnostic conditions

- Engine speed > 680 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- Monitoring of ignition coil activation for line open circuit

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

P035600

Diagnosis information DME control module

P035600 Cylinder 6 ignition control - malfunction

Diagnostic conditions

- Engine speed > 680 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage > 5.2 V...6.0 V
- Monitoring of ignition coil activation for line open circuit

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P036600 Camshaft position sensor - implausible signal

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- The number of newly detected camshaft edges is evaluated once per camshaft revolution
- Not enough camshaft sender edge changes matching the crankshaft signal detected

Monitored component or system

♦ Bank 1 exhaust camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P036700 Camshaft position sensor - signal too low

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- No sensor edge change detected while engine is running
- Sensor signal is continuously at Low level

Monitored component or system

♦ Bank 1 exhaust camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P036800 Camshaft position sensor - signal too high

Diagnostic conditions

- No crankshaft sensor fault present
- With engine running

Fault setting condition(s)

- No sensor edge change detected while engine is running
- Sensor signal continuously at High level

Monitored component or system

♦ Bank 1 exhaust camshaft sensor

Fault finding notes

♦ Check of the sensor for correct installation (distance from sensor to sender wheel, fit)
♦ Check sensor power supply
♦ Check sensor signal with engine running (oscilloscope)
♦ Check of the wiring
♦ Check sender wheel

Function restrictions

♦ Camshaft adjustment is no longer permissible; camshaft moves to reference position

Diagnosis information DME control module

P042000 Bank 1 catalytic converter system - inadequate effect

Diagnostic conditions

- Exhaust gas mass flow < 25 kg/h...70 kg/h
- Modeled catalytic converter temperature in the range 549.998 °C...849.998 °C (1,021.996 °F 1,561.996 °F)
- Mass air flow in the range 15.0%...68.3%
- Engine speed in the range 1,000 rpm...3,000 rpm
- Number of tests: 4
- Rapid adaptation stabilized
- Oxygen sensor ahead of catalytic converter ready; no fault
- Oxygen sensor behind catalytic converter ready; no fault
- Secondary-air system not active
- No misfiring
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Catalytic converter diagnostics through determination of the oxygen storage capacity

Monitored component or system

♦ Bank 1 catalytic converter

Fault finding notes

♦ The fault of the conversion loss in the catalytic converter cannot be checked in the workshop
♦ Poor fuel quality or misfiring could have caused the fault

Function restrictions

♦ The driver cannot perceive the reduction in the catalytic converter effect

Diagnosis information DME control module

P043000 Bank 2 catalytic converter system - inadequate effect

Diagnostic conditions

- Exhaust gas mass flow < 25 kg/h...70 kg/h
- Modeled catalytic converter temperature in the range 549.998 °C...849.998 °C (1,021.996 °F 1,561.996 °F)
- Mass air flow in the range 15.0%...68.3%
- Engine speed in the range 1,000 rpm...3,000 rpm
- Number of tests: 4
- Rapid adaptation stabilized
- Oxygen sensor ahead of catalytic converter ready; no fault
- Oxygen sensor behind catalytic converter ready; no fault
- Secondary-air system not active
- No misfiring
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Catalytic converter diagnostics through determination of the oxygen storage capacity

Monitored component or system

♦ Bank 2 catalytic converter

Fault finding notes

♦ The fault of the conversion loss in the catalytic converter cannot be checked in the workshop
♦ Poor fuel quality or misfiring could have caused the fault

Function restrictions

♦ The driver cannot perceive the reduction in the catalytic converter effect

Diagnosis information DME control module

P044100 Tank vent system - incorrect throughput

Diagnostic conditions

- Time after engine starts > 60 sec
- Engine idling
- Engine temperature > 60 °C (140 °F)
- Intake air temperature > 3.8 °C (38.8 °F)
- Elevation above sea level < 2,700 m (8,858 ft.)
- Lambda control present
- No downhill driving
- Tank system tested as tight
- No misfiring
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Tank vent valve stuck open or closed
- Tank vent valve purge rate < 20.0%
- After a successful 0.5-mm tightness test on the tank system, the tank pressure is increased slightly in another fixed pumping phase and the tank vent valve is then actively opened. The fall time of the reed contact is evaluated. If the fall time lies between two thresholds, the tank system is evaluated as OK. If the contact falls very late (3rd threshold), the tank vent valve is evaluated as not OK. If the reed contact falls very quickly or if the fall times lie in a gray area between OK and not OK, the diagnostic run is not evaluated. Alternatively, the test takes place via the conventional tank vent valve diagnostics by means of deviation of the lambda controller

Monitored component or system

♦ Tank vent valve

Fault finding notes

♦ If the tank vent valve drive link test is not OK, then replace the tank vent valve
♦ If the tank vent valve drive link test is OK, then perform short trip tank vent valve test
♦ Check lines from the carbon canister to the tank vent valve and from the tank vent valve to the intake manifold for leaks, kinks, joined connections and clogging
♦ Replace tank vent valve

Function restrictions

♦ The tank vent valve does not open

♦ The carbon canister is not flushed
♦ Fuel vapors can emerge at the fresh air filter in the rear left wheel housing
♦ MIL on

Diagnosis information DME control module

P044200 Tank vent system - fine leak detected

Diagnostic conditions

- No downhill driving
- Vehicle speed > 7.5 km/h (4.7 mph) (once)
- Engine temperature 3.8 °C...140.3 °C (38.8 °F...284.5 °F)
- Engine temperature at start 3.8 °C...120.0 °C (38.8 °F...248.0 °F)
- Intake air/ambient temperature 3.8 °C ...95.3 °C (38.8 °F...203.5 °F)
- Intake manifold vacuum -2,560.0 hPa
- Tank vent closed

Fault setting condition(s)

- The leakage diagnostic pump applies approx. 20 mbar overpressure on the tank system according to the principle of a diaphragm pump. The leakage diagnostic pump is operated by means of vacuum. The position of the pump diaphragm is monitored via a reed contact. The reed contact is interrupted when the diaphragm is raised. Either vacuum is being applied to the pump or overpressure has already built up in the tank system. Two brief component check phases are followed by a pumping phase in which the tank is pumped up by means of periodic enabling of vacuum activation. If adequate overpressure has been built up or the end of the pumping phase has been reached, this may be followed by a measuring phase. Here, the time that elapses after a single diaphragm stroke until the reed contact is closed again is evaluated. The tank vent valve is forcibly closed during diagnostics after engine start.
- The detected leakage in the fuel system corresponds to a diameter > 2 mm.

Monitored component or system

♦ Tank system/leakage

Fault finding notes

♦ Check the tank cap for correct closing and intact seals
♦ Check tank vent valve
♦ Check plug on the leakage diagnostic pump for correct seating
♦ Pressure-test the tank
♦ Check vacuum supply of the leakage diagnostic pump
♦ As a last option, replace the leakage diagnostic pump

Function restrictions

♦ More pronounced fuel odor
♦ MIL on

ⓘ INFORMATION

The system includes:
- ♦ mechanical **Vacuum pump**
- ♦ **Leakage diagnosis pump**
- ♦ **Intake pipe switchover** (if present)
- ♦ **Exhaust flap** (if present)

Diagnosis information DME control module

P044400 Tank vent valve - open circuit

Diagnostic conditions

- Engine speed > 0.00 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage of the tank vent valve detects a load decrease; the internal voltage is measured at the output > 4.8 V...5.3 V
- Tank vent valve output stage line drop-off (low side switch)

Monitored component or system

♦ Tank vent valve

Fault finding notes

♦ Check wiring between the DME control unit and component for open circuit. Depending on the output stage, the internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check voltage supply
♦ Check tank vent valve

Function restrictions

♦ Output stage inactive, failure of the tank vent valve

P045500

Diagnosis information DME control module

P045500 Tank vent system - major leak detected

Diagnostic conditions

- No downhill driving
- Vehicle speed > 7.5 km/h (4.7 mph) (once)
- Engine temperature 3.8 °C...140.3 °C (38.8 °F...284.5 °F)
- Engine temperature at start 3.8 °C...120.0 °C (38.8 °F...248.0 °F)
- Intake air/ambient temperature 3.8 °C ...95.3 °C (38.8 °F...203.5 °F)
- Intake manifold vacuum -2,560.0 hPa
- Tank vent closed

Fault setting condition(s)

- The leakage diagnostic pump applies approx. 20 mbar overpressure on the tank system according to the principle of a diaphragm pump. The leakage diagnostic pump is operated by means of vacuum. The position of the pump diaphragm is monitored via a reed contact. The reed contact is interrupted when the diaphragm is raised. Either vacuum is being applied to the pump or overpressure has already built up in the tank system. Two brief component check phases are followed by a pumping phase in which the tank is pumped up by means of periodic enabling of vacuum activation. If adequate overpressure has been built up or the end of the pumping phase has been reached, this may be followed by a measuring phase. Here, the time that elapses after a single diaphragm stroke until the reed contact is closed again is evaluated. The tank vent valve is forcibly closed during diagnostics after engine start.
- The detected leakage in the fuel system corresponds to a diameter of approx. 1 - 2 mm.

Monitored component or system

♦ Tank system/leakage

Fault finding notes

♦ Check the tank cap for correct closing and intact seals
♦ Check tank vent valve
♦ Check plug on the leakage diagnostic pump for correct seating
♦ Pressure-test the tank
♦ Check vacuum supply of the leakage diagnostic pump
♦ As a last option, replace the leakage diagnostic pump

Function restrictions

♦ More pronounced fuel odor

♦ MIL on

ⓘ INFORMATION

The system includes:
- ♦ mechanical **Vacuum pump**
- ♦ **Leakage diagnosis pump**
- ♦ **Intake pipe switchover** (if present)
- ♦ **Exhaust flap** (if present)

P045600

Diagnosis information DME control module

P045600 Tank vent system - micro leak detected

ⓘ INFORMATION

► Additionally observe following Technical Information: **100/11**
⇒ **ATI 1102** (2048)

Diagnostic conditions

- No driving downhill or uphill
- Vehicle speed > 7.5 km/h (4.7 mph) (once)
- Engine temperature 3.8 °C...140.3 °C (38.8 °F...284.5 °F)
- Engine temperature at start 3.8 °C...120.0 °C (38.8 °F...248.0 °F)
- Intake air/ambient temperature 3.8 °C ...95.3 °C (38.8 °F...203.5 °F)
- Intake manifold vacuum -2,560.0 hPa
- Tank vent closed

Fault setting condition(s)

- The leakage diagnostic pump applies approx. 20 mbar overpressure on the tank system according to the principle of a diaphragm pump. The leakage diagnostic pump is operated by means of vacuum. The position of the pump diaphragm is monitored via a reed contact. The reed contact is interrupted when the diaphragm is raised. Either vacuum is being applied to the pump or overpressure has already built up in the tank system. Two brief component check phases are followed by a pumping phase in which the tank is pumped up by means of periodic enabling of vacuum activation. If adequate overpressure has been built up or the end of the pumping phase has been reached, this may be followed by a measuring phase. Here, the time that elapses after a single diaphragm stroke until the reed contact is closed again is evaluated. The tank vent valve is forcibly closed during diagnostics after engine start.
- The detected leakage in the fuel system corresponds to a diameter of approx. 0.5 - 1 mm.

Monitored component or system

♦ Tank system/leakage

Fault finding notes

♦ Check the tank cap for correct closing and intact seals
♦ Check tank vent valve
♦ Check plug on the leakage diagnostic pump for correct seating
♦ Pressure-test the tank
♦ Check vacuum supply of the leakage diagnostic pump

♦ As a last option, replace the leakage diagnostic pump

Function restrictions

♦ More pronounced fuel odor
♦ MIL on

ⓘ INFORMATION

The system includes:
- ♦ mechanical **Vacuum pump**
- ♦ **Leakage diagnosis pump**
- ♦ **Intake pipe switchover** (if present)
- ♦ **Exhaust flap** (if present)

Diagnosis information DME control module

P045700 Tank vent system - leak/tank cap missing

Diagnostic conditions

- No downhill driving
- Vehicle speed > 7.5 km/h (4.7 mph) (once)
- Engine temperature 3.8 °C...140.3 °C (38.8 °F...284.5 °F)
- Engine temperature at start 3.8 °C...120.0 °C (38.8 °F...248.0 °F)
- Intake air/ambient temperature 3.8 °C ...95.3 °C (38.8 °F...203.5 °F)
- Intake manifold vacuum -2,560.0 hPa
- Tank vent closed
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- The leakage diagnostic pump applies approx. 20 mbar overpressure on the tank system according to the principle of a diaphragm pump. The leakage diagnostic pump is operated by means of vacuum. The position of the pump diaphragm is monitored via a reed contact. The reed contact is interrupted when the diaphragm is raised. Either vacuum is being applied to the pump or overpressure has already built up in the tank system. Two brief component check phases are followed by a pumping phase in which the tank is pumped up by means of periodic enabling of vacuum activation. If adequate overpressure has been built up or the end of the pumping phase has been reached, this may be followed by a measuring phase. Here, the time that elapses after a single diaphragm stroke until the reed contact is closed again is evaluated. The tank vent valve is forcibly closed during diagnostics after engine start.

Monitored component or system

♦ Tank system major leak

Fault finding notes

♦ A major leak was detected after a refueling operation; the customer may have forgotten to close the tank cap
♦ Check tank cap
♦ If the fault is simultaneously entered with other faults of the tank vent system, e.g. P0441, P0442, P0455, P0456 or P2403 or P2404, it can be ignored

Function restrictions

♦ Tank cap warning light illuminates

Diagnosis information DME control module

P045800 Tank vent valve - short circuit to ground

Diagnostic conditions

- Engine speed > 0.00 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage of the tank vent valve detects a short circuit to ground; the diagnostic voltage is measured at the output < 0 V...3.25 V
- Tank vent valve output stage short circuit to ground (low side switch)

Monitored component or system

♦ Tank vent valve

Fault finding notes

♦ Check wiring between the DME control unit and component for short circuit to ground. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the tank vent valve

P045900

Diagnosis information DME control module

P045900 Tank vent valve - short circuit to B+

Diagnostic conditions

- Engine speed > 0.00 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage of the tank vent valve detects a short circuit to B+
- Signal current > 2.2 A...4.0 A
- Tank vent valve output stage short circuit to ground (low side switch)

Monitored component or system

♦ Tank vent valve

Fault finding notes

♦ Check wiring between the DME control unit and component for short circuit to B+. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive, failure of the tank vent valve

Diagnosis information DME control module

P046100 Fuel level signal - implausible signal

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Tank filling level sum error
- Electrical fault (via CAN) or implausible signal

Monitored component or system

♦ Fuel level sender

Fault finding notes

♦ Fault finding via instrument cluster

Diagnosis information DME control module

P048000 Radiator fan control 1 - electrical fault

Diagnostic conditions

- Switch ignition on; fault is entered immediately
- Effect: last revs are maintained; limp-home mode occurs after 10 s

Fault setting condition(s)

- Open circuit in signal line to fan control unit 1

Monitored component or system

♦ Activation line to the first fan output stage

Fault finding notes

♦ Line from DME control unit to fan control unit 1 is interrupted
♦ Continuity test from DME control unit to the radiator fan output stage
♦ In case of open circuit, it is possible to measure battery positive voltage at the fan control unit and ground at the DME control unit

Function restrictions

♦ Emergency operation of the fan means that the requirements for charging balance, acoustics and closed-circuit current are not met
♦ An empty battery is the possible result

Diagnosis information DME control module

P0501 Vehicle speed signal 1 - implausible signal

Diagnostic conditions

- Engine running
- Diagnostics runs continuously in the brake control unit

Fault setting condition(s)

- The individual wheel speed signals of the respective wheel speed sensors are compared with each other in the PSM control unit

Monitored component or system

♦ Vehicle speed sensor

Fault finding notes

♦ Check brake control unit fault memory

Function restrictions

♦ ACC/cruise control is switched off

Diagnosis information DME control module

P0501 Vehicle speed signal 1 - implausible signal

Diagnostic conditions

- Engine running
- Diagnostics runs continuously in the brake control unit

Fault setting condition(s)

- The individual wheel speed signals of the respective wheel speed sensors are compared with each other in the PSM control unit

Monitored component or system

♦ Vehicle speed sensor

Fault finding notes

♦ Check brake control unit fault memory

Function restrictions

♦ ACC/cruise control is switched off

P050600

Diagnosis information DME control module

P050600 Idle control speed below setpoint

Diagnostic conditions

- Vehicle speed = 0 km/h / mph
- Vehicle speed signal OK
- Engine temperature > 20.3 °C (68.5 °F)
- Intake air temperature > -48.0 °C (-54.4 °F)
- No throttle potentiometer fault (banks 1+2)
- No safety fuel shutoff
- Emergency air driving not active
- No rpm sender limp-home mode
- Diagnostics runs continuously

Fault setting condition(s)

- Idle speed deviation > 100.0 rpm

Monitored component or system

♦ Idle control

P050700

Diagnosis information DME control module

P050700 Idle control speed above setpoint

Diagnostic conditions

- Vehicle speed = 0 km/h / mph
- Vehicle speed signal OK
- Engine temperature > 20.3 °C (68.5 °F)
- Intake air temperature > -48.0 °C (-54.4 °F)
- No throttle potentiometer fault (banks 1+2)
- No safety fuel shutoff
- Emergency air driving not active
- No rpm sender limp-home mode
- Diagnostics runs continuously

Fault setting condition(s)

- Idle speed deviation < -100.0 rpm

Monitored component or system

♦ Idle control

Diagnosis information DME control module

P050A00 Idle speed control - malfunction during cold start

Diagnostic conditions

- Vehicle speed = 0 km/h / mph
- Vehicle speed signal OK
- No throttle potentiometer fault (banks 1+2)
- No safety fuel shutoff
- Emergency air driving not active
- No rpm sender limp-home mode
- Catalytic converter heating active
- Diagnostics running continuously (during catalytic converter heating)

Fault setting condition(s)

- Speed deviation with respect to setpoint speed < -200.0 rpm or > 200.0 rpm
- Integrator of idle speed control is at minimum limit or maximum limit
- Idle speed monitoring
- Maximum threshold or minimum threshold exceeded

Monitored component or system

♦ Idle speed control (overspeed or underspeed)

Fault finding notes

♦ Possible leakage in the air tract (the fault was simulated via a throttle valve with a large segment cut off, so that the engine receives too much air even with the throttle valve closed)
♦ Possible clogging in the air tract (the fault was simulated via a plate (clog) with a 2-mm hole in the air tract, so that the engine receives too little air despite the throttle valve being fully open)

Function restrictions

♦ Higher revs in the instrument cluster
♦ Noise due to higher engine speed
♦ Rough-running engine

Diagnosis information DME control module

P050B00 Ignition timing adjustment - malfunction during cold start

Diagnostic conditions

- Diagnostics runs only during catalytic converter heating

Fault setting condition(s)

- Monitoring of ignition angle for advancing (via engine efficiency) during idling

Monitored component or system

♦ Ignition angle

Fault finding notes

♦ Inform the product support department (possibly fuel quality)

Diagnosis information DME control module

P052A00 Bank 1 intake camshaft adjustment - setpoint not reached during cold start

Diagnostic conditions

- Camshaft adjustment enable issued
- Catalytic converter heating active
- Diagnostics runs once per driving cycle (only during catalytic converter heating)

Fault setting condition(s)

- The camshaft does not track the setpoint but instead is statically stuck

Monitored component or system

♦ Magnetic camshaft adjusting valve, oil pressure of controlled camshaft adjuster, intake camshaft, bank 1

P053A00

Diagnosis information DME control module

P053A00 Positive crankcase ventilation heater - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Monitoring of the electrical components for line open circuit

Monitored component or system

♦ Crankcase heater output stage

Fault finding notes

♦ Line check and resistance check of the component

Function restrictions

♦ Possibly breakdown

P053B00

Diagnosis information DME control module

P053B00 Positive crankcase ventilation heater - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Monitoring of the electrical components for short circuit to ground

Monitored component or system

♦ Crankcase heater output stage

Fault finding notes

♦ Line check and resistance check of the component

Function restrictions

♦ Possibly breakdown

Diagnosis information DME control module

P053C00 Positive crankcase ventilation heater - short circuit to B+

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics
- Monitoring of the electrical components for short circuit to B+

Monitored component or system

♦ Crankcase heater output stage

Fault finding notes

♦ Line check and resistance check of the component

Function restrictions

♦ Possibly breakdown

P053F00

Diagnosis information DME control module

P053F00 Fuel pressure during cold start - pressure too low

Diagnostic conditions

- Engine start longer than debouncing time (5 sec)
- Catalytic converter heating active
- Diagnostics running only during catalytic converter heating

Fault setting condition(s)

- The control-difference signal is smoothed via a low-pass filter with a time constant and compared with two threshold values

Monitored component or system

♦ Fuel rail/system pressure during catalytic converter heating

Fault finding notes

♦ High-pressure sensor faulty
♦ Metering valve faulty
♦ Low-pressure system faulty
♦ Leaks in the rail
♦ Pressure limiting valve faulty

Function restrictions

♦ Misfiring detected (less power)
♦ Engine stalls

Diagnosis information DME control module

P054A00 Bank 1 exhaust camshaft adjustment - setpoint not reached during cold start

Diagnostic conditions

- Camshaft adjustment enable issued
- Catalytic converter heating active
- Diagnostics runs once per driving cycle (only during catalytic converter heating)

Fault setting condition(s)

- The camshaft does not track the setpoint but instead is statically stuck

Monitored component or system

♦ Magnetic camshaft adjusting valve, oil pressure of controlled camshaft adjuster, exhaust camshaft, bank 1

Diagnosis information DME control module

P055500 Brake booster pressure sender - electrical fault

Diagnostic conditions

- Diagnostics running continuously from ignition on

Fault setting condition(s)

- Brake booster vacuum sensor overvoltage or an open signal line detected

Monitored component or system

♦ Pressure sensor for brake booster

Fault finding notes

♦ Unplug pressure sensor and jumper signal line to ground
♦ If the raw sensor voltage in the measured-value block is approx. 0 V, the sensor is faulty. If the raw sensor voltage in the measured value block > 0 V, check the line to the DME control unit
♦ If the line to the DME control unit is OK, the DME control unit is faulty

Function restrictions

♦ Start/stop may not be available
♦ On vehicles with electrical vacuum pump, it is activated as long as the fault as present. The electrical vacuum pump could be damaged as a result

P055600

Diagnosis information DME control module

P055600 Brake booster pressure sender - implausible signal

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- This detects a brake booster vacuum that is too high, too low or implausible

Monitored component or system

♦ Pressure sensor for brake booster

Fault finding notes

♦ Check whether vacuum is physically OK (leakage, etc.)
♦ Check wiring harness
♦ Replace sensor
♦ Check DME control unit for correct program/data version
♦ Replace DME control unit

Function restrictions

♦ Start/stop may not be available
♦ On vehicles with electrical vacuum pump, it is activated as long as the fault as present. The electrical vacuum pump could be damaged as a result

Diagnosis information DME control module

P055700 Brake booster pressure sender - short circuit to ground

Diagnostic conditions

- Diagnostics running continuously from ignition on

Fault setting condition(s)

- This detects insufficient voltage of the brake booster vacuum sensor

Monitored component or system

♦ Pressure sensor for brake booster

Fault finding notes

♦ Unplug pressure sensor
♦ If the raw sensor voltage in the measured value block is the reference voltage (5 V), the sensor is faulty. If not, check the line to the DME control unit
♦ If the line to the DME control unit is OK, the DME control unit is faulty

Function restrictions

♦ Start/stop may not be available
♦ On vehicles with electrical vacuum pump, it is activated as long as the fault as present. The electrical vacuum pump could be damaged as a result

P056000

Diagnosis information DME control module

P056000 Power supply - implausible signal

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Battery positive voltage signal implausible

Monitored component or system

♦ Battery positive voltage

Fault finding notes

♦ Check terminal 87 behind main relay for battery positive voltage
♦ Check of the line, fuse and main relay

Function restrictions

♦ Engine off

Diagnosis information DME control module

P056200 Power supply - voltage too low

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● Battery positive voltage below minimum value (vehicle electrical system)
● If the battery positive voltage < 9.04 V (but not below the absolute minimum limit below which fault memory entries are no longer possible)

Monitored component or system

♦ Battery positive voltage

Fault finding notes

♦ Check terminal 87 behind main relay for battery positive voltage
♦ Check of the line, fuse and main relay

Function restrictions

♦ Engine off

P056300

Diagnosis information DME control module

P056300 Power supply - voltage too high

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Battery positive voltage above maximum value (vehicle electrical system)
- If the battery positive voltage > 16.01 V

Monitored component or system

♦ Battery positive voltage

Fault finding notes

♦ Check terminal 87 behind main relay for battery positive voltage
♦ Check of the line, fuse and main relay (main relay possibly stuck)

Diagnosis information DME control module

P056800 Cruise control switch - implausible signal

Diagnostic conditions

- DME control unit coded for cruise control/adaptive cruise control (ACC)
- Corresponding operating lever installed
- Cruise control selected
- Release of diagnostic function from ignition on
- Diagnostics running continuously from ignition on

Fault setting condition(s)

- CAN signal of the cruise control/adaptive cruise control (ACC) main switch differs from the hardware line of the main switch
- Fault of the cruise control/adaptive cruise control (ACC) main switch

Monitored component or system

♦ Cruise control/adaptive cruise control (ACC) operating lever

Fault finding notes

♦ Is the cruise control operating lever installed correctly (check coding)?
♦ Is the hardware line to the DME control unit connected correctly in addition to the CAN connection?
♦ Check component line

Function restrictions

♦ No cruise control/adaptive cruise control (ACC) operation possible in the current ignition cycle

Diagnosis information DME control module

P057100 Brake light switch - implausible signal

Diagnostic conditions

- No component fault on brake pedal sensor
- Ignition on
- Frequency count saved over driving cycle
- Diagnostics runs continuously

Fault setting condition(s)

- Plausibility check, brake pedal sensor short circuit to ground

Monitored component or system

♦ Brake light sensor

Fault finding notes

♦ Check plug connection for open circuit (corrosion, soiling, pin out of place)
♦ Check line for short circuit to ground
♦ Check signal line for open circuit
♦ Check power supply of the brake light sensor
♦ No fault found; replace the brake light sensor
♦ If the fault memory entry is entered again after replacement of the brake light sensor, the DME control unit must be replaced

Function restrictions

♦ Rejection of adaptive cruise control (ACC) /cruise control

Diagnostic information - DME control unit

P05A000 Radiator shutter, servo motor turns freely/mechanically blocked

Diagnostic conditions
- Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- Radiator shutter was turned manually while the ignition was off
- Radiator shutter iced up
- Radiator shutter dirty
- Radiator shutter, vanes scrape/stick (incorrectly installed, positioned)
- Radiator shutter, mechanism broken
- Servo motor faulty

Fault setting conditions
- Increased current draw during movement
- No increased current draw when the learned limit stops are reached

Fault effects
- New initialization
- When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

P05A200

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the signal line
- Loose contact or corrosion on connectors or lines
- Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the shutter as far as possible

Diagnostic information - DME control unit

P05A300 Radiator shutter, signal implausible

Diagnostic conditions
- Ignition on

Possible fault causes
- Implausible request from DME control unit, e.g. during reprogramming
- Servo motor signal line ◄► Open circuit in DME control unit
- Servo motor power supply or ground supply faulty
- Servo motor faulty

Fault setting conditions
- No signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the shutter as far as possible

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the signal line
- Loose contact or corrosion on connectors or lines
- Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the shutter as far as possible

P05A500

Diagnostic information - DME control unit

P05A200 Radiator shutter - open circuit
P05A400 Radiator shutter - short circuit in signal line
P05A500 Radiator shutter - short circuit in signal line

Diagnostic conditions
- Ignition on

Possible fault causes

- ♦ Short circuit to B+/ground/between lines or open circuit in the signal line
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the shutter as far as possible

Diagnostic information - DME control unit

P05C000 Radiator shutter unit, overtemperature

Diagnostic conditions
- Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- Ambient temperature too high
- Servo motor overloaded
- Servo motor faulty

Fault setting conditions
- Temperature in servo motor too high

Fault effects
- New initialization
- When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

Diagnosis information DME control module

P060600 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The DME control unit detects an internal fault

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Replace DME control unit

Function restrictions

♦ Functional restrictions depend on which components are served by which output stage

Diagnosis information DME control module

P060700 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The DME control unit detects an internal fault

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Replace DME control unit

Function restrictions

♦ Functional restrictions depend on which components are served by which output stage

Diagnosis information DME control module

P060A00 Control unit - internal processor monitoring

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Monitoring of the applied addresses

Monitored component or system

♦ Control unit

Function restrictions

♦ No function of the OBD radar

Diagnosis information DME control module

P061500 Starter relay activation - open circuit

Diagnostic conditions

● Output stage de-energized

Fault setting condition(s)

● Output stages are assessed taking the fault detection possibilities into account. A short circuit to B+ can be detected with an activated output stage. A fallen-off cable and short circuit to ground can be detected with a deactivated output stage. The fault/OK messages are read according to these states
● Starter control IC reports a fallen-off cable of the starter relay control system

Monitored component or system

♦ Starter relay monitoring by starter control IC

Fault finding notes

♦ Check relay wiring

Function restrictions

♦ Starting not possible

Diagnosis information DME control module

P061600 Starter relay activation - short circuit to ground

Diagnostic conditions

● Output stage de-energized

Fault setting condition(s)

● The information about the fault status of the output stages is assessed taking the fault detection possibilities into account. A short circuit to B+ can be detected with an activated output stage. A fallen-off cable and short circuit to ground can be detected with a deactivated output stage. The fault/OK messages are read according to these states
● Starter control IC reports a short circuit to ground of the starter relay control system

Monitored component or system

♦ Starter relay monitoring by starter control IC

Fault finding notes

♦ Check relay wiring

Function restrictions

♦ Starting not possible

Diagnosis information DME control module

P061700 Starter relay activation - short circuit to B+

Diagnostic conditions

● Output stage energized

Fault setting condition(s)

● The information about the fault status of the output stages is assessed taking the fault detection possibilities into account. A short circuit to B+ can be detected with an activated output stage. A fallen-off cable and short circuit to ground can be detected with a deactivated output stage. The fault/OK messages are read according to these states
● Starter control IC reports a short circuit to B+ of the starter relay control system

Monitored component or system

♦ Starter relay monitoring by starter control IC

Fault finding notes

♦ Check relay wiring

Function restrictions

♦ Starting not possible

P062B00

Diagnosis information DME control module

P062B00 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs several times per driving cycle

Fault setting condition(s)

- The fault setting condition is monitored by output stage diagnostics

Monitored component or system

♦ Fuel injector communication

Fault finding notes

♦ Control unit faulty

Function restrictions

♦ The resulting driving behavior is jerky and there is a lack of power

Diagnosis information DME control module

P063400 Control unit - temperature switch-off

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage for fan control unit 1 in the DME control unit has detected an overtemperature. The temperature exceeds an applied threshold
- Direct temperature measurement in the output stage driver: when the threshold (150 °C/302 ° F) is reached, the output stage is switched off and a status is reported
- The output stage reports the overtemperature fault

Monitored component or system

- Activation line to the first fan output stage
- DME control unit pre-delivery pump output stage
- Generator
- Main water pump valve
- Auxiliary water pump
- Water pump supply shutoff valve

Fault finding notes

- Switch engine off, switch ignition off and allow DME control unit to cool down
- Internal fault of the DME control unit; replace the DME control unit

Function restrictions

- Emergency operation of the fan means that the requirements for charging balance, acoustics and closed-circuit current are not met
- An empty battery is a possible result
- Output stage inactive, resulting failure of the pre-delivery pump and engine failure
- Restricted power of the passenger compartment heating

Diagnostic information - DME control unit

P064100 Sender reference voltage A - open circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Direct voltage-measurement monitoring in the chip of the output stage. A status is reported when a minimum or maximum threshold is reached

Monitored component or system

♦ Sender reference voltage 5 V

Fault finding notes

♦ Check the electrical connection of the components connected to the shared power supply
♦ Check components
♦ Control unit:
  ♦ Connector [A], contact 26
  or
  ♦ Connector [A], contact 28
  or
  ♦ Connector [B], contact 63
  or
  ♦ Connector [B], contact 80

Function restrictions

♦ Limp-home mode

Diagnostic information - DME control unit

P065100 Sender reference voltage B - open circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Direct voltage-measurement monitoring in the chip of the output stage. A status is reported when a minimum or maximum threshold is reached

Monitored component or system

♦ Sender reference voltage 5 V

Fault finding notes

♦ Check the electrical connection of the components connected to the shared power supply
♦ Check components
♦ Control unit:
  ♦ Connector [A], contact 37
  or
  ♦ Connector [B], contact 19
  or
  ♦ Connector [B], contact 58

Function restrictions

♦ Limp-home mode

Diagnosis information DME control module

P066000 Register intake pipe switchover - electrical fault

Diagnostic conditions

- Engine speed > 40.0 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage of the intake pipe switchover detects a load decrease. The internal voltage is measured at the output > 4.8 V...5.3 V depending on the output stage module
- Monitoring of electrical activation components (line, components, output stage) for short circuits and open low-side switch line

Monitored component or system

♦ Intake pipe switchover

Fault finding notes

♦ Check wiring between the control unit and component for open circuit. Depending on the output stage, the internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check voltage supply
♦ Check component for continuity

Function restrictions

♦ Output stage inactive, failure of intake pipe switchover, valve closed, more power possible

Diagnosis information DME control module

P066100 Register intake pipe switchover - short circuit to ground

Diagnostic conditions

- Engine speed > 40.0 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage of the intake pipe switchover detects a short circuit to ground; the diagnostic voltage < 0 V...3.25 V is measured at the output
- Monitoring of electrical activation components (line, components, output stage) for short circuits and open low-side switch line

Monitored component or system

♦ Intake pipe switchover

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to ground. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of intake pipe switchover, valve open, more torque possible

Diagnosis information DME control module

P066200 Register intake pipe switchover - short circuit to B+

Diagnostic conditions

- Intake pipe switchover activated
- Engine speed > 40.0 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- The output stage of the intake pipe switchover detects a short circuit to B+; signal current > 2.2 A...4.0 A
- Monitoring of electrical activation components (line, components, output stage) for short circuits and open low-side switch line

Monitored component or system

♦ Intake pipe switchover

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to B+. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive, failure of intake pipe switchover, valve closed, more power possible

Diagnosis information DME control module

P068600 Main relay - short circuit to ground

Diagnostic conditions

- Main relay not activated
- Diagnostics runs several times

Fault setting condition(s)

- Signal voltage in the range 2.6 V...3.7 V
- Short circuit to ground of the main relay

Monitored component or system

♦ Main relay

P068A00

Diagnosis information DME control module

P068A00 Main relay opens too early

Diagnostic conditions

- Ignition on
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Open circuit of terminal 87 to the engine control unit

Monitored component or system

♦ Open circuit of terminal 87 to the engine control unit

Fault finding notes

♦ Check electrical connection to the main relay or replace main relay

Function restrictions

♦ DME control unit off

Diagnosis information DME control module

P068B00 Main relay opens too late

Diagnostic conditions

- Started driving cycle
- Diagnostics runs continuously

Fault setting condition(s)

- Sticking main relay

Monitored component or system

♦ Main relay

Fault finding notes

♦ Check electrical connection to the main relay or replace main relay

Function restrictions

♦ Battery discharge possible because the DME control unit does not switch off

Diagnosis information DME control module

P069100 Radiator fan control 1 - short circuit to ground

Diagnostic conditions

- Switch ignition on; fault is entered immediately
- Effect: last revs are maintained; limp-home mode occurs after 10 sec

Fault setting condition(s)

- Control line to fan control unit 1 has a short circuit to ground

Monitored component or system

♦ Activation line to the first fan output stage

Fault finding notes

♦ Check of the control line and plug to determine whether they are short circuited to ground
♦ In a voltage measurement on the control line, the measuring instrument indicates a value close to 0 V
♦ A current measurement on the control line with a clamp-on ammeter displays, if OK, a square-wave signal

Function restrictions

♦ Emergency operation of the fan means that the requirements for charging balance, acoustics and closed-circuit current are not met
♦ An empty battery is the possible result

Diagnosis information DME control module

P069200 Radiator fan control 1 - short circuit to B+

Diagnostic conditions

- Switch ignition on; fault is entered immediately
- Effect: last revs are maintained; limp-home mode occurs after 10 sec

Fault setting condition(s)

- Control line to fan control unit 1 has a short circuit to battery positive voltage

Monitored component or system

♦ Activation line to the first fan output stage

Fault finding notes

♦ Check of the control line and plug to determine whether they are short circuited to battery positive voltage
♦ In a voltage measurement on the control line, the measuring instrument indicates a value close to battery positive voltage
♦ A valid pulse/duty ratio lies between 10% and 90%
♦ A current measurement on the control line with a clamp-on ammeter displays, if OK, a square-wave signal

Function restrictions

♦ Emergency operation of the fan means that the requirements for charging balance, acoustics and closed-circuit current are not met
♦ An empty battery is the possible result

Diagnostic information - DME control unit

P069700 Sender reference voltage C - open circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Direct voltage-measurement monitoring in the chip of the output stage. A status is reported when a minimum or maximum threshold is reached

Monitored component or system

♦ Sender reference voltage 5 V

Fault finding notes

♦ Check the electrical connection of the components connected to the shared power supply
♦ Check components
♦ Control unit:
  ♦ Connector [A], contact 50
  or
  ♦ Connector [B], contact 36

Function restrictions

♦ In the most unfavorable case: engine off

P06D100

Diagnosis information DME control module

P06D100 Control unit faulty

Diagnostic conditions

● Initialization is performed at the start of the driving cycle when the ignition is switched on

Fault setting condition(s)

● If the ignition driver cannot be initialized within a certain number of attempts, an initialization error is triggered
● The initialization sends all parameters required for operation to the ignition driver
● Initialization takes place with the aid of an automatic state function in three steps : 1. Initialization procedure 2. Verification 3. Completion

Monitored component or system

♦ Ignition coil component driver

Fault finding notes

♦ Internal fault in the DME control unit

Function restrictions

♦ Breakdown

Diagnosis information DME control module

P070400 Clutch switch module, interlock switch

Diagnostic conditions

- Vehicle speed > 35 km/h (22 mph)
- Engine speed > 1,000 rpm
- No parking brake fault

Fault setting condition(s)

- > 50 gear changes without clutch actuation being detected

Monitored component or system

♦ Clutch switch module, interlock switch

Fault finding notes

♦ Check wiring of clutch switch
♦ Check clutch switch

Function restrictions

♦ No cruise control operation

Diagnosis information DME control module

P071600 Sender 1 for transmission input speed - implausible signal

Diagnostic conditions

- Transmission CAN message active
- Diagnostics runs continuously

Fault setting condition(s)

- Fault value on "transmission input speed" signal received by transmission control unit via CAN

Monitored component or system

♦ Transmission input speed (turbine speed) CAN signal from transmission

Fault finding notes

♦ Read out fault memory of the transmission control unit

Diagnosis information DME control module

P085000 Start inhibit P/N signal - short circuit to B+/open circuit

Diagnostic conditions

- Diagnostics runs continuously during ignition on

Fault setting condition(s)

- P or N CAN signal from transmission control unit is present; hardware signal is neither P nor N

Monitored component or system

♦ P/N hardware signal is compared with the CAN message from the transmission

Fault finding notes

♦ Suspect list: P/N switch, wiring, CAN communication, transmission control unit

Function restrictions

♦ Automatic transmission vehicle cannot be started

Diagnosis information DME control module

P085100 Start inhibit P/N signal - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously during ignition on

Fault setting condition(s)

- Neither P nor N CAN signal from transmission control unit; hardware signal P or N

Monitored component or system

♦ P/N hardware signal is compared with the CAN message from the transmission

Fault finding notes

♦ Suspect list: P/N switch, wiring of the switch, CAN communication, transmission control unit

Function restrictions

♦ Automatic transmission vehicle cannot be started

P091900

Diagnosis information DME control module

P091900 Selector lever fault

Diagnostic conditions

- Diagnostics runs continuously
- The transmission CAN message must be activated

Fault setting condition(s)

- Fault value for "selector lever position" signal received by the transmission control unit via CAN

Monitored component or system

♦ Selector lever position CAN signal from transmission

Fault finding notes

♦ Read out fault memory of the transmission control unit

Function restrictions

♦ Possibly switch-off of the cruise control/adaptive cruise control (ACC)

P105700

Diagnosis information DME control module

P105700 Bank 1 exhaust camshaft adjustment - open circuit

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Activation voltage higher than diagnostic threshold 4.4...5.6 V
- Output stage diagnostics, line open circuit

Monitored component or system

♦ Bank 1 exhaust camshaft adjuster output stage

P109300

Diagnosis information DME control module

P109300 Bank 1 fuel metering system 2 - malfunction

Diagnostic conditions

- Engine speed > 1,200 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Error in the plausibility check of the predicted air flow (torque monitoring function)
- Error in the plausibility check of the mixture correction factors
- The lambda setpoint does not match the current operating mode
- Error in the plausibility check between injection time and fuel mass
- Error in the plausibility check of the relative fuel mass

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Processing of all faults relating to the air and fuel system (see fault memory). If there are no more faults, the DME control unit is faulty
♦ The fault might lie in the fuel metering system or intake system, otherwise the DME control unit must be replaced

Function restrictions

♦ A reset can be performed when the fault occurs once
♦ If the fault is still present, the injection quantity will be limited (no more injections will be permitted above 1,500 rpm)

P111400

Diagnosis information DME control module

P111400 Bank 1 sensor 2 - internal resistance too high

Diagnostic conditions

- Filtered exhaust gas temperature 299.991 °C…819.998 °C (571.984 °F ...1,507.996 °F)
- Switch-off time > 630 sec
- Intake air temperature > -48 °C (-54 °F)
- Overrun mode not active
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- The internal resistance is compared with its setpoint (728.0...16,632.0 Ohm). If the resistance is higher, the fault is set after debouncing

Monitored component or system

♦ Bank 1 oxygen sensor 2 heating

Fault finding notes

♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "heating voltage" and "ground". U>10 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary
♦ Check of the lines "heater voltage" and "heater ground" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P114000

Diagnosis information DME control module

P114000 Bank 2 sensor 2 - internal resistance too high

Diagnostic conditions

- Filtered exhaust gas temperature 299.991 °C…819.998 °C (571.984 °F ...1,507.996 °F)
- Switch-off time > 630 sec
- Intake air temperature > -48 °C (-54 °F)
- Overrun mode not active
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- The internal resistance is compared with its setpoint (728.0...16,632.0 Ohm). If the resistance is higher, the fault is set after debouncing

Monitored component or system

♦ Bank 2 oxygen sensor 2 heating

Fault finding notes

♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "heating voltage" and "ground". U>10 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary
♦ Check of the lines "heater voltage" and "heater ground" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P119A00

Diagnosis information DME control module

P119A00 Fuel pressure sender - malfunction

Diagnostic conditions

- Diagnostics runs continuously

Monitored component or system

♦ Fuel pressure sensor

Fault finding notes

♦ High-pressure sensor faulty

Function restrictions

♦ Acute lack of power; vehicle possibly stalls at idle
♦ Engine off

Diagnosis information DME control module

P125000 Fuel level too low

Fault setting condition(s)

- Set along with another fault entry, if Reserve lamp of the tank is active

Monitored component or system

♦ Tank-empty information (this is set only together with another fault memory entry)

Diagnostic information - DME V6 DFI

Fuel high pressure implausible
● From MY 2015 =>

Diagnostic conditions
● Battery voltage 10 V ... 16 V
● Engine off for > 4 hours
● Engine temperature < 50 °C (122 °F)
● Intake air temperature deviates from engine temperature by less than 12 °C (53 °F)
● Engine start followed by idling
● No fault codes P0193 or P0192

Possible fault causes
♦ Deviating fuel/air mixture
OR
♦ Fluctuating fuel high pressure
► **Check**:
♦ Secondary air (intake manifold, vacuum system, oil separator, tank vent valve, ...)
♦ Mass air flow sensor (MAF)
♦ Fuel high-pressure sensor (comparison of actual value **B070** using pressure gauge)
♦ Fuel low-pressure circuit (delivery quantity/pressure)
♦ Pressure-relief valve (fuel high-pressure rail)
♦ Fuel high-pressure pump (comparison of setpoint and actual pressure)
♦ Fuel injectors (coked/blocked)
♦ Intake and exhaust valves (significant coking)
♦ Camshaft timing

Fault setting conditions
● When the engine is starting under the diagnostic conditions specified above, the plausibility of the value of the fuel high-pressure sensor is checked.
● When the engine is running at idle speed and in the near idle speed range, a suspected fault is set if the actual value of the fuel high-pressure control system differs from the setpoint value.
● The plausibility of the fuel high-pressure sensor **AND also** the value of the fuel/air mixture adaptation is now evaluated:
⇒ If the fuel high-pressure sensor shows plausible values **AND** if this adaptation value is close to 0, the fault code P008700 or P008800 will be entered.
⇒ If the fuel high-pressure sensor shows implausible values **AND** if the adaptation value is significantly different, the fault code P12A100 or P12A200 will be entered.
ⓘ A significant deviation in the fuel adaptation value does not necessarily result in a fault entry for mixture adaptation because another fault limit is decisive for this.

Diagnostic information - DME V6 DFI

Fuel high pressure implausible
● From MY 2015 =>

Diagnostic conditions
● Battery voltage 10 V ... 16 V
● Engine off for > 4 hours
● Engine temperature < 50 °C (122 °F)
● Intake air temperature deviates from engine temperature by less than 12 °C (53 °F)
● Engine start followed by idling
● No fault codes P0193 or P0192

Possible fault causes
♦ Deviating fuel/air mixture
OR
♦ Fluctuating fuel high pressure
► **Check**:
♦ Secondary air (intake manifold, vacuum system, oil separator, tank vent valve, ...)
♦ Mass air flow sensor (MAF)
♦ Fuel high-pressure sensor (comparison of actual value **B070** using pressure gauge)
♦ Fuel low-pressure circuit (delivery quantity/pressure)
♦ Pressure-relief valve (fuel high-pressure rail)
♦ Fuel high-pressure pump (comparison of setpoint and actual pressure)
♦ Fuel injectors (coked/blocked)
♦ Intake and exhaust valves (significant coking)
♦ Camshaft timing

Fault setting conditions
● When the engine is starting under the diagnostic conditions specified above, the plausibility of the value of the fuel high-pressure sensor is checked.
● When the engine is running at idle speed and in the near idle speed range, a suspected fault is set if the actual value of the fuel high-pressure control system differs from the setpoint value.
● The plausibility of the fuel high-pressure sensor **AND also** the value of the fuel/air mixture adaptation is now evaluated:
⇒ If the fuel high-pressure sensor shows plausible values **AND** if this adaptation value is close to 0, the fault code P008700 or P008800 will be entered.
⇒ If the fuel high-pressure sensor shows implausible values **AND** if the adaptation value is significantly different, the fault code P12A100 or P12A200 will be entered.
ⓘ A significant deviation in the fuel adaptation value does not necessarily result in a fault entry for mixture adaptation because another fault limit is decisive for this.

Diagnosis information DME control module

P130A00 Cylinder shutoff

Fault setting condition(s)

- Misfiring rate damaging to catalytic converter

Monitored component or system

♦ Misfire detection, misfiring detected

Fault finding notes

♦ Fault occurs after misfiring faults

Function restrictions

♦ MIL on
♦ Power restriction
♦ Poor throttle response at high speeds
♦ Breakdown

Diagnosis information DME control module

P133500 Engine torque monitoring 2 - control limit exceeded

Fault setting condition(s)

● A fault in the torque comparison is entered if the filtered permissible torque plus offset is higher than the actual torque

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ Engine speed limitation to 1,500 rpm

P133600

Diagnosis information DME control module

P133600 Engine torque monitoring 2 - control limit exceeded

Fault setting condition(s)

- Level 1 torque monitoring limits continuously (longer than 600 sec)

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ Incorrect torque in DME control unit is limited
♦ Possibly increased idle speed
♦ Vehicle follows driver's command, possibly with post-acceleration

P138600

Diagnosis information DME control module

P138600 Control unit faulty

Diagnostic conditions

- Ignition on
- Engine speed > 80 rpm
- Diagnostics runs continuously

Monitored component or system

♦ Knock control/signal evaluation

Diagnosis information DME control module

P138700 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs several times/continuously
- Pressure sensor ahead of throttle valve ready, no fault

Fault setting condition(s)

- Electrical maximum fault: signal voltage > 4.8779 V
- Electrical minimum fault: signal voltage < 0.2002 V
- Check of whether the ambient pressure lies within a range that can be approached by a vehicle
- The signal is plausible if it has changed only slightly since the last driving cycle. Comparison is made with the ambient pressure limit model

Monitored component or system

♦ Ambient pressure sensor, electrical

Fault finding notes

♦ Replace DME control unit (ambient pressure sensor is installed in the control unit)

P138800

Diagnosis information DME control module

P138800 Control unit faulty

Diagnostic conditions

● Diagnostics runs every 10 ms

Fault setting condition(s)

● Test fault occurred during monitoring of the analog-to-digital converter
● Error in the plausibility check of the accelerator pedal voltage
● The difference between the rpm value calculated in level 2 and the level 1 value exceeds a maximum permissible threshold
● The engine speed exceeds a maximum threshold in case of a level 1 injection quantity limit
● Error in the plausibility check of the ignition angle voltage

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ Severe juddering if it is attempted to set engine speeds higher than 1,500 rpm using the accelerator pedal potentiometer
♦ Engine speed limitation to 1,500 rpm

Diagnosis information DME control module

P13EA00 Ignition timing adjustment - malfunction during cold start over idle speed

Diagnostic conditions

- Diagnostics runs only during catalytic converter heating

Fault setting condition(s)

- Monitoring of ignition angle for advancing (via engine efficiency) during partial load

Monitored component or system

♦ Ignition angle

Fault finding notes

♦ Inform the product support department (possibly fuel quality)

Diagnosis information DME control module

P150300 Load signal from generator terminal DF - implausible signal

Monitored component or system

♦ Generator

Fault finding notes

♦ Check electrical line to generator
♦ Check the generator

Diagnosis information DME control module

P150A00 Ignition-off time period signal - implausible

Diagnostic conditions

- Ignition on
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- Plausibility check of the Off time, which is calculated from the standstill time information from the instrument cluster, compared with the run-on counter of the control unit.

Monitored component or system

♦ Off-time counter in the instrument cluster

Fault finding notes

♦ Check data bus
♦ Clear fault memory and observe
♦ Off-time counter in the instrument cluster faulty

Function restrictions

♦ Off-time wrong
♦ In the event of a fault, a change is made to the substitute-value model. Function restrictions of the receiving functions can occur as a result
♦ Possibly poor starting behavior

P154500

Diagnosis information DME control module

P154500 Throttle valve control - malfunction

Diagnostic conditions

- No throttle valve fault active
- No output stage fault
- Diagnostics runs continuously

Fault setting condition(s)

- Difference between measured and calculated throttle valve angles > 4.0009%...50.0008%
- Pulse/duty ratio > 80% and no output stage fault present

Monitored component or system

♦ Throttle valve adjusting unit, control range

Diagnosis information DME control module

P155800 Throttle valve drive - electrical fault in circuit

Diagnostic conditions

- Ignition on and run-on during adaptation
- Diagnostics runs during adaptation

Fault setting condition(s)

- The fault is present if closing of the throttle valve over the reference point takes longer than 0.56 sec

Monitored component or system

♦ Throttle valve adjuster spring test; throttle valve does not open
♦ Throttle valve adjuster output stage, basic test after ignition on

P155900

Diagnosis information DME control module

P155900 Throttle valve control unit - basic setting fault

Diagnostic conditions

- Adaptation
- Diagnostics runs during adaptation

Monitored component or system

♦ Throttle valve adjuster fault during test of the emergency-air position

Diagnosis information DME control module

P156400 Throttle valve control unit - undervoltage at basic setting

Diagnostic conditions

- Ignition on or run-on before and during adaptation
- Adaptation

Fault setting condition(s)

♦ Battery positive voltage < 10.0 V

Monitored component or system

♦ Throttle valve adjuster - adaptation cancellation due to environmental condition

P156500

Diagnosis information DME control module

P156500 Throttle valve control unit - lower limit not reached

Diagnostic conditions

- Adaptation active
- Diagnostics runs several times

Monitored component or system

♦ Throttle valve adjuster, basic setting

P157000

Diagnosis information DME control module

P157000 DME control unit blocked

Diagnostic conditions

- Ignition on or engine speed threshold exceeded
- Diagnostics once after ignition on

Fault setting condition(s)

- Check of the immobilizer communication
- Wrong application

Monitored component or system

♦ Immobilizer in DME control unit, P-class

Fault finding notes

♦ Check CAN communication in the vehicle
♦ Check gateway if present
♦ Check front-end electronics
♦ Check immobilizer vehicle system adaptation
♦ Read out of the "DME control unit immobilizer overall status"
♦ Check data record for P-class

Function restrictions

♦ No engine start

P157900

Diagnosis information DME control module

P157900 Throttle valve control unit - adaptation not started

Diagnostic conditions

- Ignition on or run-on before and during adaptation
- Adaptation

Monitored component or system

♦ Throttle valve adjuster - adaptation cancellation due to environmental condition

P159D00

Diagnosis information DME control module

P159D00 Oil level/temperature sender - implausible signal

Fault setting condition(s)

- Oil temperature/time implausible

Monitored component or system

♦ Oil level/oil temperature sender

Diagnosis information DME control module

P15A000 Sender for transmission neutral position - electrical fault

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Neutral gear sensor input signal exceeds the permissible maximum value

Monitored component or system

♦ Neutral gear sensor

Fault finding notes

♦ Unplug the neutral gear sensor and measure reference voltage at the signal line
♦ Connect signal line to ground. If the raw sensor voltage is 0 V, the sensor is faulty. If not, then check the sensor line to the DME control unit
♦ If the line to the DME control unit is OK, the DME control unit is faulty

Function restrictions

♦ Start/Stop no longer functions

Diagnosis information DME control module

P15A100 Sender for transmission neutral position - implausible signal

Diagnostic conditions

- With neutral gear engaged
- A gear is engaged and the vehicle is in load/overrun mode
- A gear is detected when a High level is produced at the neutral gear sensor (1-3-5)
- A gear is detected when a Low level is produced at the neutral gear sensor (2-4-6)
- Diagnostics runs continuously

Fault setting condition(s)

- The engine is idling, the clutch pedal is not depressed, but if the neutral gear sensor does not detect neutral gear, the fault path becomes active
- A neutral gear is detected and the neutral gear sensor voltage does not lie in the window of the calculated shift angles. The shift angle is calculated from the voltages of the "even" and "odd" engaged gears
- The absolute neutral gear voltage lies outside the defined window
- The neutral gear raw detection detects a neutral gear when a gear that is securely engaged is detected and load/overrun mode is present
- The valid range for the sensor voltage is left in case of securely engaged even or odd gear

Monitored component or system

♦ Neutral gear sensor

Fault finding notes

♦ Delete neutral gear sensor learning values (basic setting or adaptation) and teach neutral gear sensor with test drive
♦ Check raw voltages of the neutral gear sensor for gears with Low and High levels
♦ If the voltages are not OK, then subject the lines to an electrical test
♦ If the lines are OK, the sensor is mechanically faulty
♦ When everything is OK, perform a final function check of the start/stop system

Function restrictions

♦ Start/Stop no longer functions

Diagnosis information DME control module

P15A200 Sender for transmission neutral position - short circuit to ground

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Neutral gear sensor input signal falls below the permissible minimum value

Monitored component or system

♦ Neutral gear sensor

Fault finding notes

♦ Unplug neutral gear sensor
♦ If the raw sensor voltage is close to the reference voltage, the sensor is faulty. If it is close to 0 V, then check the line to the DME control unit
♦ If the line to the DME control unit is OK, the DME control unit is faulty

Function restrictions

♦ Start/Stop no longer functions

Diagnosis information DME control module

P160300 Control unit faulty

Fault setting condition(s)

● Incorrect question/answer communication between monitoring module and function processor
● Control unit, component or incoming line fault leading to transmission of incorrect answers to the monitoring module

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ Restart no longer possible

Diagnosis information DME control module

P160400 Control unit faulty

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● The starter module provides fault information that refers to a "central communication error", a "central SPI error" or a "central overtemperature flag"

Monitored component or system

♦ DME control unit, internal output stage module

Fault finding notes

♦ Component fault, DME control unit must be replaced

Function restrictions

♦ The component fault prevents the engine from starting

Diagnosis information DME control module

P160900 Crash shutoff was triggered

Fault setting condition(s)

- Crash intensity is greater than/equal to 4

Monitored component or system

♦ Crash signal from airbag control unit

Fault finding notes

♦ Via airbag control unit drive link test

P160A00

Diagnosis information DME control module

P160A00 Control unit faulty

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Control unit internal diagnostics
- Control unit reset

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced
♦ Flash DME control unit again

Function restrictions

♦ Engine does not start or only with difficulty
♦ Fault is not entered and is thus also not noticed

Diagnosis information DME control module

P161200 DME control unit coded incorrectly

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously
- Only in the initialization phase

Fault setting condition(s)

- DME control unit to airbag control unit coding variants do not match
- If neither the coding word in the EEPROM nor the value of the associated first initialization value represents a valid coding word

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Check DME control unit for correct coding (code airbag)
♦ Read out fault memory and coding word and re-code the DME control unit. OK if the coding is accepted. Otherwise replace the DME control unit

Diagnostic information - DME control unit

P162400 Fault lamp on request active due to fault in transmission control unit

Diagnostic conditions
- Transmission control unit ready for operation

Fault setting condition(s)
- Activation of the fault lamp is required due to exhaust-related fault in the transmission

Monitored component or system
♦ Transmission

P163D00

Diagnosis information DME control module

P163D00 Indicator light for driving program - electrical fault in circuit

Monitored component or system

♦ Driving program switch

Diagnosis information DME control module

P163E00 Control unit faulty

Diagnostic conditions

- Diagnostics runs once per driving cycle

Fault setting condition(s)

- CAN controller RAM monitoring

Monitored component or system

♦ CAN communication: CAN controller

Fault finding notes

♦ Replace DME control unit

Function restrictions

♦ DME control unit faulty

Diagnosis information DME control module

P164000 Control unit faulty

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- If deletion cannot be performed or was not performed successfully
- If at least three blocks cannot be read
- If a block cannot be written after more than three attempts

Monitored component or system

♦ DME control unit

Fault finding notes

♦ DME control unit must be replaced

Function restrictions

♦ DME control unit performs a reset

P164600

Diagnosis information DME control module

P164600 Please read out fault memory of the all-wheel drive electronics

Fault setting condition(s)

- Monitoring of distributor limitation torque

Monitored component or system

♦ Distributor limitation torque signal

Fault finding notes

♦ Check drive data bus and all-wheel drive control unit

Diagnosis information DME control module

P164700 Check coding/variants of the control units in the drive train

Diagnostic conditions

● Release of diagnostic function takes place from ignition on

Fault setting condition(s)

● The DME control unit is not coded for a cruise control or adaptive cruise control (ACC) although the corresponding operating lever is installed

Monitored component or system

♦ Steering column switch module, DME control unit

Fault finding notes

♦ Check whether the DME control unit is correctly coded with regard to cruise control/adaptive cruise control

Function restrictions

♦ No cruise control/adaptive cruise control (ACC) operation possible in the current ignition cycle

P164C00

Diagnosis information DME control module

P164C00 Oil pressure switch for reduced oil pressure - implausible signal

Diagnostic conditions

- Ignition on
- Engine off

Fault setting condition(s)

- Oil low pressure switch closed
- Low pressure level switch implausible

Monitored component or system

♦ Oil pressure switch for low pressure detection

Fault finding notes

♦ Check of the electrical wiring and the functionality of the oil pressure switch

P164D00

Diagnosis information DME control module

P164D00 Oil pressure switch for reduced oil pressure - malfunction

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Low pressure level not reached

Monitored component or system

♦ Oil pressure switch for low pressure detection

Fault finding notes

♦ Check whether there is sufficient oil/oil pressure to operate the switch
♦ Check of the electrical wiring, plug and the functionality of the oil pressure switch

Diagnosis information DME control module

P167E00 Start/stop restart - max. start time exceeded

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● A bad start is detected if a start/stop restart is requested, but the activation of the starter did not lead to starting after a time of 3 sec has elapsed

Monitored component or system

♦ Engine start

Fault finding notes

♦ Read out fault memory of the DME control unit and front-end electronics control unit

Function restrictions

♦ Blockage of start/stop function

P168200

Diagnosis information DME control module

P168200 Drive data bus - implausible message from PSM control unit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Engine drag torque control intervention functions only over an applicable speed threshold, default value : 10 km/h (6 mph)
- The positive torque intervention by the PSM is monitored via an integration function in the engine control unit. Torque values minus losses, driver's torque request or application constant (the largest value in each case) are included

Monitored component or system

♦ PSM messages

Fault finding notes

♦ See PSM fault memory

Function restrictions

♦ No engine drag torque control intervention

Diagnosis information DME control module

P169800 Steering-column electronics, please read out the fault memory

Diagnostic conditions

- Diagnostics runs continuously, according to the configured time grid

Fault setting condition(s)

- Fault of the steering-angle control unit detected

Monitored component or system

♦ Steering angle CAN signal

Fault finding notes

♦ Read out fault memory of the corresponding sender control unit

Function restrictions

♦ Idling possibly somewhat less stable

Diagnosis information DME control module

P169A00 Loading mode active

Fault setting condition(s)

● The following conditions must be met at the same time: Current operating state: control unit run-on; vehicle speed less than 5 km/h (3 mph); engine speed is 0 rpm; vehicle has travelled no more than 100 km (62 miles) since being put into operation; production mode is locally deactivated
● The control unit run-on mode is active for a certain time period after the state has been changed from ignition on to ignition off. The transport mode can be activated/deactivated only when the DME control unit is in run-on mode. Furthermore, all fault setting conditions must be met. Transport mode remains activated/deactivated beyond the ignition change. Transport mode is deactivated by a locally active production mode

Monitored component or system

♦ DME control unit

Fault finding notes

♦ Transport mode set

Function restrictions

♦ MIL/warning message in instrument cluster "engine control fault" on
♦ Rev limitation, speed limitation, torque limitation
♦ Suppression of catalytic converter heating

Diagnosis information DME control module

P172300 Start inhibit signal - open circuit

Diagnostic conditions

● Engine start

Fault setting condition(s)

● Starting attempts with a half-depressed clutch increment a fault counter, and the fault is set when a certain threshold is reached
● Clutch switch actuated, interlock switch not actuated, terminal 50 active

Monitored component or system

♦ Interlock switch

Fault finding notes

♦ Interlock switch or wiring faulty
♦ Test via DME control unit actual values
♦ Customer misbehavior (carpet)

Function restrictions

♦ Engine cannot be started

Diagnosis information DME control module

P172400 Start inhibit signal - short circuit to ground

Diagnostic conditions

- Diagnostics running continuously during ignition on

Fault setting condition(s)

- Clutch switch not actuated, interlock switch actuated
- Cruise control switch not actuated

Monitored component or system

♦ Interlock switch, clutch switch

Fault finding notes

♦ Interlock switch or clutch switch faulty
♦ Test via DME control unit actual values

Function restrictions

♦ No automatic start possible

P172900

Diagnosis information DME control module

P172900 Start inhibit signal - short circuit to B+

Diagnostic conditions

● A test pulse is produced if there is no fault in the clutch or interlock switch signal, the engine speed is higher than the threshold (approx. 800 rpm), the vehicle speed is higher than the threshold (approx. 5 km/h / 3 mph) and the clutch pedal is not depressed
● Diagnostics runs once per driving cycle

Fault setting condition(s)

● If there is no fault in the clutch or interlock switch signal, the output stage for expanded drive train-open release is activated but no P/N interlock hardware signal is present
● The output stage of the expanded drive train-open release has switched a Low level, but a High level is detected at the P/N interlock input

Monitored component or system

♦ Expanded drive train-open release

Fault finding notes

♦ Engine can be started manually: Check line from DME control unit to DME control unit (bridge between 2 pins: expanded drive train-open release to interlock switch input) according to the wiring diagram
♦ Engine cannot be started manually: Remove plug on the clutch master cylinder, read out actual values and bridge the interlock signal line to ground . If the DME control unit and line are OK, the sensor is faulty. If not, then check the line. If the line is OK, then the DME control unit is faulty

Function restrictions

♦ Start/stop no longer functions
♦ Possibly normal engine starting no longer possible

Diagnosis information DME control module

P188A00 Coolant shutoff valve - electrical fault

Diagnostic conditions

● Diagnostics runs continuously

Fault setting condition(s)

● The output stage reports the load reduction fault; short circuit to battery positive voltage/ground
● Monitoring of the electrical components for line open circuit and short circuit to B+/ground

Monitored component or system

♦ Water pump supply shutoff valve

Fault finding notes

♦ Line test

Function restrictions

♦ Restricted power of the passenger compartment heating

Diagnosis information DME control module

P191B00 Radiator fan control unit - implausible signal

Diagnostic conditions

● Diagnostics runs only when the DME control unit has been flashed again or coded
● The learning values are then deleted, and the request is re-sent after a terminal 87 reset (end of control unit run-on)

Fault setting condition(s)

● Plausibility check of the sent short-circuit times in the DME control unit
● Communication error with fan output stage 1

Monitored component or system

♦ Radiator fan on first output stage

Fault finding notes

♦ A faulty fan control unit might not be able to report back any variant when requested to do so. An incorrect or old fan module might not be able to report back any variant. The signal for flashing was sent during variant feedback, but flashing is cancelled for inexplicable reasons

Function restrictions

♦ No function restrictions, only the acoustics and control quality are impaired

P193600

Diagnosis information DME control module

P193600 Generator switch-off - open circuit/short circuit to ground

Monitored component or system

♦ Generator

Fault finding notes

♦ See gateway fault memory

P193700

Diagnosis information DME control module

P193700 Generator switch-off - short circuit to B+

Monitored component or system

♦ Generator

Fault finding notes

♦ See gateway fault memory

Diagnosis information DME control module

P194400 Control unit 1 for radiator fans - overtemperature

Diagnostic conditions

● Switch ignition on and wait 6 min., then fault entry. Effect: fan decreases power or switches off. Procedure: drive link test, test according to specification. Signal every 2 sec., for 1 sec. to ground
● The fan must be activated with 10% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● The radiator fan output stage reduces the power from 110 °C (230 °F) and switches off above 130 °C (266 °F). When the temperature falls below 125 °C (257 °F) again, then heat-loss-reduced operation is in effect

Monitored component or system

♦ Radiator fan output stage 1

Fault finding notes

♦ Drive link test
♦ Visual inspection of whether the fan module is in the original condition

Function restrictions

♦ No or reduced fan power of the two possible fans on the first output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "Hot" light

Diagnosis information DME control module

P194600 Control unit 1 for radiator fans - faulty/power supply

Diagnostic conditions

● Switch ignition on and wait 6 min., then fault entry. Effect: electronics fault or power supply interrupted. Procedure: Signal every 2 sec., for 4 sec. to ground
● The fan must be activated with 10% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● Electronics fault or power supply to the fan control unit interrupted

Monitored component or system

♦ Radiator fan output stage 1

Fault finding notes

♦ Drive link test
♦ Check power supply fuse
♦ Check of the supply line from the power supply to the fan
♦ Fan control unit faulty

Function restrictions

♦ No or reduced fan power of the two possible fans on the first output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "Hot" light

Diagnosis information DME control module

P194600 Control unit 1 for radiator fans - faulty/power supply

Diagnostic conditions

● Switch ignition on and wait 6 min., then fault entry. Effect: electronics fault or power supply interrupted. Procedure: Signal every 2 sec., for 4 sec. to ground
● The fan must be activated with 10% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● Electronics fault or power supply to the fan control unit interrupted

Monitored component or system

♦ Radiator fan output stage 1

Fault finding notes

♦ Drive link test
♦ Check power supply fuse
♦ Check of the supply line from the power supply to the fan
♦ Fan control unit faulty

Function restrictions

♦ No or reduced fan power of the two possible fans on the first output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "Hot" light

Diagnosis information DME control module

P194600 Control unit 1 for radiator fans - faulty/power supply

Diagnostic conditions

● Switch ignition on and wait 6 min., then fault entry. Effect: electronics fault or power supply interrupted. Procedure: Signal every 2 sec., for 4 sec. to ground
● The fan must be activated with 10% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● Electronics fault or power supply to the fan control unit interrupted

Monitored component or system

♦ Radiator fan output stage 1

Fault finding notes

♦ Drive link test
♦ Check power supply fuse
♦ Check of the supply line from the power supply to the fan
♦ Fan control unit faulty

Function restrictions

♦ No or reduced fan power of the two possible fans on the first output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "Hot" light

Diagnosis information DME control module

P195000 Coolant fan - sluggish/stalled

Diagnostic conditions

● Switch the ignition on and either drive the engine warm, or check via a measured value whether the air conditioner demands the correct number of fans. The measured value indicates the activation of the output stages
● The fan must be activated with 15% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● Soiling by leaves or ice, corrosion-related stalling due to the effects of road salt, accident damage or similar

Monitored component or system

♦ Radiator fan 1 on first output stage

Fault finding notes

♦ Fan output stage 1 drive link diagnostics
♦ The fan should accelerate to maximum speed in approx. 10 sec.

Function restrictions

♦ No fan power of the first fan on the first radiator fan output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "Hot" light

Diagnosis information DME control module

P195000 Coolant fan - sluggish/stalled

Diagnostic conditions

● Switch the ignition on and either drive the engine warm, or check via a measured value whether the air conditioner demands the correct number of fans. The measured value indicates the activation of the output stages
● The fan must be activated with 15% pulse/duty ratio for at least 6 min.

Fault setting condition(s)

● Soiling by leaves or ice, corrosion-related stalling due to the effects of road salt, accident damage or similar

Monitored component or system

♦ Radiator fan 1 on first output stage

Fault finding notes

♦ Fan output stage 1 drive link diagnostics
♦ The fan should accelerate to maximum speed in approx. 10 sec.

Function restrictions

♦ No fan power of the first fan on the first radiator fan output stage
♦ The system can overheat in extreme situations (towing a trailer, hot countries, top speed). Symptoms are A/C rejection and "Hot" light

P198700

Diagnostic information - DME control unit

P198700 Brake temperature too high - check PSM control unit fault memory content

Diagnostic conditions
- PSM control unit ready for operation

Fault setting condition(s)
- Brake temperature too high

Monitored component or system
♦ Brake system

Diagnosis information DME control module

P208800 Bank 1 camshaft adjustment - short circuit to ground

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Activation voltage less than diagnostic threshold 2.14...3.26 V

Monitored component or system

♦ Bank 1 intake camshaft adjuster output stage

Diagnosis information DME control module

P208900 Bank 1 camshaft adjustment - short circuit to B+

Diagnostic conditions

- Ignition on
- With engine running

Fault setting condition(s)

- Typically: I > 2.2...4.0 A, depending on which output stage type is used
- Output stage diagnostics, short circuit to B+

Monitored component or system

♦ Actuator for camshaft adjustment (intake, bank 1) output stage

Function restrictions

♦ Power restriction

Diagnosis information DME control module

P209000 Bank 1 exhaust camshaft adjustment - short circuit to ground

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Activation voltage less than diagnostic threshold 2.14...3.26 V

Monitored component or system

♦ Bank 1 exhaust camshaft adjuster output stage

P209100

Diagnosis information DME control module

P209100 Bank 1 exhaust camshaft adjustment - short circuit to B+

Diagnostic conditions

- With engine running

Fault setting condition(s)

- Diagnostic current higher than diagnostic threshold > 3 A
- Output stage diagnostics, short circuit to B+

Monitored component or system

♦ Bank 1 exhaust camshaft adjuster output stage

P209600

Diagnosis information DME control module

P209600 Bank 1 lambda correction behind catalytic converter - lean control limit exceeded

Fault setting condition(s)

- Delta of the sensor offset of setpoint control -3%...-7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

P209700

Diagnosis information DME control module

P209700 Bank 1 lambda correction behind catalytic converter - rich control limit exceeded

Fault setting condition(s)

- Delta of the sensor offset of setpoint control 3%....7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor, bank 1

Diagnosis information DME control module

P209800 Bank 2 lambda correction behind catalytic converter - lean control limit exceeded

Fault setting condition(s)

- Delta of the sensor offset of setpoint control -3%...-7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor, bank 2

Diagnosis information DME control module

P209900 Bank 2 lambda correction behind catalytic converter - rich control limit exceeded

Fault setting condition(s)

- Delta of the sensor offset of setpoint control 3%....7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor, bank 2

Diagnosis information DME control module

P210600 Throttle valve control unit - limited power due to system fault

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit in the DV-E output stage : I > 8.0...18.0 A
- DV-E output stage is overheated or carries excessive current: I > 5.5...7.7 A or T > 150 °C/302 °F (current limitation) or T> 175 °C/347 °F (overtemperature shutoff)
- SPI or signal error in the DV-E output stage : Maximum pulse/duty ratio > 80%
- Open-load fault in the DV-E output stage; output voltage 1 > 2 V and output voltage 2 < 0.8 V

Monitored component or system

♦ Throttle valve adjuster output stage

Diagnosis information DME control module

P211900 Throttle valve control unit - fault during adaptation

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The lower limit is outside the normal adaptation range (potentiometer 1 < 0.12 V or potentiometer 2 > 4.84 V)

Monitored component or system

♦ Throttle valve adjuster basic setting/adjuster test on adaptation

Fault finding notes

♦ Electrical test of the plug connections and cables
♦ Throttle valve adjuster faulty

Function restrictions

♦ Engine does not start or can be run only in limp-home mode (fixed engine speed, low torque)

Diagnosis information DME control module

P212200 Accelerator pedal position sender - signal too low

Diagnostic conditions

- No fault in the 5 V supply

Fault setting condition(s)

- Electrical test of the pedal value encoder: signal too low

Monitored component or system

♦ Pedal sensor 1

Fault finding notes

♦ Electrical test of the plug connections and cables for short circuit to ground

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

Diagnosis information DME control module

P212300 Accelerator pedal position sender - signal too high

Diagnostic conditions

- No fault in the 5 V supply

Fault setting condition(s)

- Electrical test of the pedal value encoder: signal too high

Monitored component or system

♦ Pedal sensor 1

Fault finding notes

♦ Electrical test of the plug connections and cables for short circuit to B+

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

Diagnosis information DME control module

P212700 Accelerator pedal position sender 2 - signal too low

Diagnostic conditions

- No fault in the 5 V supply

Fault setting condition(s)

- Electrical test of the pedal value encoder: signal too low

Monitored component or system

♦ Pedal sensor 2

Fault finding notes

♦ Electrical test of the plug connections and cables for short circuit to ground

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

Diagnosis information DME control module

P212300 Accelerator pedal position sender 2 - signal too high

Diagnostic conditions

- No fault in the 5 V supply

Fault setting condition(s)

- Electrical test of the pedal value encoder: signal too high

Monitored component or system

♦ Pedal sensor 2

Fault finding notes

♦ Electrical test of the plug connections and cables for short circuit to B+

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

Diagnosis information DME control module

P213800 Accelerator pedal position sender 1/2 - implausible signal

Diagnostic conditions

- Diagnostics running continuously from ignition on
- No fault in the 5 V supply
- Control unit run-on

Fault setting condition(s)

- The difference of the two input signals exceeds the permissible maximum
- The two signal voltages of the pedal encoder are tested for synchronism
- The two pedal encoder signal voltages are observed in run-on for pedal encoder drift detection. A fault is present if one signal voltage lies within and one signal voltage lies outside the idle range
- When the idle range of the first channel is left, the voltage value of the second channel is stored. When the first channel exceeds a voltage threshold but the second one does not, a fault is detected
- A fault is also detected when the second channel falls below the voltage threshold before the first channel when reaching the idle range again from above

Monitored component or system

♦ Pedal encoder

Fault finding notes

♦ Electrical test of the plug connections, cables and components
♦ Test of the contact resistance values on sensors 1 and 2
♦ It might be necessary to replace the sensors

Function restrictions

♦ The torque is greatly reduced above 3,000 rpm

Diagnostic information - DME control unit

P214600 Supply for fuel injector(s) A - open circuit

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit of the high-pressure fuel injector (high side) to battery positive voltage/ground
- Winding short circuit of the high-pressure fuel injector (high side)

Monitored component or system

♦ High-pressure fuel injector, high side, cylinder 1/6

Function restrictions

♦ Suppression of the high-pressure fuel injectors with data

Diagnostic information - DME control unit

P214900 Supply for fuel injector(s) B - open circuit

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit of the high-pressure fuel injector (high side) to battery positive voltage/ground
- Winding short circuit of the high-pressure fuel injector (high side)

Monitored component or system

♦ High-pressure fuel injector, high side, cylinder 2

Function restrictions

♦ Suppression of the high-pressure fuel injectors with data

Diagnostic information - DME control unit

P215200 Supply for fuel injector(s) C - electrical fault

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit of the high-pressure fuel injector (high side) to battery positive voltage/ground
- Winding short circuit of the high-pressure fuel injector (high side)

Monitored component or system

♦ High-pressure fuel injector, high side, cylinder 3/4

Function restrictions

♦ Suppression of the high-pressure fuel injectors with data

Diagnostic information - DME control unit

P215500 Supply for fuel injector(s) D - electrical fault

Diagnostic conditions

- Engine speed > 80 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuit of the high-pressure fuel injector (high side) to battery positive voltage/ground
- Winding short circuit of the high-pressure fuel injector (high side)

Monitored component or system

♦ High-pressure fuel injector, high side, cylinder 5

Function restrictions

♦ Suppression of the high-pressure fuel injectors with data

P217700

Diagnosis information DME control module

P217700 Bank 1 fuel metering system - system too lean from idling speed

Fault setting condition(s)

- Multiplicative lambda adaptation value > 1.299988

Monitored component or system

♦ Mixture adaptation

P217800

Diagnosis information DME control module

P217800 Bank 1 fuel metering system - system too rich from idling speed

Fault setting condition(s)

- Multiplicative lambda adaptation value < 0.700012

Monitored component or system

♦ Mixture adaptation

P217900

Diagnosis information DME control module

P217900 Bank 2 fuel metering system - system too lean from idling speed

Fault setting condition(s)

- Multiplicative lambda adaptation value > 1.299988

Monitored component or system

♦ Mixture adaptation

P218000

Diagnosis information DME control module

P218000 Bank 2 fuel metering system - system too rich from idling speed

Fault setting condition(s)

- Multiplicative lambda adaptation value < 0.700012

Monitored component or system

♦ Mixture adaptation

Diagnosis information DME control module

P218100 Fault in cooling system

Diagnostic conditions

● Diagnostics runs once per driving cycle with conditioned vehicle

Fault setting condition(s)

● Supplementary diagnostics in addition to conventional thermostat diagnostics on vehicles with thermal management
● Once a certain engine temperature is reached, the further temperature characteristic is observed. If the engine temperature subsequently falls below a temperature threshold, a faulty cooling system is detected

Monitored component or system

♦ Coolant temperature system, performance capacity

Fault finding notes

♦ Test for heating of the cooling system and engine after cold start
♦ Test of the engine temperature sensor. If the sensor is OK, then replace the thermostat

Function restrictions

♦ When the thermostat is stuck open, the cooling system and engine heat up too slowly after a cold start or the engine temperature remains continuously too low

P218700

Diagnosis information DME control module

P218700 Bank 1 fuel metering system - system too lean at idling speed

Fault setting condition(s)

- Additive lambda adaptation value < -6.0%

Monitored component or system

♦ Mixture adaptation sum error

P218800

Diagnosis information DME control module

P218800 Bank 1 fuel metering system - system too rich at idling speed

Fault setting condition(s)

- Additive lambda adaptation value > 6.0%

Monitored component or system

♦ Mixture adaptation sum error

P218900

Diagnosis information DME control module

P218900 Bank 2 fuel metering system - system too lean at idling speed

Fault setting condition(s)

- Additive lambda adaptation value < -6.0%

Monitored component or system

♦ Mixture adaptation sum error

P219000

Diagnosis information DME control module

P219000 Bank 2 fuel metering system - system too rich at idling speed

Fault setting condition(s)

- Additive lambda adaptation value > 6.0%

Monitored component or system

♦ Mixture adaptation sum error

P219500

Diagnosis information DME control module

P219500 Bank 1 oxygen sensor 1 - signal too lean

Fault setting condition(s)

- Delta of the sensor offset of setpoint control > 7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

P219600

Diagnosis information DME control module

P219600 Bank 1 oxygen sensor 1 - signal too rich

Fault setting condition(s)

- Delta of the sensor offset of setpoint control < -7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

P219700

Diagnosis information DME control module

P219700 Bank 2 oxygen sensor 1 - signal too lean

Fault setting condition(s)

- Delta of the sensor offset of setpoint control > 7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

P219800

Diagnosis information DME control module

P219800 Bank 2 oxygen sensor 1 - signal too rich

Fault setting condition(s)

- Delta of the sensor offset of setpoint control < -7%

Monitored component or system

♦ Oxygen sensor drift comparison by oxygen sensor

P223700

Diagnosis information DME control module

P223700 Bank 1 oxygen sensor 1 - pump current open circuit

Diagnostic conditions

- Heater control active
- Lambda control active
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is in a voltage band, and the gradient of lambda control factor is higher than the maximum value

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P224000

Diagnosis information DME control module

P224000 Bank 2 oxygen sensor 1 - pump current open circuit

Diagnostic conditions

- Heater control active
- Lambda control active
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is in a voltage band, and the gradient of lambda control factor is higher than the maximum value

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P224300

Diagnosis information DME control module

P224300 Bank 1 oxygen sensor 1 - reference voltage open circuit

Diagnostic conditions

- Heater control active
- Dew point end reached
- 3-kHz measuring frequency of the internal resistance not active for 2 sec
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is either greater than the maximum voltage or less than the minimum voltage, and the internal resistance is implausibly high

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P224700

Diagnosis information DME control module

P224700 Bank 2 oxygen sensor 1 - reference voltage open circuit

Diagnostic conditions

- Heater control active
- Dew point end reached
- 3-kHz measuring frequency of the internal resistance not active for 2 sec
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is either greater than the maximum voltage or less than the minimum voltage, and the internal resistance is implausibly high

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P225100

Diagnosis information DME control module

P225100 Bank 1 oxygen sensor 1 - ground line open circuit

Diagnostic conditions

- Dew point end reached
- With oxygen sensor 4.9 heater control active for > 5 sec
- Overrun mode not active for > 35 sec
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is in the voltage band, and the internal resistance is higher than the maximum resistance

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P225400

Diagnosis information DME control module

P225400 Bank 2 oxygen sensor 1 - ground line open circuit

Diagnostic conditions

- Dew point end reached
- With oxygen sensor 4.9 heater control active for > 5 sec
- Overrun mode not active for > 35 sec
- Diagnostics runs continuously

Fault setting condition(s)

- The sensor voltage is in the voltage band, and the internal resistance is higher than the maximum resistance

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P227000

Diagnosis information DME control module

P227000 Bank 1 oxygen sensor 2 - signal too lean

Diagnostic conditions

- Engine speed > 25 rpm
- Lambda adjustment for diagnostics ended
- P-share of control behind catalytic converter active
- All fuel injectors active
- Diagnostics runs several times in the driving cycle

Fault setting condition(s)

- Oxygen sensor voltage behind catalytic converter < 0.64 V...0.649 V
- Vibration test

Monitored component or system

♦ Bank 1 oxygen sensor 2

P227100

Diagnosis information DME control module

P227100 Bank 1 oxygen sensor 2 - signal too rich

Diagnostic conditions

- Engine speed > 25 rpm
- Lambda adjustment for diagnostics ended
- P-share of control behind catalytic converter active
- All fuel injectors active
- Diagnostics runs several times in the driving cycle

Fault setting condition(s)

- Oxygen sensor voltage behind catalytic converter > 0.64 V...0.649 V
- Vibration test

Monitored component or system

♦ Bank 1 oxygen sensor 2

Diagnosis information DME control module

P227200 Bank 2 oxygen sensor 2 - signal too lean

Diagnostic conditions

- Engine speed > 25 rpm
- Lambda adjustment for diagnostics ended
- P-share of control behind catalytic converter active
- All fuel injectors active
- Diagnostics runs several times in the driving cycle

Fault setting condition(s)

- Oxygen sensor voltage behind catalytic converter < 0.64 V...0.649 V
- Vibration test

Monitored component or system

♦ Bank 2 oxygen sensor 2

Diagnosis information DME control module

P227300 Bank 2 oxygen sensor 2 - signal too rich

Diagnostic conditions

- Engine speed > 25 rpm
- Lambda adjustment for diagnostics ended
- P-share of control behind catalytic converter active
- All fuel injectors active
- Diagnostics runs several times in the driving cycle

Fault setting condition(s)

- Oxygen sensor voltage behind catalytic converter > 0.64 V...0.649 V
- Vibration test

Monitored component or system

♦ Bank 2 oxygen sensor 2

Diagnosis information DME control module

P227900 Leakage air in intake system

Diagnostic conditions

- Vehicle idling
- Engine at operating temperature
- Diagnostics runs continuously, but exclusively for tank ventilation

Fault setting condition(s)

- Monitoring of all lambda deviations (lambda actual value, lambda controller, lambda adaptation) to detect a leak ahead of the throttle valve

Monitored component or system

♦ Positive crankcase ventilation

Fault finding notes

♦ Examine all connections of the positive crankcase ventilation for disconnection or leakage

P229400

Diagnosis information DME control module

P229400 Fuel pressure control valve - open circuit

Diagnostic conditions

- Valve not activated
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage in the range 0.65 V...3.2 V
- Quantity control valve output stage load reduction

Monitored component or system

♦ High pressure quantity control valve

Fault finding notes

♦ Check line connection
♦ Cable break or output stage faulty

P229500

Diagnosis information DME control module

P229500 Fuel pressure control valve - short circuit to ground

Diagnostic conditions

- Valve not activated
- Diagnostics runs continuously

Fault setting condition(s)

- Quantity control valve short circuit to ground, low side

Monitored component or system

♦ High pressure quantity control valve

Fault finding notes

♦ Pull plug off quantity control valve and read out the fault memory again. If there is an additional fault, replace the quantity control valve
♦ Check the line connection between the quantity control valve and DME control unit. If it is OK, then replace the DME control unit

Diagnosis information DME control module

P229600 Fuel pressure control valve - short circuit to B+

Diagnostic conditions

- Valve activated
- Diagnostics runs continuously

Fault setting condition(s)

- Quantity control valve short circuit to battery positive voltage, low side

Monitored component or system

♦ High pressure quantity control valve

Fault finding notes

♦ Pull plug off quantity control valve and read out the fault memory again. If there is an additional fault, replace the quantity control valve
♦ Check the line connection between the quantity control valve and DME control unit. If it is OK, then replace the DME control unit

Diagnosis information DME control module

P230000 Ignition coil 1 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230100 Ignition coil 1 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230300 Ignition coil 2 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230400 Ignition coil 2 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230600 Ignition coil 3 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230700 Ignition coil 3 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P230900 Ignition coil 4 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231000 Ignition coil 4 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231200 Ignition coil 5 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231300 Ignition coil 5 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231500 Ignition coil 6 activation - short circuit to ground

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal voltage < 0.5 V...1.0 V
- In case of short circuit to ground, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P231600 Ignition coil 6 activation - short circuit to B+

Diagnostic conditions

- Engine speed > 1,400 rpm
- Diagnostics runs continuously

Fault setting condition(s)

- Signal current < 5.0 mA...8.8 mA
- In case of short circuit to battery positive voltage, an internal register is set after a filtering time. A monitoring function for the lines to the output stage is integrated. A detected ignition driver fault is stored separately in a register for each channel and can be read out via an SPI interface

Monitored component or system

♦ Ignition coils

Fault finding notes

♦ Perform line check
♦ Check resistance of the ignition coil

Function restrictions

♦ Breakdown possible

Diagnosis information DME control module

P233600 Cylinder 1 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 1)

Diagnosis information DME control module

P233700 Cylinder 2 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 2)

P233800

Diagnosis information DME control module

P233800 Cylinder 3 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 3)

Diagnosis information DME control module

P233900 Cylinder 4 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 4)

Diagnosis information DME control module

P234000 Cylinder 5 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 5)

P234100

Diagnosis information DME control module

P234100 Cylinder 6 knock control - control limit reached

Fault setting condition(s)

- Knock control runs against limit for > 100 ignitions

Monitored component or system

♦ Cylinder-specific knock control intervention monitoring (cylinder 6)

Diagnosis information DME control module

P240000 Tank vent system, tank leak diagnostic pump activation - electrical fault/open circuit

Diagnostic conditions

● Ignition on
● The cycle condition is reached when both switching states ON/OFF were active for at least 500 ms

Fault setting condition(s)

● The output stage of the leakage diagnostic pump detects a load decrease; the internal voltage is measured at the output > 4.8 V...5.3 V

Monitored component or system

♦ Leakage diagnostic pump

Fault finding notes

♦ Check wiring between the control unit and component for open circuit. Depending on the output stage, the internal diagnostic voltage (between 3 V and 6 V) is measured
♦ Check power supply on the component
♦ Check leakage diagnostic pump

Function restrictions

♦ Output stage inactive, failure of the leakage diagnostic pump

ⓘ INFORMATION

The system includes:
- ♦ mechanical **Vacuum pump**
- ♦ **Leakage diagnosis pump**
- ♦ **Intake pipe switchover**
- ♦ **Exhaust flap** (if present)

Diagnosis information DME control module

P240100 Tank vent system, tank leak diagnostic pump activation - short circuit to ground

Diagnostic conditions

● Ignition on
● The cycle condition is reached when both switching states ON/OFF were active for at least 500 ms

Fault setting condition(s)

● The output stage of the leakage diagnostic pump detects a short circuit to ground; the diagnostic voltage is measured at the output < 0 V...3.25 V

Monitored component or system

♦ Leakage diagnostic pump

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to ground. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component
♦ Check power supply on the component

Function restrictions

♦ Output stage inactive, failure of the leakage diagnostic pump

ⓘ INFORMATION

The system includes:
- ♦ mechanical **Vacuum pump**
- ♦ **Leakage diagnosis pump**
- ♦ **Intake pipe switchover**
- ♦ **Exhaust flap** (if present)

Diagnosis information DME control module

P240200 Tank vent system, tank leak diagnostic pump activation - short circuit to B+

Diagnostic conditions

● Ignition on
● The cycle condition is reached when both switching states ON/OFF were active for at least 500 ms

Fault setting condition(s)

● The output stage of the leakage diagnostic pump detects a short circuit to B+; signal current > 2.2 A...4.0 A

Monitored component or system

♦ Leakage diagnostic pump

Fault finding notes

♦ Check wiring between the control unit and component for short circuit to battery positive voltage. If this is OK, then pull the component off and clear the fault memory
♦ If the DME control unit detects an open circuit, the fault is in the component

Function restrictions

♦ Output stage inactive, failure of the leakage diagnostic pump

ⓘ INFORMATION

The system includes:
- ♦ mechanical **Vacuum pump**
- ♦ **Leakage diagnosis pump**
- ♦ **Intake pipe switchover**
- ♦ **Exhaust flap** (if present)

P240300

Diagnosis information DME control module

P240300 Tank vent system, tank leak diagnostic pump sensor - electrical fault/open circuit

Diagnostic conditions

- Vehicle speed > 7.5 km/h (4.7 mph) (once)
- Vehicle speed > 0.0 km/h / mph
- Control unit run-on phase ended
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- The state of the reed contact is monitored before the start of leakage diagnostics. If it is open after engine start, an initial purge is requested because the tank system might still be pressurized. If the reed contact is still open after a purge quantity of 49.8 g over the tank vent valve and the tank vent valve is tested as OK, the component fault is set. This is a purely passive test; the actual diagnostics does not become active. Another check is performed at the start of leakage diagnostics. A so-called closed check is performed here. It sets the fault if the reed contact is open after 0.5 sec

Monitored component or system

♦ Leakage diagnostic pump

Fault finding notes

♦ Vacuum system leaking (see ⓘ)
♦ Vacuum pump faulty
♦ Depressurize the tank by opening the tank cap before the workshop test
♦ Reed contact in the leakage diagnostic pump faulty
♦ Loose contact of the electrical connections of the leakage diagnostics pump
♦ Replace the leakage diagnostics pump

Function restrictions

♦ MIL lights up

ⓘ INFORMATION

The system includes:

- mechanical **Vacuum pump**
- **Leakage diagnosis pump**
- **Intake pipe switchover** (if present)
- **Exhaust flap** (if present)

Diagnosis information DME control module

P240400 Tank vent system, tank leak diagnostic pump sensor - implausible signal

Diagnostic conditions

- Vehicle speed > 7.5 km/h (4.7 mph) (once)
- Vehicle speed > 0.0 km/h / mph
- Control unit run-on phase ended
- Tank vent closed
- Diagnostics runs once per driving cycle

Fault setting condition(s)

- It is checked whether the reed contact opens when the leakage diagnostics pump is activated (close to open check). After an activation pulse, it is waited for 0.4 sec to determine whether the reed contact opens. If this does not happen, the cto check is repeated 30 times. If the contact is then still closed and no fault reservations occurred, the fault is set

Monitored component or system

♦ Leakage diagnostic pump

Fault finding notes

♦ Vacuum system leaking (see ⓘ)
♦ Vacuum pump faulty
♦ Check plug on the leakage diagnostic pump for correct seating
♦ Check vacuum supply of the leakage diagnostic pump
♦ As a last option, replace the leakage diagnostic pump

Function restrictions

♦ MIL lights up

ⓘ INFORMATION

The system includes:
- ♦ mechanical **Vacuum pump**
- ♦ **Leakage diagnosis pump**
- ♦ **Intake pipe switchover** (if present)
- ♦ **Exhaust flap** (if present)

Diagnosis information DME control module

P241400 Bank 1 sensor 1 - voltage too low/leakage air

Fault setting condition(s)

- Signal voltage > 2.5 V...3.2 V

Monitored component or system

♦ Oxygen sensor in air

Diagnosis information DME control module

P241500 Bank 2 sensor 1 - voltage too low/leakage air

Fault setting condition(s)

- Signal voltage > 2.5 V...3.2 V

Monitored component or system

♦ Oxygen sensor in air

Diagnosis information DME control module

P253300 Ignition starting switch circuit - short circuit to ground/open circuit

Diagnostic conditions

● During starting process

Fault setting condition(s)

● If valid terminal 50 CAN information is present, it is used to check the cable information
● Comparison of terminal 50 component signal with terminal 50 CAN signal from the front end electronics control unit

Monitored component or system

♦ Terminal 50 component signal

Fault finding notes

♦ Check of the electrical line to the front-end electronics control unit
♦ Check front-end electronics control unit fault memory

Function restrictions

♦ Manual start with delay (delay due to CAN delay)

Diagnosis information DME control module

P253500 Ignition starting switch circuit - short circuit to B+

Diagnostic conditions

● During starting process

Fault setting condition(s)

● If valid terminal 50 CAN information is present, it is used to check the cable information
● Comparison of terminal 50 component signal with terminal 50 CAN signal from the front end electronics control unit, signal continuously high

Monitored component or system

♦ Terminal 50 component signal

Fault finding notes

♦ Check of the electrical line to the front-end electronics control unit
♦ Check front-end electronics control unit fault memory

Function restrictions

♦ Manual start with delay (delay due to CAN delay)

Diagnosis information DME control module

P253900 Fuel low pressure sender - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Analog value measurement detects that a maximum value was exceeded (4.7998 V)
- Monitoring of the electrical signals of the pressure sensor for the demand-controlled fuel system (low pressure) for minimum and maximum limits
- The sensor voltage is read into the DME control unit via an analog/digital channel

Monitored component or system

♦ Fuel low-pressure sensor

Diagnosis information DME control module

P254100 Fuel low pressure sender - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Analog value measurement detects that a value fell below the minimum value (0.2002 V)
- Monitoring of the electrical signals of the pressure sensor for the demand-controlled fuel system (low pressure) for minimum and maximum limits
- The sensor voltage is read into the DME control unit via an analog/digital channel

Monitored component or system

♦ Fuel low-pressure sensor

Diagnosis information DME control module

P260000 Coolant pump - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the load decrease fault
- Monitoring of the electrical components for line open circuit

Monitored component or system

♦ Main water pump valve

Fault finding notes

♦ Check component
♦ Line test

Diagnosis information DME control module

P260200 Coolant pump - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the short circuit to ground fault
- Monitoring of the electrical components for short circuit to ground

Monitored component or system

♦ Main water pump valve

Fault finding notes

♦ Check valve internal resistance
♦ Line test

Function restrictions

♦ Restrictions in this sequence: no interior heating, start/stop ban, deactivation of auxiliary units
♦ Breakdown possible
♦ The driver is informed via the instrument cluster

Diagnosis information DME control module

P260300 Coolant pump - short circuit to B+

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the short circuit to battery positive voltage fault
- Monitoring of the electrical components for short circuit to B+

Monitored component or system

♦ Main water pump valve

Fault finding notes

♦ Check valve internal resistance
♦ Line test

Diagnosis information DME control module

P261A00 Coolant pump 2 - open circuit

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the load decrease fault
- Monitoring of the electrical components for line open circuit

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Line test

Diagnosis information DME control module

P261C00 Coolant pump 2 - short circuit to ground

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the short circuit to ground fault
- Monitoring of the electrical components for short circuit to ground

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Line test

Function restrictions

♦ Restrictions in this sequence: no interior heating, start/stop ban, deactivation of auxiliary units
♦ Breakdown possible

P261D00

Diagnosis information DME control module

P261D00 Coolant pump 2 - short circuit to B+

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- The output stage reports the short circuit to battery positive voltage fault
- Monitoring of the electrical components for short circuit to B+

Monitored component or system

♦ Auxiliary water pump

Fault finding notes

♦ Line test

P262600

Diagnosis information DME control module

P262600 Bank 1 linear oxygen sensor/comparison line pump current - open circuit

Diagnostic conditions

- Dew point end reached
- Heater control active
- Overrun mode active
- Exhaust temperature from model < 849.998 °C (1,561.996 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- Offset-corrected sensor voltage > 4.81006 V
- In overrun mode, the sensor voltage is higher than the maximum voltage

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P262900

Diagnosis information DME control module

P262900 Bank 2 linear oxygen sensor/comparison line pump current - open circuit

Diagnostic conditions

- Dew point end reached
- Heater control active
- Overrun mode active
- Exhaust temperature from model < 849.998 °C (1,561.996 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- Offset-corrected sensor voltage > 4.81006 V
- In overrun mode, the sensor voltage is higher than the maximum voltage

Monitored component or system

♦ Oxygen sensor ahead of catalytic converter, bank 2

Fault finding notes

♦ Test of the measuring resistor: Important: The ignition must be off for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "pump current" and "trim resistance". R=60-65 Ohm.
If the measuring resistor is faulty, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "virtual ground" and "K ground". U=2-3 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary.
♦ Test of the lines "pump voltage", "virtual ground", "trim resistance" and "Nernst voltage" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

Diagnosis information DME control module

P304000 Transmission ratio implausible

Diagnostic conditions

- Monitoring of the drive train plausibility check is activated
- Diagnostics runs continuously

Fault setting condition(s)

- The drive train transmission ratio received by the CAN exceeds the maximum permissible value of 13.64
- The drive train transmission ratio received by the CAN falls below the minimum permissible value of 2.38
- The drive train transmission ration received by the CAN does not correspond to the back-computed rpm ratio, even though the torque converter lockup clutch is closed

Monitored component or system

♦ CAN drive train transmission ratio

Diagnosis information DME control module

P304300 Fuel pump - mechanical fault

Diagnostic conditions

- Ignition on
- Activation of the fuel pump electronics/electronic fuel pump
- Diagnostics runs continuously

Fault setting condition(s)

- Stalled pump rotor
- Detection via rpm measurement (no commutation, but current is flowing. Suspicion: stalled rotor)

Monitored component or system

♦ Fuel pump electronics

Fault finding notes

♦ Check of the three phases between the fuel pump electronics and the electronic fuel pump
♦ Check of the fuel pump (mechanical fault must be present)

Function restrictions

♦ Fuel pump stationary

Diagnosis information DME control module

P304400 Fuel pump - short circuit

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Short circuits (to B+ and ground between the fuel pump electronics and fuel pump and short circuits between the phase lines)

Monitored component or system

♦ Fuel pump electronics

Fault finding notes

♦ Remove plug on the tank and erase the fault memory. If the fuel pump electronics now detects an open line, the fuel pump is faulty. Otherwise, check the line between the fuel pump electronics and the fuel pump. If the lines are OK, then replace the fuel pump electronics

Function restrictions

♦ Fuel pump might be stationary

Diagnosis information DME control module

P304500 Fuel pump electronics faulty

Diagnostic conditions

- If the DME control unit is awake, e.g. due to door contact wake-up
- Diagnostics runs continuously (test takes place in every grid of the process)

Fault setting condition(s)

- EEPROM/NV-RAM error; fuel pump electronics reports internal fault via ground clocking on the signal line to the DME control unit

Monitored component or system

♦ Fuel pump electronics

Fault finding notes

♦ Replace fuel pump electronics

Function restrictions

♦ Speed limitation of the fuel pump
♦ Possibly torque restriction

Diagnosis information DME control module

P304600 Starter relay 1 - electrical fault in circuit (relay stuck/does not switch)

Diagnostic conditions

● End of starter activation

Fault setting condition(s)

● In order to permit diagnostics of both relays, a different output stage is switched off first at each start. The switch-off sequence for the output stages is interchanged at the end of each starter activation. This makes it possible to determine which relay sticks closed.

Monitored component or system

♦ Starter relay 1

Fault finding notes

♦ Replace the relay. If the relay fault moves as well, replace the relay
♦ If both relays are entered, a short circuit to B+ of the feedback line should be tested first

Function restrictions

♦ Only manual start possible

Diagnosis information DME control module

P304700 Starter relay 2 activation - short circuit to B+

Diagnostic conditions

● Output stages are assessed taking the fault detection possibilities into account. A short circuit to B+ can be detected with an activated output stage. A fallen-off cable and short circuit to ground can be detected with a deactivated output stage. The fault/OK messages are read according to these states
● Output stage energized

Fault setting condition(s)

● Short circuit to B+ of starter relay activation 2

Monitored component or system

♦ Starter relay monitoring

Fault finding notes

♦ Check relay wiring

Function restrictions

♦ Starting not possible

Diagnosis information DME control module

P304800 Starter relay 2 activation - short circuit to ground

Diagnostic conditions

● Output stages are assessed taking the fault detection possibilities into account. A short circuit to B+ can be detected with an activated output stage. A fallen-off cable and short circuit to ground can be detected with a deactivated output stage. The fault/OK messages are read according to these states
● Output stage de-energized

Fault setting condition(s)

● Short circuit to ground of starter relay activation 2

Monitored component or system

♦ Starter relay monitoring

Fault finding notes

♦ Check relay wiring

Function restrictions

♦ Starting not possible

Diagnosis information DME control module

P304900 Starter relay 2 activation - open circuit

Diagnostic conditions

● Output stages are assessed taking the fault detection possibilities into account. A short circuit to B+ can be detected with an activated output stage. A fallen-off cable and short circuit to ground can be detected with a deactivated output stage. The fault/OK messages are read according to these states
● Output stage de-energized

Fault setting condition(s)

● Cable fell off starter relay activation 2

Monitored component or system

♦ Starter relay monitoring

Fault finding notes

♦ Check relay wiring

Function restrictions

♦ Starting not possible

Diagnosis information DME control module

P305000 Starter relay 2 - electrical fault in circuit (relay stuck/does not switch)

Diagnostic conditions

● End of starter activation

Fault setting condition(s)

● In order to permit diagnostics of both relays, a different output stage is switched off first at each start. The switch-off sequence for the output stages is interchanged at the end of each starter activation. This makes it possible to determine which relay sticks closed.
● Relay 2 sticks and is always closed

Monitored component or system

♦ Starter relay 2

Fault finding notes

♦ Replace the relay. If the relay fault moves as well, replace the relay
♦ If both relays are entered, a short circuit to B+ of the feedback line should be tested first

Function restrictions

♦ Only manual start possible

Diagnosis information DME control module

P305200 Starter activation feedback terminal 50 - short circuit to B+

Diagnostic conditions

- Not during starting process

Fault setting condition(s)

- When both starter relays are activated, the feedback line must report a "high" level

Monitored component or system

♦ Feedback line terminal 50R

Fault finding notes

♦ Check of the lines
♦ Check of whether starter is activated
♦ Check the starter relay
♦ Check starter

Function restrictions

♦ Possibly no engine start

Diagnosis information DME control module

P305300 Starter activation feedback terminal 50 - short circuit to ground/open circuit

Diagnostic conditions

- Only during starting process

Fault setting condition(s)

- When both starter relays are activated, the feedback line must report a "high" level

Monitored component or system

♦ Feedback line terminal 50R

Fault finding notes

♦ Check of the lines
♦ Check of whether starter is activated
♦ Check the starter relay
♦ Check starter

Function restrictions

♦ Possibly no engine start

P305400

Diagnosis information DME control module

P305400 Starter does not turn/mechanically blocked/electrical fault

Diagnostic conditions

● Starting process

Fault setting condition(s)

● With active feedback signal and no speed, the starter is faulty or the engine is mechanically blocked

Monitored component or system

♦ Starter/motor blocked

Fault finding notes

♦ Line test on terminal 50 to the starter
♦ Voltage dip during starting process
♦ Motor mechanically blocked
♦ Starter faulty

Function restrictions

♦ Engine cannot be started

Diagnosis information DME control module

P307300 Fuel pump - electrical fault in circuit

Diagnostic conditions

- Ignition on
- Activation of the fuel pump electronics/fuel pump
- Diagnostics runs continuously

Fault setting condition(s)

- Interruption in phase line

Monitored component or system

♦ Fuel pump electronics

Fault finding notes

♦ Check plug connections and lines between the fuel pump electronics and fuel pump for continuity.
♦ The fuel pump can be measured (continuity between all phases on the pump). If OK, then replace the fuel pump electronics

Function restrictions

♦ Fuel pump might be stationary

P307800

Diagnosis information DME control module

P307800 Throttle valve control unit - air throughput at idle too low

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Offset standardized mass air flow through throttle valve < -8.0 kg/h

Monitored component or system

♦ Throttle adjuster

Diagnosis information DME control module

P308800 Starter relay - electrical fault in circuit

Diagnostic conditions

● Activation of the starter output stages during the starting process

Fault setting condition(s)

● It is tested whether the motor turns and a feedback signal from terminal 50R is present after activation of the two starter relays. After brief detection of engine speed/camshaft movement during starter output stage activation, a faulty starter can be assumed.
● Relays are activated, but do not close. Consequently the motor does not turn and there is no feedback signal

Monitored component or system

♦ Starter relay

Fault finding notes

♦ Check of the relay wiring, terminal 50R and starter wiring
♦ Check of the relays

Function restrictions

♦ Vehicle does not start because the relays do not close

Diagnosis information DME control module

P308D00 Fuel pump - too slow

Diagnostic conditions

- Ignition on
- Activation of the fuel pump electronics/fuel pump
- Diagnostics runs continuously (test takes place in every grid of the process)

Fault setting condition(s)

- Overcurrent
- Current measurement via measuring shunt
- Total current from all three phases
- Speed deviation

Monitored component or system

♦ Fuel pump electronics

Fault finding notes

♦ Check of the fuel system, e.g. fuel filter, sluggish pump (flow measurement), kinked fuel line

Function restrictions

♦ Speed limitation of the fuel pump
♦ Possibly torque restriction

Diagnosis information DME control module

P308E00 Fuel pump electronics - overtemperature

Diagnostic conditions

- Ignition on
- Activation of the fuel pump electronics/fuel pump
- Diagnostics runs continuously

Fault setting condition(s)

- Overtemperature in fuel pump electronics output stage (load circuit); the temperature is measured by means of NTC thermistors on the PCB next to the output stage outputs
- When the fuel pump electronics detect a fault, it reports this back to the DME control unit by connecting the signal line to ground at defined times corresponding to the fault. The length of the ground clocking corresponds to the respective fault.

Monitored component or system

♦ Fuel pump electronics

Fault finding notes

♦ Check for sluggish pump (flow measurement). If OK, then replace the fuel pump electronics

Function restrictions

♦ Fuel pump stationary
♦ Speed limitation of the fuel pump
♦ Possibly torque restriction

Diagnosis information DME control module

P309600 Control unit faulty

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The evaluation IC reports "low supply voltage" (< 9.0 V)
- The evaluation IC reports a communication error

Monitored component or system

♦ Control unit: Evaluation IC for oxygen sensor

Fault finding notes

♦ Replace DME control unit

Function restrictions

♦ No detection of electrical faults on the signal lines possible, and lambda control is therefore no longer possible

Diagnosis information DME control module

P309700 Control unit faulty

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The evaluation IC reports "low supply voltage" (< 9.0 V)
- The evaluation IC reports a communication error

Monitored component or system

♦ Control unit: Evaluation IC for oxygen sensor

Fault finding notes

♦ Replace DME control unit

Function restrictions

♦ No detection of electrical faults on the signal lines possible, and lambda control is therefore no longer possible

P310B00

Diagnosis information DME control module

P310B00 Fuel low pressure control - fuel pressure out of tolerance

Diagnostic conditions

- With engine running
- Diagnostics runs continuously

Fault setting condition(s)

- The measured fuel low pressure deviates significantly from the setpoint pressure

Monitored component or system

♦ Fuel low pressure system

Fault finding notes

♦ Check fuel lines (tightness)
♦ Check fuel filter (soiled/clogged)
♦ Check pressure retaining valve
♦ Check pressure limiting valve
♦ Check activation of electric fuel pump (low pressure)
♦ Check low pressure sensor (in the high pressure pump)
♦ Check electric fuel pump (low pressure) (pressure, delivery quantity)

P325500

Diagnosis information DME control module

P325500 Bank 1 oxygen sensor ahead of catalytic converter, heating circuit - control at upper limit

Diagnostic conditions

- Dew point end reached
- Heater control active for 50.0 sec
- Heater control not active for 50.0 sec
- Exhaust gas temperature at the sensor > 299.991 °C (571.984 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- If the setpoint temperature of the sensor ceramic element (684.998 °C/1,264.996 °F) is not reached during control operation of the heater, the pulse/duty ratio converges to 100%. The fault is set if this state is present for 60.0 sec.

Monitored component or system

♦ Oxygen sensor heating ahead of catalytic converter

Fault finding notes

♦ Check of the heater resistance: Important: Oxygen sensor at room temperature (20-25 °C/68-77 °F)! Unplug the oxygen sensor and measure the resistance at the contacts on the plug between "heater contact (-)" and "heater (battery positive voltage)". R=2.4-4.0 Ohm. If the heater resistor is incorrect, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "heating (battery positive voltage)" and "K ground". U=10 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary
♦ Check of the lines "heater contact (-)" and "heating (battery positive voltage)" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P325600

Diagnosis information DME control module

P325500 Bank 1 oxygen sensor ahead of catalytic converter, heating circuit - control at upper limit

Diagnostic conditions

- Dew point end reached
- Heater control active for 50.0 sec
- Heater control not active for 50.0 sec
- Exhaust gas temperature at the sensor > 299.991 °C (571.984 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- If the setpoint temperature of the sensor ceramic element (684.998 °C/1,264.996 °F) is not reached during control operation of the heater, the pulse/duty ratio converges to 100%. The fault is set if this state is present for 60.0 sec.

Monitored component or system

♦ Oxygen sensor heating ahead of catalytic converter

Fault finding notes

♦ Check of the heater resistance: Important: Oxygen sensor at room temperature (20-25 °C/68-77 °F)! Unplug the oxygen sensor and measure the resistance at the contacts on the plug between "heater contact (-)" and "heater (battery positive voltage)". R=2.4-4.0 Ohm. If the heater resistor is incorrect, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "heating (battery positive voltage)" and "K ground". U=10 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary
♦ Check of the lines "heater contact (-)" and "heating (battery positive voltage)" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P325700

Diagnosis information DME control module

P325700 Bank 2 oxygen sensor ahead of catalytic converter, heating circuit - control at upper limit

Diagnostic conditions

- Dew point end reached
- Heater control active for 50.0 sec
- Heater control not active for 50.0 sec
- Exhaust gas temperature at the sensor > 299.991 °C (571.984 °F)
- Diagnostics runs continuously

Fault setting condition(s)

- If the setpoint temperature of the sensor ceramic element (684.998 °C/1,264.996 °F) is not reached during control operation of the heater, the pulse/duty ratio converges to 100%. The fault is set if this state is present for 60.0 sec.

Monitored component or system

♦ Oxygen sensor heater upstream of catalytic converter, bank 2

Fault finding notes

♦ Check of the heater resistance: Important: Oxygen sensor at room temperature (20-25 °C/68-77 °F)! Unplug the oxygen sensor and measure the resistance at the contacts on the plug between "heater contact (-)" and "heater (battery positive voltage)". R=2.4-4.0 Ohm. If the heater resistor is incorrect, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "heating (battery positive voltage)" and "K ground". U=10 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary
♦ Check of the lines "heater contact (-)" and "heating (battery positive voltage)" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P326600

Diagnosis information DME control module

P326600 Bank 1 sensor 1 - internal resistance implausible

Diagnostic conditions

● Only during the starting phase : Dew point end reached, heater control active, minimum off time > 180.0 sec, time after activation of heater control = 40.0 sec
● Diagnostics runs once per driving cycle

Fault setting condition(s)

● The ceramic element temperature is less than the minimum temperature (719.991 ° C/1,327.984)

Monitored component or system

♦ Oxygen sensor heating ahead of catalytic converter

Fault finding notes

♦ Check of the heater resistance: Important: Oxygen sensor at room temperature (20-25 °C/68-77 °F)! Unplug the oxygen sensor and measure the resistance at the contacts on the plug between "heater contact (-)" and "heater (battery positive voltage)". R=2.4-4.0 Ohm. If the heater resistor is incorrect, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "heating (battery positive voltage)" and "K ground". U=10 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary
♦ Check of the lines "heater contact (-)" and "heating (battery positive voltage)" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

P326700

Diagnosis information DME control module

P326700 Bank 2 sensor 1 - internal resistance implausible

Diagnostic conditions

● Only during the starting phase : Dew point end reached, heater control active, minimum off time > 180.0 sec, time after activation of heater control = 40.0 sec
● Diagnostics runs once per driving cycle

Fault setting condition(s)

● The ceramic element temperature is less than the minimum temperature (719.991 ° C/1,327.984)

Monitored component or system

♦ Oxygen sensor heater upstream of catalytic converter, bank 2

Fault finding notes

♦ Check of the heater resistance: Important: Oxygen sensor at room temperature (20-25 °C/68-77 °F)! Unplug the oxygen sensor and measure the resistance at the contacts on the plug between "heater contact (-)" and "heater (battery positive voltage)". R=2.4-4.0 Ohm. If the heater resistor is incorrect, the oxygen sensor is replaced
♦ Test of the power supply: Important: The ignition must be on for this purpose! Unplug the oxygen sensor and measure at the contacts on the coupling between "heating (battery positive voltage)" and "K ground". U=10 V. If there is no voltage, the line must be checked for open circuit and replaced if necessary
♦ Check of the lines "heater contact (-)" and "heating (battery positive voltage)" for open circuit and short circuits
♦ If open circuits or short circuits are present, the lines must be repaired
♦ If the fault occurs nevertheless, the DME control unit must be checked

Diagnosis information DME control module

U000100 Drive data bus faulty

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Bus-off monitoring; the fault entry is made after 250 ms continuous bus off

Monitored component or system

♦ CAN communication: Drive CAN

Fault finding notes

♦ Check electrical connections of the CAN line

Function restrictions

♦ Various restrictions possible: engine does not start, torque restriction, transmission limp-home mode

Diagnosis information DME control module

U000200 Drive data bus - no communication

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Timeout monitoring: no message receipt on drive CAN

Monitored component or system

♦ CAN communication: Drive CAN

Fault finding notes

♦ Check drive data bus

Function restrictions

♦ All messages sent on the drive CAN are no longer evaluated

U010100

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U011400

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U012100

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U012600

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U012800

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U013200

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U014000

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U014100

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U014600

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U015100

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U015500

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U015900

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U016400

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U016600

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U019900

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U020000

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U020100

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U020200

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U021200

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

U023500

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

Diagnosis information DME control module

U030200 Transmission control unit - check data record

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- DME control unit is coded for manual transmission, but nevertheless still receives transmission messages

Monitored component or system

♦ CAN communication: transmission messages

Fault finding notes

♦ This fault is entered if the DME control unit in an automatic vehicle is incorrectly coded for a manual transmission

Diagnosis information DME control module

U032300 Check fault memory content/coding of air conditioner control unit

Diagnostic conditions

- Ignition on

Monitored component or system

♦ CAN communication: ambient temperature

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

U041500 Check PSM control unit fault memory content

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- The fault is set if the brake pressure is invalid (CAN bit) and the fault identification of the brake pressure (CAN signal) is set at the same time. In other words, the fault is set if the signal quality of the brake pressure is "bad" and the transmitted brake pressure is "FFhex"
- Vehicle speed sensor value range test. The maximum fault is detected when the vehicle speed exceeds the maximum value. Diagnostics is not performed if there is a fault in the vehicle speed sensor (component or CAN signal not valid)
- Monitoring for stopped message counter: The same message count is received 5 times in sequence, the message counter received in the PSM message always includes the same value for an applicable number of messages (4)
- Monitoring of the data length code: An incorrect message length was detected 3 times; the received PSM message is shorter than the applied length (8)
- Monitoring of the checksum: Incorrect checksum received 3 times in sequence; the checksum received in the PSM message does not agree with the checksum calculated by the DME control unit for an applicable number of messages (3)
- Monitoring of the speed signal

Monitored component or system

- PSM control unit
- PSM speed signal
- CAN communication: PSM messages

Fault finding notes

- Check drive data bus and PSM control unit
- Read out PSM control unit fault memory

Function restrictions

- Start/stop is deactivated
- Adaptive cruise control (ACC)/cruise control is switched off
- Torque limitation

Diagnosis information DME control module

U041600 PSM control unit - implausible signal

Diagnostic conditions

- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- Brake booster vacuum value from PSM control unit: Message remains at the initialization value or sends fault value

Monitored component or system

♦ Pressure sensor for brake booster

Fault finding notes

♦ Read out PSM control unit fault memory.

Function restrictions

♦ Start/stop not available
♦ On vehicles with electrical vacuum pump, it is activated as long as the fault as present. The electrical vacuum pump could be damaged as a result

U041700

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042200

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042500

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042800

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U042900

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U043300

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U044700

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

U100300

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

Diagnosis information DME control module

Uxxxx00 Check XY control unit fault memory content

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Monitoring for stopped message counter: The same message count is received several times in sequence, the message counter received in the XY message always includes the same value for an applicable number of messages.
● Monitoring of the data length code: An incorrect message length was detected several times; the received XY message is shorter than the applied length
● Monitoring of the checksum: Incorrect checksum received several times in sequence; the checksum received in the XY message does not agree with the checksum calculated by the DME control unit for an applicable number of messages.
● Timeout monitoring: No message receipt. The identifier applied for the XY message is not received

Monitored component or system

♦ CAN communication with control unit message of the specified XY control unit

Fault finding notes

♦ Check XY control unit fault memory content

Function restrictions

♦ Control unit XY message is no longer evaluated

Diagnosis information DME control module

U100800 Check gateway control unit fault memory content

Diagnostic conditions

- Engine on
- Diagnostics runs continuously

Fault setting condition(s)

- Generator power plausibility check; the requested generator power is too high
- Generator load plausibility check; the generator load via CAN is maximum and in the invalid range

Monitored component or system

♦ Interface with front-end electronics control unit ♦ Front-end electronics control unit

Fault finding notes

♦ Poll front-end electronics control unit fault memory

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

Diagnosis information DME control module

U101000 heck parking brake control unit fault memory content

Diagnostic conditions

- Receipt of message from parking brake control unit

Fault setting condition(s)

- Clutch fault status of the parking brake message

Monitored component or system

♦ Clutch travel sensor

Fault finding notes

♦ Check via parking brake actual values and clutch travel sensor function
♦ Observe parking brake control unit fault memory entries

Diagnosis information DME control module

Uxxxx00 Communication with control unit XY

Diagnostic conditions

● Ignition on

Fault setting condition(s)

● Timeout monitoring: No message receipt of at least one of the CAN identifiers applied for the adaptive cruise control (ACC).

Monitored component or system

♦ CAN communication with the specified control unit

Fault finding notes

♦ Check DME control unit coding
♦ Check the power supply of the specified control unit
♦ Check CAN for the specified control unit
♦ Check specified control unit

Function restrictions

♦ All messages of the specified control unit are no longer evaluated.
♦ The specified control unit can no longer be addressed by all other control units

Diagnosis information DME control module

U101700 Check PSM control unit fault memory content

Diagnostic conditions

- Valid PSM message received
- Ignition on
- Diagnostics runs continuously

Fault setting condition(s)

- PSM control unit reports a sensor fault during brake pressure evaluation
- Transverse acceleration not available via CAN
- Monitoring of individual wheel speed signals

Monitored component or system

♦ PSM control unit
♦ Signal, wheel speeds

Fault finding notes

♦ Brake light switch faulty
♦ Check positioning of brake light switch
♦ Check drive data bus and PSM control unit

Function restrictions

♦ Rejection of adaptive cruise control (ACC) /cruise control

U101900

Diagnosis information DME control module

U101900 Check instrument cluster fault memory content

Diagnostic conditions

- Ignition on

Monitored component or system

♦ CAN communication: Oil level/oil temperature sender

Diagnosis information DME control module

U102500 Check air conditioner control unit fault memory content

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Monitoring of compressor load
- Monitoring of radiator fan signal

Monitored component or system

♦ Compressor load signal
♦ Radiator fan signal

Fault finding notes

♦ Check electrical connection between DME control unit and A/C compressor, or check the A/C compressor
♦ CAN fault: air conditioner control unit - radiator fan control unit

Function restrictions

♦ Air conditioner does not function
♦ Radiator fans run at 100%

Diagnosis information DME control module

U102600 Check transmiss. control unit fault memory content

Diagnostic conditions

- Receipt of transmission message
- CAN message active
- Diagnostics runs continuously

Fault setting condition(s)

- Clutch fault status of the transmission message
- Transmission continuously signals clutch sensor fault via CAN
- Fault value on "transfer function" signal received from transmission control unit

Monitored component or system

♦ Transmission control unit
♦ CAN clutch signal from transmission control unit
♦ CAN signal transfer function from transmission

Fault finding notes

♦ Check the transmission via actual values
♦ Observe fault memory entries from transmission
♦ If a fault value is received on the "transfer function" signal from the transmission control unit, then read out the transmission control unit fault memory

Function restrictions

♦ Automatic transmission vehicle cannot be started

Diagnosis information DME control module

U110300 Production mode active

Diagnostic conditions

- Diagnostics runs continuously

Fault setting condition(s)

- Production mode set

Monitored component or system

♦ Control unit

Fault finding notes

♦ Perform vehicle handover with Tester

Function restrictions

♦ MIL or warning message in instrument cluster "engine control fault" on
♦ Rpm limitation
♦ Speed limitation
♦ Torque limitation
♦ Suppression of catalytic converter heating

Diagnostic information - DME control unit

U110300 Transport mode active

Diagnostic conditions
- Diagnostics runs continuously

Fault setting condition(s)
- Transport mode set

Monitored component or system
- Control unit

Fault finding notes
- Perform vehicle handover using Tester

Functional restrictions
- MIL on and/or "Fault engine control" warning message in instrument cluster
- Engine speed limitation
- Speed limitation
- Torque limitation
- Suppression of catalytic converter heating

Diagnosis information DME control module

U111200 Function restriction due to implausible message

Diagnostic conditions

● If the DME control unit is coded for cruise control, the corresponding operating lever is installed and cruise control is selected, the diagnostic function is released from ignition on
● If the DME control unit is coded for adaptive cruise control (ACC), the adaptive cruise control (ACC) is in the ACTIVE or OVERRIDE state and the driver performs braking intervention, the diagnostic function is released from ignition on
● If the DME control unit is coded for adaptive cruise control (ACC) and no corresponding CAN faults occur, the diagnostic function is released from terminal 15 on.
● Diagnostics runs continuously from ignition on

Fault setting condition(s)

● The driver brakes and the adaptive cruise control (ACC) remains in the ACTIVE or OVERRIDE state
● The adaptive cruise control ACC/cruise control main switch is "OFF", but an adaptive cruise control (ACC) torque request continues to be sent
● Speed signals in the instrument cluster and the vehicle speed deviate from each other
● Signals of the cruise control operating lever received in the DME control unit indicate an implausible button combination

Monitored component or system

♦ Adaptive cruise control (ACC) control unit
♦ DME control unit
♦ Speed in instrument cluster
♦ Cruise control operating lever

Fault finding notes

♦ Check brake light switch information
♦ Check whether the adaptive cruise control (ACC) control unit receives the brake light switch information
♦ Check whether the adaptive cruise control (ACC) control unit properly receives the plausibility-checked main switch (CAN and component signal)
♦ Check speed signals in/to the instrument cluster
♦ Check measurement of the vehicle speed
♦ Check coding in the instrument cluster
♦ Contact product support
♦ Ensure unambiguous actuation of the cruise control operating lever buttons. Use actual value to check whether plausible button combinations are sent from the cruise control operating lever.

If one button is pressed and two buttons are measured, then update the control unit and then replace the operating unit if necessary. If two buttons are pressed and two buttons are measured, then perform a software setpoint/actual comparison. If the fault is still present or recurs or updating is not possible, then contact the product support department

Function restrictions

♦ No adaptive cruise control (ACC)/cruise control operation possible in the current ignition cycle

Diagnosis information DME control module

U111300 Function restriction due to received fault value

Diagnostic conditions

● If the DME control unit is coded for cruise control, the corresponding operating lever is installed and cruise control is selected, the diagnostic function is released from ignition on
● If a longitudinal acceleration sensor is installed in the vehicle

Fault setting condition(s)

● Instrument cluster sends fault value for speed signal
● Front-end electronics control unit or steering wheel electronics reports a fault of the cruise control operating lever
● Longitudinal acceleration sensor sends a fault value

Monitored component or system

♦ Instrument cluster (dashboard insert)
♦ Adaptive cruise control (ACC)/cruise control operating lever
♦ Longitudinal acceleration sensor

Fault finding notes

♦ Read out instrument cluster fault memory
♦ Function test of the cruise control operating lever
♦ Read out fault memory of the front end electronics and steering wheel electronics
♦ Read out fault memory of PSM or parking brake

Function restrictions

♦ No adaptive cruise control (ACC)/cruise control operation possible in the current ignition cycle
♦ No correct calculation of the road gradient

Diagnosis information DME control module

U140A00 DME control unit - terminal 30 open circuit

Diagnostic conditions

● Control unit run-on phase must be completely ended.

Fault setting condition(s)

● Monitoring of the power supply for the shutoff timer in the control unit via terminal 30 pin (continuous supply) during the de-energized state (main relay dropped out).

Monitored component or system

♦ Control unit: Voltage monitoring, terminal 30 pin (continuous supply)

Fault finding notes

♦ Check voltage at terminal 30 pin (fuse, line open circuit)

Function restrictions

♦ Shutoff time is invalid
♦ Locking of temperature sensor plausibility check during cold starting
♦ Restrictions in the maintenance interval calculation

Cayenne, MY 2015-

Diagnosis information - DME (DFI) V6T + V8

P000A..... 1
P000B..... 2
P000C..... 3
P000D..... 4
P0010..... 5
P0011..... 6
P0013..... 7
P0014..... 8
P0016..... 9
P0017..... 10
P0018..... 11
P0019..... 12
P0020..... 13
P0021..... 14
P0023..... 15
P0024..... 16
P0030..... 17
P0031..... 18
P0032..... 19
P0036..... 20
P0037..... 21
P0038..... 22
P0040..... 23
P0041..... 24
P0049..... 25
P0050..... 26
P0051..... 27
P0052..... 28
P0053..... 29
P0056..... 30
P0057..... 31
P0058..... 32
P0059..... 33
P0068..... 34
P0071..... 35
P0072..... 36
P0073..... 37
P0074..... 38
P0076..... 39

P0077 40
P0082 41
P0083 42
P0089 43
P008A 44
P008B 45
P0090 46
P0091 47
P0092 48
P0105 49
P0106 50
P0107 51
P0108 52
P0111 53
P0112 54
P0113 55
P0114 56
P0116 57
P0117 58
P0118 59
P0119 60
P0121 61
P0122 62
P0123 63
P0128 64
P0131 65
P0132 66
P0133 67
P0135 68
P0137 69
P0138 70
P013A 71
P013B 72
P013C 73
P013D 74
P013E 75
P013F 76
P0140 77
P0141 78

P014A..... 79
P014B..... 80
P0151..... 81
P0152..... 82
P0153..... 83
P0155..... 84
P0157..... 85
P0158..... 86
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P0171..... 89
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P0174..... 91
P0175..... 92
P0190..... 93
P0192..... 94
P0195..... 95
P0197..... 96
P0198..... 97
P0199..... 98
P0201..... 99
P0202..... 100
P0203..... 101
P0204..... 102
P0205..... 103
P0206..... 104
P0207..... 105
P0208..... 106
P0222..... 107
P0223..... 108
P0234..... 109
P0235..... 110
P0236..... 111
P0237..... 112
P0238..... 113
P0244..... 114
P0245..... 115
P0246..... 116
P025A..... 117

P025C..... 118
P025D..... 119
P0261..... 120
P0262..... 121
P0264..... 122
P0265..... 123
P0267..... 124
P0268..... 125
P0270..... 126
P0271..... 127
P0273..... 128
P0274..... 129
P0276..... 130
P0277..... 131
P0279..... 132
P0280..... 133
P0282..... 134
P0283..... 135
P0298..... 136
P0299..... 137
P02CC..... 138
P02CD..... 139
P02CE..... 140
P02CF..... 141
P02D0..... 142
P02D1..... 143
P02D2..... 144
P02D3..... 145
P02D4..... 146
P02D5..... 147
P02D6..... 148
P02D7..... 149
P02D8..... 150
P02D9..... 151
P02DA..... 152
P02DB..... 153
P02EE..... 154
P02EF..... 155
P02F0..... 156

P02F1 157
P02F2 158
P02F3 159
P02F4 160
P02F5 161
P0300 162
P0301 164
P0302 166
P0303 168
P0304 170
P0305 172
P0306 174
P0307 176
P0308 178
P0326 180
P0327 181
P032B 182
P032C 183
P0331 184
P0332 185
P0335 186
P0336 187
P033B 188
P033C 189
P0341 190
P0342 191
P0343 192
P0344 193
P0346 194
P0347 195
P0348 196
P0349 197
P0350 198
P0351 199
P0352 200
P0353 201
P0354 202
P0355 203
P0356 204

P0357 205
P0358 206
P0366 207
P0367 208
P0368 209
P0369 210
P0370 211
P0371 212
P0373 213
P0391 214
P0392 215
P0393 216
P0394 217
P0411 218
P0418 219
P0421 220
P0431 221
P0441 222
P0442 223
P0444 225
P0455 226
P0456 228
P0458 230
P0459 231
P0480 232
P0491 233
P0492 234
P0501 235
P0502 236
P0503 237
P0506 238
P0507 239
P050A 240
P050B 241
P050D 242
P0513 243
P0521 244
P0522 245
P0523 246

P0524..... 247
P052A..... 248
P052C..... 249
P053A..... 250
P053B..... 251
P053C..... 252
P053F..... 253
P054A..... 254
P054C..... 255
P0564..... 256
P0568..... 257
P0570..... 258
P0571..... 259
P0597..... 260
P0598..... 261
P0599..... 262
P059F..... 263
P05A0..... 264
P05A1..... 265
P05A2..... 266
P05A3..... 267
P05A4..... 268
P05A5..... 269
P05A8..... 270
P05C0..... 271
P0601..... 272
P0603..... 273
P0604..... 274
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P0607..... 277
P0611..... 278
P0615..... 279
P0616..... 280
P0617..... 281
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P0652..... 284
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P0658 286
P0659 287
P0685 288
P0686 292
P0687 293
P06E9 294
P0701 295
P0850 296
P0851 297
P0857 298
P1021 299
P1023 300
P1024 302
P1025 303
P1026 304
P1027 305
P1030 306
P1031 307
P1036 308
P1037 309
P1038 310
P1039 311
P1044 312
P1045 313
P1046 314
P1050 315
P1051 316
P1053 318
P1054 319
P1055 320
P1056 321
P1057 322
P1069 323
P1071 325
P1072 327
P1074 329
P1076 330
P1077 331
P1111 332

P1114 333
P1147 334
P1148 335
P1149 336
P1150 337
P1151 338
P1152 339
P1157 340
P1158 341
P115A 342
P115B 343
P115C 344
P115D 345
P1180 346
P1181 347
P1182 348
P1183 349
P1184 350
P1186 351
P1187 352
P1188 353
P1189 354
P1190 355
P119A 356
P119B 357
P119C 358
P119D 359
P119E 360
P119F 361
P11A0 362
P11A1 363
P11A2 364
P11A3 365
P11A4 366
P11A5 367
P11A6 368
P1280 369
P1281 370
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P1286..... 375
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P1324..... 379
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P1381..... 396
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P13A1..... 400
P13A2..... 402
P13EA..... 404
P1460..... 405
P1461..... 406
P1462..... 407
P1466..... 408
P1476..... 409
P14AB..... 410
P14AC..... 411
P1502..... 412
P1506..... 413
P1507..... 414

P1508 415
P1509 416
P1512 417
P1517 418
P1528 419
P1530 420
P1536 421
P1537 422
P1538 423
P1539 424
P1540 425
P1541 426
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P1543 428
P1544 429
P1546 430
P1547 431
P1548 432
P1549 433
P1550 434
P1552 435
P1556 436
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P1558 438
P1559 439
P1561 440
P1563 441
P1564 442
P1565 443
P1575 444
P1581 445
P1582 446
P1600 447
P1620 448
P1641 449
P1642 450
P1657 451
P1658 452
P1659 453

P1680 454
P1681 455
P1682 456
P168A 457
P168B 458
P168C 459
P1696 460
P1699 461
P2088 462
P2089 463
P2090 464
P2091 465
P2092 466
P2093 467
P2094 468
P2095 469
P2096 470
P2097 471
P2098 472
P2099 473
P2100 474
P2101 475
P2103 476
P2121 477
P2122 478
P2123 479
P2126 480
P2127 481
P2128 482
P2138 483
P2181 484
P2183 485
P2184 486
P2185 487
P2186 488
P2195 489
P2196 490
P2197 491
P2198 492

P219C..... 493
P219D..... 494
P219E..... 495
P219F..... 496
P21A0..... 497
P21A1..... 498
P2227..... 499
P2228..... 500
P2229..... 501
P2237..... 502
P2240..... 503
P2243..... 504
P2247..... 505
P2257..... 506
P2258..... 507
P2263..... 508
P2270..... 509
P2271..... 510
P2272..... 511
P2273..... 512
P2294..... 513
P2295..... 514
P2296..... 515
P2297..... 516
P2298..... 517
P2300..... 518
P2301..... 519
P2302..... 520
P2303..... 521
P2304..... 522
P2305..... 523
P2306..... 524
P2307..... 525
P2308..... 526
P2309..... 527
P230A..... 528
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P230C..... 530
P230D..... 531

P230E..... 532
P230F..... 533
P2310..... 534
P2311..... 535
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P2316..... 540
P2317..... 541
P2318..... 542
P2319..... 543
P2320..... 544
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P2323..... 547
P2400..... 548
P2401..... 549
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P3052 572
P3053 573
P3054 574
P3081 575
P3082 577
P3088 579
U0073 580
U0101 581
U0111 582
U0114 583
U0121 584
U0126 585
U0128 586
U0129 587
U0133 588
U0137 589
U0141 590
U0142 591
U0146 592
U0155 593
U0159 594
U0164 595
U0166 596
U0167 597
U0199 598
U0200 599
U0201 600
U0202 601
U0212 602
U0235 603
U0300 604
U0302 605
U0314 606
U0318 607
U0402 608
U0412 609
U0414 610
U0415 611

U0417 612
U0418 613
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U0423 615
U0424 616
U0425 617
U0428 618
U0429 619
U0431 620
U0433 621
U0434 622
U0438 623
U0443 624
U0447 625
U1017 626
U1103 627
U1104 628
U1113 629
U1122 630
U1123 631

P000A

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- **Engine oil temperature** -10 ... +120 °C (14 … 248 °F)
- **Engine speed** 1,200 ... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Intake camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on intake camshaft

or
- Intake camshaft adjustment slow

P000B

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature -10 ... +120 °C (14 … 248 °F)
- Engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0013, P0023, P2090, P2091, P2094, P2095

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Exhaust camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on exhaust camshaft

or
- Exhaust camshaft adjustment slow

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature -10 ... +120 °C (14 … 248 °F)
- Engine speed 1,200 .... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Intake camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on intake camshaft

or
- Intake camshaft adjustment slow

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature -10 ... +120 °C (14 … 248 °F)
- Engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0013, P0023, P2090, P2091, P2094, P2095

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Exhaust camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on exhaust camshaft

or
- Exhaust camshaft adjustment slow

P0010

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 1

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- **Engine oil temperature** -10 ... +120 °C (14 … 248 °F)
- **Engine speed** 1,200 ... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Intake camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on intake camshaft

or
- Intake camshaft adjustment slow

P0013

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature -10 ... +120 °C (14 … 248 °F)
- Engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0013, P0023, P2090, P2091, P2094, P2095

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Exhaust camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on exhaust camshaft

or
- Exhaust camshaft adjustment slow

P0016

Diagnostic information - DME (DFI) control unit

Crankshaft position in relation to bank 1 intake camshaft

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- Timing set incorrectly
- Timing chain stretched
- Camshaft adjustment faulty (locking)
- Hall sender rotor (camshaft) wrong or damaged
- Intake camshaft sensor wrong

Fault setting condition(s)
- Adaptation not within the valid value range

Diagnostic information - DME (DFI) control unit

Crankshaft position in relation to bank 1 exhaust camshaft

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- Timing set incorrectly
- Timing chain stretched
- Camshaft adjustment faulty (locking)
- Hall sender rotor (camshaft) wrong or damaged
- Exhaust camshaft sensor wrong

Fault setting condition(s)
Adaptation not within the valid value range

P0018

Diagnostic information - DME (DFI) control unit

Crankshaft position in relation to bank 2 intake camshaft

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- ♦ Timing set incorrectly
- ♦ Timing chain stretched
- ♦ Camshaft adjustment faulty (locking)
- ♦ Hall sender rotor (camshaft) wrong or damaged
- ♦ Intake camshaft sensor wrong

Fault setting condition(s)
- Adaptation not within the valid value range

Diagnostic information - DME (DFI) control unit

Crankshaft position in relation to bank 2 exhaust camshaft

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- Timing set incorrectly
- Timing chain stretched
- Camshaft adjustment faulty (locking)
- Hall sender rotor (camshaft) wrong or damaged
- Exhaust camshaft sensor wrong

Fault setting condition(s)
Adaptation not within the valid value range

P0020

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 2

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature -10 ... +120 °C (14 … 248 °F)
- Engine speed 1,200 .... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Intake camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on intake camshaft

or
- Intake camshaft adjustment slow

P0023

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature -10 ... +120 °C (14 … 248 °F)
- Engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0013, P0023, P2090, P2091, P2094, P2095

Possible fault causes
- ♦ Dynamic driving style when oil level is near minimum (oil foaming)
- ♦ Solenoid valve for hydraulic camshaft adjustment faulty
  ⇒ (e.g. mechanical fault or dirt (oil circuit))
- ♦ Engine oil pressure too low
  ⇒ (e.g. oil thinning, oil thickening, wrong oil quality, oil pressure control or oil pump faulty)
- ♦ Camshaft adjustment faulty
- ♦ Exhaust camshaft stuck

Fault setting condition(s)
- Actual value/setpoint deviation > 10° on exhaust camshaft

or
- Exhaust camshaft adjustment slow

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 1
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 1
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 1
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor(s) upstream of catalytic converter interchanged

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Lambda control active
- Driving with:
  - small valve lift (See Actual value A220)
  - large valve lift (See Actual value A220)

Possible fault causes

♦ Oxygen sensors upstream of catalytic converter bank 1 and bank 2 interchanged

Diagnostic information - DME (DFI) control unit

Oxygen sensor(s) downstream of catalytic converter interchanged

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Oxygen sensors downstream of catalytic converter bank 1 and bank 2 interchanged

Diagnostic information - DME (DFI) control unit

Turbocharger governor

Diagnostic conditions
- Full-load acceleration

Possible fault causes
- ♦ Ambient pressure too low (e.g. at high altitude)
- ♦ Boost pressure too high (P0234) at high altitude

Fault setting condition(s)
Turbocharger exceeds speed limits ⇒ approx. 170,000 ... 180,000 rpm (See ⓘ)

Fault effects
- ♦ Reduced engine torque
- ♦ Wastegate open

ⓘ INFORMATION
The turbocharger's speed is calculated from various input variables.

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 2
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 2
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Engine running > 10 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor upstream of catalytic converter, bank 2
faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Electrical fault in electric circuit (short circuit) for oxygen sensor heater

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater driver for oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 10 second(s)
- Oxygen sensor heater active

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line (power supply or activation)

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Electrical fault in electric circuit (short circuit) for oxygen sensor heater

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Mass air flow implausible

ⓘ INFORMATION

Totals fault

One or more additional faults are entered that more precisely indicate the operating ranges in which the fault occurred.

- Near idle speed range:
  - ♦ P1069 + P1070 + P1071 + P1072 + P1073
- Lower partial-load range :
  - ♦ P1074 + P1075
- Upper partial-load range :
  - ♦ P1076 + P1077

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN

Diagnostic conditions
- NO fault stored in the DME (DFI) control unit
- Driving > 80 km/h (49 mph) for > 15 minute(s)
- then driving > 1 minute(s) under the following conditions:
  - Coolant temperature 47 ... 108 °C (116 … 226 °F)
  - Engine speed 1,200 ... 4,000 rpm
  - Vehicle speed 40 ... 180 km/h (24 … 111 mph)

Possible fault causes
- ♦ Ambient temperature incorrect (sensor trimming incorrect/faulty)
- ♦ Intake air temperature incorrect (sensor trimming incorrect/faulty)
- Turbo only:
  - ♦ Charge-air cooler blocked, faulty, modified …

Fault setting condition(s)

ⓘ INFORMATION

The temperature model depends mainly on the measured intake air temperature.
- Deviation between ambient temperature via CAN and substitute value from model > 25 °C (77 °F)

Fault effects

♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
♦ Outside temperature sensor fault (See Fault memory for air-conditioning system regulator)

Fault setting condition(s)
Outside temperature sensor fault (See Fault memory for **air-conditioning system regulator**)

Fault effects
♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
♦ Outside temperature sensor fault (See Fault memory for air-conditioning system regulator)

Fault setting condition(s)
Outside temperature sensor fault (See Fault memory for **air-conditioning system regulator**)

Fault effects
♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
♦ Outside temperature sensor fault (See Fault memory for air-conditioning system regulator)

Fault setting condition(s)
Outside temperature sensor fault (See Fault memory for **air-conditioning system regulator**)

Fault effects
♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

P0076

Diagnostic information - DME (DFI) control unit

Valve lift control driver, bank 1

Diagnostic conditions
- Idle speed > 10 second(s)
- then increase engine speed until the large valve lift has been switched (See Actual value A220)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic valve lift control faulty

P0077

Diagnostic information - DME (DFI) control unit

Valve lift control driver, bank 1

Diagnostic conditions
- Idle speed > 10 second(s)
- then increase engine speed until the large valve lift has been switched (See Actual value A220)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic valve lift control faulty

P0082

Diagnostic information - DME (DFI) control unit

Valve lift control driver, bank 2

Diagnostic conditions
- Idle speed > 10 second(s)
- then increase engine speed until the large valve lift has been switched (See Actual value A220)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic valve lift control faulty

P0083

Diagnostic information - DME (DFI) control unit

Valve lift control driver, bank 2

Diagnostic conditions
- Idle speed > 10 second(s)
- then increase engine speed until the large valve lift has been switched (See Actual value A220)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line (activation)
- ♦ Short circuit to ground or open circuit in the lines (power supply)
- ♦ Fuse faulty
- ♦ Solenoid valve for hydraulic valve lift control faulty

P0089

Diagnostic information - DME (DFI) control unit

Fuel low pressure implausible

Diagnostic conditions
- Engine running > 2 second(s)
- Engine temperature 60 ... 110 °C (140 ... 230 °F)

Possible fault causes
- ♦ Fuel tank (driven) empty
  - ► See Extended fault memory
  - ⇒ Actual value **40-Fuel Level Input** [**0%**]
- ♦ Fuel filter clogged up
- ♦ Fuel line kinked/trapped
- ♦ Pressure relief valve in fuel delivery unit leaking
- ♦ Fuel delivery unit leaking
- ♦ Electric fuel pump faulty
- ♦ Fuel low-pressure sensor out of adjustment

Fault setting condition(s)
Setpoint-to-actual comparison of fuel pump control unit activation.
♦ If the actual fuel low-pressure value cannot follow the setpoint or cannot follow it quickly enough, a fault entry is made for a deviation of the actual fuel low-pressure value of:
- > 1,200 hPa below the setpoint for > 15 seconds

or
- > 2,400 hPa above the setpoint for > 15 seconds

P008A

Diagnostic information - DME (DFI) control unit

Fuel low-pressure system pressure too low

Diagnostic conditions
- Engine running > 2 second(s)

Possible fault causes
- ♦ Fuel tank (driven) empty
  - ► See Extended fault memory
  - ⇒ Actual value **40-Fuel Level Input** [**0%**]
- ♦ Fuel line detached
- ♦ Electric fuel pump faulty
- ♦ Fuel low-pressure sensor faulty

Fault setting condition(s)
Actual fuel low pressure value below 3,000 hPa minimum pressure for 0.7 seconds.

P008B

Diagnostic information - DME (DFI) control unit

Fuel low-pressure system pressure too high

Diagnostic conditions
- Engine running > 2 second(s)

Possible fault causes
- ♦ Fuel low-pressure sensor faulty
- ♦ Fuel high-pressure pump faulty (supplies high pressure to low-pressure side)

Fault setting condition(s)
Actual fuel low pressure value above 9,000 hPa maximum pressure for 0.7 seconds.
ⓘ The pressure relief valve in the fuel delivery unit opens at approx. 7,000 hPa.

P0090

Diagnostic information - DME (DFI) control unit

Bank 1 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 1 fuel high-pressure pump)

P0091

Diagnostic information - DME (DFI) control unit

Bank 1 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 1 fuel high-pressure pump)

P0092

Diagnostic information - DME (DFI) control unit

Bank 1 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 1 fuel high-pressure pump)

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor

ⓘ INFORMATION

Totals fault

♦ One or more additional faults are entered that more precisely indicate where to look for the fault cause.

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

- **ONLY** for '**40-Time after Start**' greater than **0** (see Extended fault memory):
  - ♦ Throttle valve adjusting unit soiled

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

- **Turbo only**
  - Only if fault P1638 or P1639 (boost pressure sensor) is entered at the same time:
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve leaking
- ♦ Wastegate leaking

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

- **Turbo only**
  - Only if fault P1638 or P1639 (boost pressure sensor) is entered at the same time:
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve leaking
- ♦ Wastegate leaking

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake air temperature implausible

Diagnostic conditions
- Vehicle has NOT been and is NOT standing in the sun.
- Engine off > 9 hour(s)
- Engine coolant temperature cooling > 35 °C (95 °F), with:
  - Engine off
- then cold start, at:
  - Coolant temperature < 37 °C (98.6 °F)
  - Difference between intake air temperature <=> engine coolant temperature < 6 °C (42.8 °F)
- then driving, with:
  - Engine running > 23 minute(s)
  - Distance driven > 7 km (4 mi.)
  - Engine coolant temperature up to > 94 °C (201 °F)

Possible fault causes
- ♦ Intake air temperature sensor faulty (in intake manifold pressure sensor)
- ♦ Resistor installed (instead of intake air temperature sensor)

Fault setting condition(s)
- Change in intake air temperature < 1.5 °C (34.7 °F), at:
  - Diagnostic conditions

Fault effects
- ♦ Substitute coolant temperature value

P0112

Diagnostic information - DME (DFI) control unit

Intake air temperature sensor: electrical fault

Diagnostic conditions
- Engine running > 2 minute(s)
- Mass air flow < 150 kg/h

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Intake air temperature sensor faulty

Fault effects
- ♦ Substitute value from model

P0113

Diagnostic information - DME (DFI) control unit

Intake air temperature sensor: electrical fault

Diagnostic conditions
- Engine running > 2 minute(s)
- Mass air flow < 150 kg/h

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Intake air temperature sensor faulty

Fault effects
- ♦ Substitute value from model

P0114

Diagnostic information - DME (DFI) control unit

Intake air temperature sensor: electrical fault

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Intake air temperature sensor faulty

Diagnostic information - DME (DFI) control unit

Engine coolant temperature implausibly high

Diagnostic conditions
- Thermal management system test (if available)

or
- Driving with:
  - Engine start temperature > 35 °C (95 °F)
  - Engine speed > 1,300 rpm
  - Vehicle speed > 40 km/h (24 mph)
  - Cooling performance high and low
- Then vehicle standstill, with:
  - Idle speed > 75 second(s)
- None of the following faults stored: P0117, P0118, P0119, P3081, P3082

Possible fault causes
- ♦ Engine coolant temperature sensor faulty
- ♦ Resistor installed (instead of coolant temperature sensor)

Fault setting condition(s)
- Change in engine coolant temperature < setpoint value (See ⓘ)

ⓘ INFORMATION
Change in setpoint value = depending on engine start temperature

Diagnostic information - DME (DFI) control unit

Engine coolant temperature sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Engine coolant temperature sensor faulty

Fault setting condition(s)
- Engine coolant temperature (measured) < -40 °C (-40 °F) (P0117), with:
  - Ignition on or engine running
  - and
  - Intake air temperature > -30 °C (-22 °F)
  - or
  - Engine running > 300 second(s)

or
- Engine coolant temperature (measured) > +130 °C (266 °F) (P0118), with:
  - Ignition on or engine running

Diagnostic information - DME (DFI) control unit

Engine coolant temperature sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Engine coolant temperature sensor faulty

Fault setting condition(s)
- Engine coolant temperature (measured) < -40 °C (-40 °F) (P0117), with:
  - Ignition on or engine running
  - and
  - Intake air temperature > -30 °C (-22 °F)
  - or
  - Engine running > 300 second(s)

or
- Engine coolant temperature (measured) > +130 °C (266 °F) (P0118), with:
  - Ignition on or engine running

Diagnostic information - DME (DFI) control unit

Engine coolant temperature sensor: loose contact

Diagnostic conditions
- Ignition on
- None of the following faults stored: P0117, P0118

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Engine coolant temperature sensor faulty

Fault setting condition(s)
- Engine coolant temperature: Actual-value jumps > 3 °C (37 °F)

Fault effects
- ♦ Substitute value = last actual value that was detected as OK, with:
  - Actual-value jumps > 9.75 °C (49.5 °F)

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer implausible

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 1 or 2
- ♦ Accelerator pedal potentiometer 1 or 2 faulty

Fault setting condition(s)
- The two potentiometer values differ too greatly from each other.
- It is not clear which value is incorrect.

Fault effects
- ♦ Engine does not respond to throttle, engine speed 1,000 rpm

P0122

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer 1

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 1
- ♦ Accelerator pedal potentiometer 1 faulty

Fault effects
- ♦ The accelerator pedal angle is calculated from the remaining potentiometer signal.
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm)
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P0123

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer 1

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 1
- ♦ Accelerator pedal potentiometer 1 faulty

Fault effects
- ♦ The accelerator pedal angle is calculated from the remaining potentiometer signal.
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm)
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P0128

Diagnostic information - DME (DFI) control unit

Thermostat stuck open

Diagnostic conditions
Preceding diagnostics:
- Driving > 10 minutes, with:
  - Engine start temperature (T072) -10 °C... +60 °C (+14 °F... +140 °C)
  - Ambient temperature (T050) > -10 °C (+14 °F)
  - Average vehicle speed (A100) > 35 ... 60 km/h (22 ... 37 mph)
    (depending on outside temperature > +60 °C ... < +20 °C/> +140 °F ... < +68 °F)
  - Vehicle speed max. 100 km/h (62 mph)
  - As few overrun phases as possible (< 100 second(s) in total)
  - Average mass air flow (H020) > 25 ... 35 kg/h
    (depending on outside temperature > +30 °C ... < -10 °C/> +86 °F ... < +14 °F)
  - With heating until engine coolant temperature > 80 °C/176 °F (T020)
- Preceding diagnostics ended without fault entry, then driving > 2 minutes at vehicle speed > 65 km/h (40 mph) and medium load

or
- System test of thermal management (if available)

Possible fault causes
- ♦ Influence by block heater
- ♦ 3/2-way valve faulty, with :
  - Original auxiliary heater
- ♦ Seal in thermostat housing faulty
- ♦ Thermostat housing faulty
- ♦ Thermostat faulty
- ♦ Engine coolant temperature sensor faulty or loose contact or corrosion on plugs or lines

Fault setting condition(s)
- Engine coolant temperature (T020) < 70 °C/158 °F for longer than 30 seconds

Fault effects
- ♦ Radiator shutter is opened
- ♦ Radiator shutter remains open until the fault has been healed or deleted from the fault memory
- ♦ Fault entry P2181 is also present

ⓘ INFORMATION
- ♦ This additional thermostat diagnostics starts only if the preceding thermostat diagnostics was ended without fault detection.
- ♦ It is required because, depending on the operating conditions, the radiator shutter can prevent reliable detection of a faulty thermostat.

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Idling > 3 second(s)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Idling > 3 second(s)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter bank 1, dynamic response

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Engine running > 2 minute(s) with:
  - Engine at operating temperature
  - All oxygen sensor(s) ready for operation
- then steady driving > 10 minute(s) at:
  - Engine speed < 800 ... 3,200 rpm
  - Mass air flow 120 … 520 mg/stroke
  - No overrun phase(s)

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Different air flow to oxygen sensor downstream of catalytic converter if:

  ♦ Catalytic converter is damaged

  ♦ Components modified or non-genuine components

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty (aged)

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater circuit upstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running, with:
  - **Oxygen sensor heater** downstream of catalytic converter active > 180 second(s)
  - Lambda control active
- None of the following faults stored: P0030, P0031, P0032

Possible fault causes

♦ Contact resistance (power supply or activation)

♦ Shunt (high resistance) in heater circuit ⇒ Signal line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

P013B

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Engine at operating temperature
  - Overrun phase(s)

Possible fault causes

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

P013E

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence

or

- Engine temperature > 60 °C (140 °F)
- Time since engine start > 10 second(s)
- Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
- Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
- Active carbon filter loading < 0.7
- Engine speed < 3,000 rpm
- Lambda control ahead of catalytic converter active
- Lambda control behind catalytic converter active
- None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

♦ Different air flow to oxygen sensor downstream of catalytic converter if:
  ♦ Catalytic converter is damaged
  ♦ Components modified or non-genuine components

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle.

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence

or

- Engine temperature > 60 °C (140 °F)
- Time since engine start > 10 second(s)
- Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
- Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
- Active carbon filter loading < 0.7
- Engine speed < 3,000 rpm
- Lambda control ahead of catalytic converter active
- Lambda control behind catalytic converter active
- None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

♦ Different air flow to oxygen sensor downstream of catalytic converter if:
  ♦ Catalytic converter is damaged
  ♦ Components modified or non-genuine components

Fault setting condition(s)

- Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle.

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater circuit downstream of catalytic converter, bank 1

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running, with:
  - **Oxygen sensor heater** downstream of catalytic converter active > 180 second(s)
  - Lambda control active
- None of the following faults stored: P0036, P0037, P0038

Possible fault causes

♦ Contact resistance (power supply or activation)

♦ Shunt (high resistance) in heater circuit ⇒ Signal line

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

P014A

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Perform all short tests in sequence

or

● Engine temperature > 60 °C (140 °F)
● Time since engine start > 10 second(s)
● Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
● Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
● Active carbon filter loading < 0.7
● Engine speed < 3,000 rpm
● Lambda control ahead of catalytic converter active
● Lambda control behind catalytic converter active
● None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

♦ Different air flow to oxygen sensor downstream of catalytic converter if:
  ♦ Catalytic converter is damaged
  ♦ Components modified or non-genuine components

Fault setting condition(s)

● Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle.

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Perform all short tests in sequence

or

● Engine temperature > 60 °C (140 °F)
● Time since engine start > 10 second(s)
● Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
● Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
● Active carbon filter loading < 0.7
● Engine speed < 3,000 rpm
● Lambda control ahead of catalytic converter active
● Lambda control behind catalytic converter active
● None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

♦ Different air flow to oxygen sensor downstream of catalytic converter if:
  ♦ Catalytic converter is damaged
  ♦ Components modified or non-genuine components

Fault setting condition(s)

● Excessive time offset during edge changes between the lean and rich cycle or between the rich and lean cycle.

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Idling > 3 second(s)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

● Idling > 3 second(s)

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter bank 2, dynamic response

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 2 minute(s) with:
  - Engine at operating temperature
  - All oxygen sensor(s) ready for operation
- then steady driving > 10 minute(s) at:
  - Engine speed < 800 ... 3,200 rpm
  - Mass air flow 120 … 520 mg/stroke
  - No overrun phase(s)

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Different air flow to oxygen sensor downstream of catalytic converter if:

♦ Catalytic converter is damaged

♦ Components modified or non-genuine components

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty (aged)

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater circuit upstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running, with:
  - **Oxygen sensor heater** downstream of catalytic converter active > 180 second(s)
  - Lambda control active
- None of the following faults stored: P0050, P0051, P0052

Possible fault causes

♦ Contact resistance (power supply or activation)

♦ Shunt (high resistance) in heater circuit ⇒ Signal line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 2 minute(s) with:
  - Engine at operating temperature
  - Mass air flow > 10 kg/h
- then idling > 30 second(s)

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

♦ Short circuit to B+/ground or open circuit in the line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor heater circuit downstream of catalytic converter, bank 2

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running, with:
  - **Oxygen sensor heater** downstream of catalytic converter active > 180 second(s)
  - Lambda control active
- None of the following faults stored: P0056, P0057, P0058

Possible fault causes

♦ Contact resistance (power supply or activation)

♦ Shunt (high resistance) in heater circuit ⇒ Signal line

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Diagnostic information - DME (DFI) control unit

Lambda control adaptation, bank 1: system too lean

Diagnostic conditions
- Short test

or:
- Lambda control active
- Lambda control adapted
- Engine temperature > 60 °C (140 °F)
- Intake air temperature < 80 °C (176 °F)
- Engine running > 45 second(s), at:
  - Engine speed < 800 rpm
- then drive with different operating conditions in the lower and upper load ranges with valve lift switchover from small lift to large lift (A220).

Possible fault causes
- ♦ Leak in exhaust system (engine ⇒ oxygen sensor upstream of catalytic converter)
- ♦ Exhaust system constricted/blocked
- ♦ Fuel injector faulty (mechanical fault)
- ♦ Timing set incorrectly
- ♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, Intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment

Fault setting condition(s)
The diagnostic function should indicate a deviation of more than 30% (3.5 mg/stroke in the range near idle) of the lambda control adaptation + 30% deviation of the lambda controller for longer than 30 seconds.
(positive deviation ⇒ enrichment)

ⓘ INFORMATION
Opposed adaptation values in connection with misfires indicate that the timing is out of adjustment.

Diagnostic information - DME (DFI) control unit

Lambda control adaptation, bank 1: system too rich

Diagnostic conditions
- Short test

or
- Lambda control active
- Lambda control adapted
- Engine temperature > 60 °C (140 °F)
- Intake air temperature < 80 °C (176 °F)
- Engine running > 45 second(s), at:
  - Engine speed < 800 rpm
- then drive with different operating conditions in the lower and upper load ranges with valve lift switchover from small lift to large lift (A220).

Possible fault causes
- ♦ High fuel content in engine oil.
- ♦ Leak in exhaust system (engine ⇒ oxygen sensor upstream of catalytic converter)
- ♦ Fuel injector faulty (mechanical fault)
- ♦ Timing set incorrectly
- ♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment

Fault setting condition(s)
The diagnostic function should indicate a deviation of more than 30% (3.5 mg/stroke in the range near idle) of the lambda control adaptation + 30% deviation of the lambda controller for longer than 30 seconds.
(negative deviation ⇒ leaning)

ⓘ INFORMATION
Opposed adaptation values in connection with misfires indicate that the timing is out of adjustment.

Diagnostic information - DME (DFI) control unit

Lambda control adaptation, bank 2: system too lean

Diagnostic conditions
- Short test

or
- Lambda control active
- Lambda control adapted
- Engine temperature > 60 °C (140 °F)
- Intake air temperature < 80 °C (176 °F)
- Engine running > 45 second(s), at:
  - Engine speed < 800 rpm
- then drive with different operating conditions in the lower and upper load ranges with valve lift switchover from small lift to large lift (A220).

Possible fault causes
- ♦ Leak in exhaust system (engine ⇒ oxygen sensor upstream of catalytic converter)
- ♦ Exhaust system constricted/blocked
- ♦ Fuel injector faulty (mechanical fault)
- ♦ Timing set incorrectly
- ♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment

Fault setting condition(s)
The diagnostic function should indicate a deviation of more than 30% (3.5 mg/stroke in the range near idle) of the lambda control adaptation + 30% deviation of the lambda controller for longer than 30 seconds.
(positive deviation ⇒ enrichment)

ⓘ INFORMATION
Opposed adaptation values in connection with misfires indicate that the timing is out of adjustment.

Diagnostic information - DME (DFI) control unit

Lambda control adaptation, bank 2: system too rich

Diagnostic conditions
- Short test

or
- Lambda control active
- Lambda control adapted
- Engine temperature > 60 °C (140 °F)
- Intake air temperature < 80 °C (176 °F)
- Engine running > 45 second(s), at:
  - Engine speed < 800 rpm
- then drive with different operating conditions in the lower and upper load ranges with valve lift switchover from small lift to large lift (A220).

Possible fault causes
- ♦ High fuel content in engine oil.
- ♦ Leak in exhaust system (engine ⇒ oxygen sensor upstream of catalytic converter)
- ♦ Fuel injector faulty (mechanical fault)
- ♦ Timing set incorrectly
- ♦ Fault in areas: fuel high pressure, intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment

Fault setting condition(s)
The diagnostic function should indicate a deviation of more than 30% (3.5 mg/stroke in the range near idle) of the lambda control adaptation + 30% deviation of the lambda controller for longer than 30 seconds.
(negative deviation ⇒ leaning)

ⓘ INFORMATION
Opposed adaptation values in connection with misfires indicate that the timing is out of adjustment.

P0190

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor

Diagnostic conditions
- Time since engine start > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Fuel high-pressure sensor faulty

P0192

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor

Diagnostic conditions
- Time since engine start > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Fuel high-pressure sensor faulty

P0195

Diagnostic information - DME (DFI) control unit

Oil temperature stuck (stuck low)

Diagnostic conditions
- Time since engine start > 10 second(s)
- Coolant temperature > 50 °C (122 °F) for > 60 second(s)
- None of the following faults stored: Coolant temperature or oil temperature sensor

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit between lines
- ♦ Oil cooler damaged or blocked
- ♦ Oil temperature sensor faulty

Fault setting condition(s)
- Oil temperature < -10 °C (14 °F), with:
  - Coolant temperature > 50 °C (122 °F) for > 60 second(s)

Diagnostic information - DME (DFI) control unit

Oil temperature sensor

Diagnostic conditions
- Time since engine start > 5 minute(s)
- Coolant temperature -15 ... 110 °C (5 … 230 °F)
- Oil temperature -39 ... 159 °C (-38 … 318 °F)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to ground or open circuit in the lines
- ♦ Oil temperature sensor faulty

Fault setting condition(s)

♦ **P0197:**
- Oil temperature (measured value) < -39 °C (-38 °F), with:
  - Engine running > 300 second(s)

or
- Ignition on or engine running

and
- Coolant temperature > -15 °C (5 °F)

♦ **P0198:**
- Oil temperature (measured value) > 159 °C (318 °F), with:
  - Ignition on or engine running

and
- Coolant temperature < 110 °C (230 °F)

Diagnostic information - DME (DFI) control unit

Oil temperature sensor

Diagnostic conditions
- Time since engine start > 5 minute(s)
- Coolant temperature -15 ... 110 °C (5 … 230 °F)
- Oil temperature -39 ... 159 °C (-38 … 318 °F)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to ground or open circuit in the lines
- ♦ Oil temperature sensor faulty

Fault setting condition(s)

♦ **P0197:**
- Oil temperature (measured value) < -39 °C (-38 °F), with:
  - Engine running > 300 second(s)

or
- Ignition on or engine running

and
- Coolant temperature > -15 °C (5 °F)

♦ **P0198:**
- Oil temperature (measured value) > 159 °C (318 °F), with:
  - Ignition on or engine running

and
- Coolant temperature < 110 °C (230 °F)

Diagnostic information - DME (DFI) control unit

Oil temperature sensor

Diagnostic conditions
- Time since engine start > 5 minute(s)
- Coolant temperature -15 ... 110 °C (5 … 230 °F)
- Oil temperature -39 ... 159 °C (-38 … 318 °F)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to ground or open circuit in the lines
- ♦ Oil temperature sensor faulty

Fault setting condition(s)

♦ **P0197:**
- Oil temperature (measured value) < -39 °C (-38 °F), with:
  - Engine running > 300 second(s)

or
- Ignition on or engine running

and
- Coolant temperature > -15 °C (5 °F)

♦ **P0198:**
- Oil temperature (measured value) > 159 °C (318 °F), with:
  - Ignition on or engine running

and
- Coolant temperature < 110 °C (230 °F)

P0201

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 1

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 1 fuel injector faulty

P0202

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 2

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 2 fuel injector faulty

P0203

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 3

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 3 fuel injector faulty

P0204

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 4

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 4 fuel injector faulty

P0205

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 5

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 5 fuel injector faulty

P0206

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 6

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 6 fuel injector faulty

P0207

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 7

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 7 fuel injector faulty

P0208

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 8

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 8 fuel injector faulty

P0222

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer 2

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 2
- ♦ Accelerator pedal potentiometer 2 faulty

Fault effects
- ♦ The accelerator pedal angle is calculated from the remaining potentiometer signal.
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm)
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer 2

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 2
- ♦ Accelerator pedal potentiometer 2 faulty

Fault effects
- ♦ The accelerator pedal angle is calculated from the remaining potentiometer signal.
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm)
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P0234

Diagnostic information - DME (DFI) control unit

Boost pressure control limit exceeded

Diagnostic conditions
- 3 full-load accelerations:
  - in 3rd gear (no gearshift)
  - Engine speed between 1,500 rpm and max. engine speed

Possible fault causes
- ♦ Insufficient vacuum supply due to leak in vacuum system or faulty vacuum pump (see ⓘ)
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve faulty (mechanical fault or leak)
- ♦ Wastegate faulty (mechanical fault or leak)

Fault setting condition(s)
- Boost pressure (measured) > setpoint value (depending on operating condition)
- Deviation of boost pressure (measured) with respect to ambient pressure too high > 2 second(s)

ⓘ INFORMATION
The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Boost pressure control cycle valve
  - ♦ Diverter solenoid valve
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

P0235

Diagnostic information - DME (DFI) control unit

Pressure sensor ahead of throttle valve

ⓘ INFORMATION

Totals fault

♦ One or more additional faults are entered that more precisely indicate where to look for the fault cause.

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve) implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Boost pressure sensor faulty

Fault effects
- Substitute value from model

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve): electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Ground supply faulty
- ♦ Boost pressure sensor faulty

- **Only if fault P0107 or P0108** (intake manifold pressure sensor) **is entered at the same time**:
  - ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
  - ♦ Boost pressure control cycle valve leaking
  - ♦ Wastegate leaking

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve): electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Ground supply faulty
- ♦ Boost pressure sensor faulty

- **Only if fault P0107 or P0108** (intake manifold pressure sensor) **is entered at the same time**:
  - ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
  - ♦ Boost pressure control cycle valve leaking
  - ♦ Wastegate leaking

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Boost pressure control cycle valve driver

Diagnostic conditions
- Engine running
- Boost pressure control cycle valve activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+ or open circuit in the lines (power supply or boost pressure control cycle valve activation)
- Boost pressure control cycle valve faulty

Fault effects
- Only basic boost pressure is built up

P0245

Diagnostic information - DME (DFI) control unit

Boost pressure control cycle valve driver

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- Short circuit to ground (boost pressure control cycle valve activation)

Fault effects
- Only basic boost pressure is built up

Diagnostic information - DME (DFI) control unit

Boost pressure control cycle valve driver

Diagnostic conditions
- Engine running
- Boost pressure control cycle valve activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+ or open circuit in the lines (power supply or boost pressure control cycle valve activation)
- Boost pressure control cycle valve faulty

Fault effects
- Only basic boost pressure is built up

P025A

Diagnostic information - DME (DFI) control unit

Fuel pump control unit: activation

Diagnostic conditions
- Engine start (electric fuel pump activated)

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Open circuit in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- Faulty power supply or ground supply for fuel pump control unit
- Fuel pump control unit faulty

P025C

Diagnostic information - DME (DFI) control unit

Fuel pump control unit: activation

Diagnostic conditions
- Engine start (electric fuel pump activated)

Possible fault causes
- Short circuit to B+ in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- Short circuit to ground in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- Fuel pump control unit faulty

Diagnostic information - DME (DFI) control unit

Fuel pump control unit: activation

Diagnostic conditions
- Engine start (electric fuel pump activated)

Possible fault causes
- Short circuit to B+ in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- Short circuit to ground in control line for DME (DFI) control unit ⇒ Fuel pump control unit
- Fuel pump control unit faulty

P0261

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 1

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 1 fuel injector faulty

P0262

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 1

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 1 fuel injector faulty

P0264

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 2

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 2 fuel injector faulty

P0265

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 2

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 2 fuel injector faulty

P0267

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 3

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 3 fuel injector faulty

P0268

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 3

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 3 fuel injector faulty

P0270

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 4

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 4 fuel injector faulty

P0271

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 4

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 4 fuel injector faulty

P0273

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 5

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 5 fuel injector faulty

P0274

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 5

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 5 fuel injector faulty

P0276

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 6

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 6 fuel injector faulty

P0277

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 6

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 6 fuel injector faulty

P0279

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 7

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 7 fuel injector faulty

P0280

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 7

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 7 fuel injector faulty

P0282

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 8

Diagnostic conditions
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Cylinder 8 fuel injector faulty

P0283

Diagnostic information - DME (DFI) control unit

Fuel injector, cylinder 8

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Cylinder 8 fuel injector faulty

P0298

Diagnostic information - DME (DFI) control unit

Oil temperature implausibly high

Diagnostic conditions
- Time since ignition off > 8 hours, then:
  - Drive > 25 km/h (16 mph) > 45 s within the first 6 minutes after engine start
  - NO drop in temperatures (e.g. due to drive from a garage into a cooler environment)

Possible fault causes
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Engine oil temperature sensor faulty

Fault setting condition(s)
- The temperature measured by the engine oil temperature sensor (T030) deviates too much from the mean value of the engine, engine oil, intake air and ambient air (T160) temperatures. (See ⓘ)

Fault effects
♦ Substitute value from model

ⓘ INFORMATION

Step 1
♦ When the engine is started after the ignition has been switched off for more than 8 hours, the engine coolant, engine oil, intake air and ambient air temperatures are compared with each other.
♦ They may deviate from the calculated mean value (T160) by only a certain amount (depending on the switch-off time).
♦ A suspected fault is set if the deviation is too large. However, the fault must still be confirmed in the second step.

Step 2
♦ Within the first six minutes after ignition on, a check is performed to determine whether the following conditions were met:
- Drive > 25 km/h (16 mph) for longer than 45 seconds in total
- None of the four temperatures decreased too much (e.g. due to drive from a garage into a cooler environment)

♦ If all conditions were met, the fault is entered in the fault memory.
♦ If one of the conditions was NOT met, the diagnostic result is rejected and NO fault is entered in the fault memory.
♦ If the vehicle is NOT driven within 6 minutes after starting and the aforementioned conditions are met, the suspected fault is rejected and NO fault is entered in the fault memory.

P0299

Diagnostic information - DME (DFI) control unit

Boost pressure control deviation

Diagnostic conditions
- 3 full-load accelerations:
  - in 3rd gear (no gearshift)
  - Engine speed between 1,500 rpm and max. engine speed
- then steady driving

Possible fault causes
- ♦ Insufficient vacuum supply due to leak in vacuum system or faulty vacuum pump (see ⓘ)
- ♦ Leak between turbocharger (on pressure side) and intake valve (engine)
- ♦ Leak between diverter solenoid valve and turbocharger or engine
- ♦ Vacuum hose leaking at boost pressure control cycle valve or diverter solenoid valve
- ♦ Diverter solenoid valve not installed or installed incorrectly
- ♦ Diverter solenoid valve leaking or stuck
- ♦ Diverter valve not installed or installed incorrectly
- ♦ Diverter valve leaking or stuck
- ♦ Boost pressure control cycle valve stuck open electrically or mechanically
- ♦ Wastegate mechanical fault, leaking or stuck open
- ♦ Turbocharger (1 or 2) stiff or stuck

Fault setting condition(s)
- Boost pressure (measured) < setpoint value (depending on operating condition)

ⓘ INFORMATION

The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Boost pressure control cycle valve
  - ♦ Diverter solenoid valve
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Cylinder 1 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 1 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 1 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 1 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 2 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 2 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 2 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 2 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D0

Diagnostic information - DME (DFI) control unit

Cylinder 3 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 3 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D1

Diagnostic information - DME (DFI) control unit

Cylinder 3 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 3 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D2

Diagnostic information - DME (DFI) control unit

Cylinder 4 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 4 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D3

Diagnostic information - DME (DFI) control unit

Cylinder 4 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 4 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D4

Diagnostic information - DME (DFI) control unit

Cylinder 5 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 5 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D5

Diagnostic information - DME (DFI) control unit

Cylinder 5 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 5 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D6

Diagnostic information - DME (DFI) control unit

Cylinder 6 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 6 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D7

Diagnostic information - DME (DFI) control unit

Cylinder 6 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 6 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D8

Diagnostic information - DME (DFI) control unit

Cylinder 7 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 7 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02D9

Diagnostic information - DME (DFI) control unit

Cylinder 7 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 7 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 8 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 8 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 8 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 8 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 1 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 1 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 2 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 2 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 3 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 3 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 4 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 4 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Cylinder 5 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 5 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02F3

Diagnostic information - DME (DFI) control unit

Cylinder 6 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 6 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02F4

Diagnostic information - DME (DFI) control unit

Cylinder 7 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 7 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

P02F5

Diagnostic information - DME (DFI) control unit

Cylinder 8 injection quantity adaptation

Diagnostic conditions
● Engine running

Possible fault causes
♦ Cylinder 8 fuel injector faulty

Fault setting condition(s)
● Adaptation limits reached - 40% in ballistic range, 20% in full-stroke range - for longer than 2 ... 20 seconds (depending on engine speed).
OR
● The closing time cannot be calculated because the injector does not send a clear signal.

ⓘ INFORMATION
♦ Very small fuel injection quantities are relevant in catalytic converter heating, as well as in warm-up at high fuel pressures and triple injection.
♦ Operation of the fuel injector in the range of very small quantities is possible only if injection no longer takes place in the full-stroke range, but instead in the ballistic range. In other words, the injector needle does not open all the way to the stop (full stroke), but instead closes again during the ballistic phase.
♦ In order to ensure a correct injection quantity, the closing time of the fuel injector is adapted. Adaptation is active throughout the operating range, i.e. also during full-stroke operation.
♦ The diagnostic function monitors these closing times.

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0301

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0302

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0305

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0306

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

P0308

Diagnostic information - DME (DFI) control unit

Misfiring

Diagnostic conditions
- Engine temperature > -20 °C (-4 °F)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes
♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s) (see ⓘ)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

ⓘ INFORMATION

♦ It is possible that only one cylinder (or the cylinders of one bank) has/have exceeded the uneven running threshold for a fault entry.
♦ Other cylinders may be just below the level which would result in a fault entry.
♦ See Actual values M005 ... M080 (Uneven running)

Diagnostic information - DME (DFI) control unit

Knock sensor 1

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Knock sensor 1 loose
- Knock sensor 1 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal does not change sufficiently, depending on the engine speed and load, and possibly also if it is too quiet (noise is less dynamic than expected).

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 1

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Knock sensor 1 loose or stuck
- Knock sensor 1 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal is too weak (noise is >quieter< than expected), depending on the engine speed and load.

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 3

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Knock sensor 3 loose
- Knock sensor 3 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal does not change sufficiently, depending on the engine speed and load, and possibly also if it is too quiet (noise is less dynamic than expected).

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 3

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Knock sensor 3 loose or stuck
- Knock sensor 3 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal is too weak (noise is >quieter< than expected), depending on the engine speed and load.

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 2

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Knock sensor 2 loose
- Knock sensor 2 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal does not change sufficiently, depending on the engine speed and load, and possibly also if it is too quiet (noise is less dynamic than expected).

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 2

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Knock sensor 2 loose or stuck
- Knock sensor 2 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal is too weak (noise is >quieter< than expected), depending on the engine speed and load.

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

P0335

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine running
- PDK only:
  - then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Phase sensor wheel faulty (damaged/bent)
- Crankshaft sensor not installed or installed incorrectly
- Crankshaft sensor faulty

Fault setting condition(s)
- Signal not OK (missing or implausible)

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine start
- then driving with overrun phase(s)
- PDK only:
  - then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- Starter battery flat at low ambient temperature
- Loose contact or corrosion on connectors or lines
- Phase sensor wheel faulty (damaged/bent)
- Crankshaft sensor loose
- Crankshaft sensor not installed or installed incorrectly
- Crankshaft sensor faulty

Fault setting condition(s)
- The crankshaft sensor detects too many or not enough tooth flanks on the sensor wheel:
  - Engine start
  - Engine running
  - Overrun phase(s)

Diagnostic information - DME (DFI) control unit

Knock sensor 4

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Knock sensor 4 loose
- Knock sensor 4 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal does not change sufficiently, depending on the engine speed and load, and possibly also if it is too quiet (noise is less dynamic than expected).

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

Diagnostic information - DME (DFI) control unit

Knock sensor 4

Diagnostic conditions
- Short test

or
- Engine running, with:
  - Time since engine start > 10 second(s)
  - Engine temperature > 50 °C (122 °F)
  - Engine speed > 1,000 rpm
  - Different load ranges

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Knock sensor 4 loose or stuck
- Knock sensor 4 faulty
- Engine oil filling level significantly too high

Fault setting condition(s)
The fault is detected if the knock sensor signal is too weak (noise is >quieter< than expected), depending on the engine speed and load.

Fault effects
- If the fault is stored, the ignition timing is retarded for all cylinders affecting this knock sensor in the >knock control active< range.
- Knock control adaptation is idle.

P0341

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0344

P0342

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0344

P0343

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0344

P0344

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0344

P0346

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0349

P0347

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0349

P0348

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0349

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 intake camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0349

Diagnostic information - DME (DFI) control unit

Power supply, bar ignition module

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Fuse faulty
♦ Short circuit to ground or open circuit in the lines (power supply)

Fault setting condition(s)
The fault is detected only if there is no voltage present at ALL bar ignition modules at contact 3.

P0351

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 1

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 1 faulty

P0352

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 2

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 2 faulty

P0353

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 3

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 3 faulty

P0354

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 4

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 4 faulty

P0355

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 5

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 5 faulty

P0356

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 6

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 6 faulty

P0357

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 7

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 7 faulty

P0358

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 8

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 8 faulty

P0366

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0369

P0367

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0369

P0368

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0369

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 1 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ only for P0369

P0370

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine start
- then driving with overrun phase(s)
- then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- ♦ Crankshaft sensor faulty

Fault setting condition(s)
- Implausible direction of rotation signal

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine running
- PDK only:
  - then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Phase sensor wheel faulty (damaged/bent)
- Crankshaft sensor not installed or installed incorrectly
- Crankshaft sensor faulty

Fault setting condition(s)
- Signal not OK (missing or implausible)

Diagnostic information - DME (DFI) control unit

Crankshaft sensor

Diagnostic conditions
- Engine start
- then driving with overrun phase(s)
- PDK only:
  - then automatic engine stop and restart by the Start/Stop system

Possible fault causes
- Starter battery flat at low ambient temperature
- Loose contact or corrosion on connectors or lines
- Phase sensor wheel faulty (damaged/bent)
- Crankshaft sensor loose
- Crankshaft sensor not installed or installed incorrectly
- Crankshaft sensor faulty

Fault setting condition(s)
- The crankshaft sensor detects too many or not enough tooth flanks on the sensor wheel:
  - Engine start
  - Engine running
  - Overrun phase(s)

P0391

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ Only for P0394

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ Only for P0394

P0393

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ Only for P0394

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft sensor

Diagnostic conditions
- Engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Bank 2 exhaust camshaft sensor faulty
- ♦ Camshaft adjustment faulty (locking) ⇒ Only for P0394

Diagnostic information - DME (DFI) control unit

Secondary-air system, bank 1 and bank 2

Diagnostic conditions
- Perform all short tests from top to bottom, up to and including secondary air.

or
- The diagnostic function starts under the following conditions:
  - Engine running, with:
    - Ambient temperature > 5 °C (41 °F)
    - Engine start temperature 5 ... 40 °C (41 … 90 °F)
    - Secondary-air injection active
  - None of the following faults stored: Oxygen sensor upstream of catalytic converter, engine coolant temperature sensor, camshaft adjustment, ambient pressure, ambient temperature
- Diagnostics is interrupted for as long as the following conditions exist:
  - Engine speed > 3,500 rpm
  - Mass air flow > 750 mg/stroke
  - Overrun phase(s)

ⓘ INFORMATION
♦ The diagnostic function ends with the end of secondary-air injection.
♦ A certain number of measurements must have taken place within diagnostics, between operational readiness of the oxygen sensors and the end of secondary-air injection.
♦ If this is not the case, diagnostics is ended without a result.

Possible fault causes
♦ Air intake duct (secondary pump) constricted/blocked
♦ Short circuit to B+/ground or open circuit in the secondary-air pump relay line (working current circuit)
♦ Secondary-air pump relay faulty
♦ Leak in secondary-air injection lines
♦ Secondary-air valve stuck/frozen
♦ Air intake duct (engine) constricted/coked
♦ Fuel/air mixture preparation not adapted
♦ Secondary air at oxygen sensor upstream of catalytic converter
♦ Catalytic converter faulty (broken)

Fault setting condition(s)
- Actual value <> setpoint lambda control deviation
  - The diagnostic function checks whether deviation of the lambda controllers is as expected upon activation.

P0418

Diagnostic information - DME (DFI) control unit

Secondary-air pump relay driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in lines for secondary-air pump relay activation
- Secondary-air pump relay faulty

Diagnostic information - DME (DFI) control unit

Primary catalytic converter, bank 1 - inadequate effect

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

Diagnostic conditions

- Perform the following short tests in sequence:
  1. All oxygen sensor short tests
  2. Tank vent valve short test
  3. Partial-load fuel supply short test
  4. Idle fuel supply short test
  5. Catalytic converter conversion short test

or:

- Engine temperature > 60 °C (140 °F)
- Time since engine start > 10 second(s)
- Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
- Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 ... 80 mph)
- Active carbon filter loading < 0.7
- Engine speed < 3,000 rpm
- Secondary-air injection not active (EU5 only)
- Lambda control ahead of catalytic converter active
- Lambda control behind catalytic converter active
- None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

- If an oxygen sensor fault is entered:
  - ♦ corresponding fault cause
    - ► Correct oxygen sensor fault according to instructions
      - ► then perform short test as described above

♦ Leak in exhaust system between engine and oxygen sensor downstream of catalytic converter
  ⇒ particularly with mass air flow < 400 mg/stroke
♦ Oxygen sensor upstream and downstream of catalytic converter bank 1 interchanged
♦ Oxygen sensor upstream of catalytic converter bank 1 and bank 2 interchanged
♦ Oxygen sensor downstream of catalytic converter bank 1 and bank 2 interchanged
♦ Catalytic converter bank 1 faulty

P0431

Diagnostic information - DME (DFI) control unit

Primary catalytic converter, bank 2 - inadequate effect

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

Diagnostic conditions

- Perform the following short tests in sequence:
  1. All oxygen sensor short tests
  2. Tank vent valve short test
  3. Partial-load fuel supply short test
  4. Idle fuel supply short test
  5. Catalytic converter conversion short test

or:

- Engine temperature > 60 °C (140 °F)
- Time since engine start > 10 second(s)
- Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
- Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
- Active carbon filter loading < 0.7
- Engine speed < 3,000 rpm
- Secondary-air injection not active (EU5 only)
- Lambda control ahead of catalytic converter active
- Lambda control behind catalytic converter active
- None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes

- If an oxygen sensor fault is entered:
  - ♦ corresponding fault cause
    - ► Correct oxygen sensor fault according to instructions
      - ► then perform short test as described above

♦ Leak in exhaust system between engine and oxygen sensor downstream of catalytic converter

⇒ particularly with mass air flow < 400 mg/stroke

♦ Oxygen sensor upstream and downstream of catalytic converter bank 2 interchanged

♦ Oxygen sensor upstream of catalytic converter bank 1 and bank 2 interchanged

♦ Oxygen sensor downstream of catalytic converter bank 1 and bank 2 interchanged

♦ Catalytic converter bank 2 faulty

P0441

Diagnostic information - DME (DFI) control unit

Tank vent system
- **NOT** V6 Turbo

Diagnostic conditions
- Perform tank vent valve short test and tank leak short test

or
- Time since engine start > 2 minute(s)
- Idling > 15 second(s)
- Engine temperature > 40 °C (104 °F)
- Ambient temperature > 4 °C (39 °F)
- Ambient pressure > 730 hPa (= location below approx. 2,400 ... 2,700 m/7,874 ... 8,858 ft.) (A060)
- Vehicle speed = 0 km/h (0 mph)
- Selector-lever position P or N, or no gear engaged
- Steering wheel in center position
- Air conditioning switched off
- All loads switched off
- All oxygen sensor(s) ready for operation
- None of the following faults stored: Oxygen sensor(s), tank vent valve output stage

Possible fault causes
- ♦ Tank vent valve faulty (stuck open or closed)
- ♦ Tank vent valve not installed or installed incorrectly
- ♦ Line between active carbon filter and tank vent valve leaking/trapped/blocked
- ♦ Purge-air line between tank vent valve and intake manifold leaking/trapped/blocked

Diagnostic information - DME (DFI) control unit

Tank system - leak

Diagnostic conditions
- Perform tank leak short test

or:
- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 40 °C (41 … 104 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 7 ... 120 km/h (5 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes
- ♦ Tank cap loose/does not close (properly)
- ♦ Tank cap leaking/faulty
- ♦ Vacuum system leaking (See ⓘ 1)
- ♦ Vacuum pump faulty
- ♦ Tank vent valve (TEV) mechanically faulty (does not close (properly))
- ♦ Leakage diagnosis pump - fresh-air side constricted (dust/dirt)
- ♦ Internal (diaphragm) or external leak in leakage diagnosis pump
- ♦ Fuel tank system (with hoses) leaking

Fault setting condition(s)
- Total leakage in fuel tank system (See ⓘ 2):
  - ♦ Diameter approx. 0.5 - 1 mm - micro leak P0456
  - ♦ Diameter approx. 1 - 2 mm - minor leak P0442
  - ♦ Diameter > 2 mm - major leak P0455

ⓘ INFORMATION

1. The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Variable intake manifold (not Turbo)
  - ♦ Boost pressure control cycle valve (Turbo only)
  - ♦ Diverter solenoid valve (Turbo only)
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

2. There may be several small leaks, which correspond in total to the leak determined here.

P0444

Diagnostic information - DME (DFI) control unit

Tank vent valve driver

Diagnostic conditions
- Perform tank vent valve short test

or:
- Time since engine start > 10 second(s)
- Tank vent valve activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+ or open circuit in the lines (power supply or tank vent valve activation)
- Tank vent valve faulty

Diagnostic information - DME (DFI) control unit

Tank system - leak

Diagnostic conditions
- Perform tank leak short test

or:
- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 40 °C (41 … 104 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 7 ... 120 km/h (5 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes
- ♦ Tank cap loose/does not close (properly)
- ♦ Tank cap leaking/faulty
- ♦ Vacuum system leaking (See ⓘ 1)
- ♦ Vacuum pump faulty
- ♦ Tank vent valve (TEV) mechanically faulty (does not close (properly))
- ♦ Leakage diagnosis pump - fresh-air side constricted (dust/dirt)
- ♦ Internal (diaphragm) or external leak in leakage diagnosis pump
- ♦ Fuel tank system (with hoses) leaking

Fault setting condition(s)
- Total leakage in fuel tank system (See ⓘ 2):
  - ♦ Diameter approx. 0.5 - 1 mm - micro leak P0456
  - ♦ Diameter approx. 1 - 2 mm - minor leak P0442
  - ♦ Diameter > 2 mm - major leak P0455

ⓘ INFORMATION

1. The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Variable intake manifold (not Turbo)
  - ♦ Boost pressure control cycle valve (Turbo only)
  - ♦ Diverter solenoid valve (Turbo only)
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

2. There may be several small leaks, which correspond in total to the leak determined here.

Diagnostic information - DME (DFI) control unit

Tank system - leak

Diagnostic conditions
- Perform tank leak short test

or:
- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 40 °C (41 … 104 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 7 ... 120 km/h (5 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes
- ♦ Tank cap loose/does not close (properly)
- ♦ Tank cap leaking/faulty
- ♦ Vacuum system leaking (See ⓘ 1)
- ♦ Vacuum pump faulty
- ♦ Tank vent valve (TEV) mechanically faulty (does not close (properly))
- ♦ Leakage diagnosis pump - fresh-air side constricted (dust/dirt)
- ♦ Internal (diaphragm) or external leak in leakage diagnosis pump
- ♦ Fuel tank system (with hoses) leaking

Fault setting condition(s)
- Total leakage in fuel tank system (See ⓘ 2):
  - ♦ Diameter approx. 0.5 - 1 mm - micro leak P0456
  - ♦ Diameter approx. 1 - 2 mm - minor leak P0442
  - ♦ Diameter > 2 mm - major leak P0455

ⓘ INFORMATION

1. The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Variable intake manifold (not Turbo)
  - ♦ Boost pressure control cycle valve (Turbo only)
  - ♦ Diverter solenoid valve (Turbo only)
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

2. There may be several small leaks, which correspond in total to the leak determined here.

P0458

Diagnostic information - DME (DFI) control unit

Tank vent valve driver: below limit value

Diagnostic conditions
- Perform tank vent valve short test

or:
- Time since engine start > 10 second(s)
- Leakage diagnosis pump not activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground (tank vent valve activation)
- Tank vent valve faulty

P0459

Diagnostic information - DME (DFI) control unit

Tank vent valve driver

Diagnostic conditions
- Perform tank vent valve short test

or:
- Time since engine start > 10 second(s)
- Tank vent valve activated

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+ or open circuit in the lines (power supply or tank vent valve activation)
- Tank vent valve faulty

P0480

Diagnostic information - DME (DFI) control unit

Radiator fan control unit driver

⚠WARNING

Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!

♦ **ALWAYS** keep hair or clothing out of the rotating range of the fan.
♦ DO NOT reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE

Sensitive electronics!
Risk of irreparable damage to electronic components!

♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.

Diagnostic conditions

● Ignition on

Possible fault causes

♦ Short circuit to ground or open circuit in lines (power supply to radiator fan control unit terminal 30)
♦ Short circuit to B+/ground or open circuit in the line (radiator fan control unit activation)
♦ Radiator fan control unit faulty

Diagnostic information - DME (DFI) control unit

Bank 1 secondary-air system

Diagnostic conditions

- Perform all short tests from top to bottom, up to and including secondary air.

or

- The diagnostic function starts under the following conditions:
  - Engine running, with:
    - Ambient temperature > 5 °C (41 °F)
    - Engine start temperature 5 ... 32 °C (41 … 90 °F)
    - Secondary-air injection active
  - None of the following faults stored: Oxygen sensor upstream of catalytic converter, engine coolant temperature sensor, camshaft adjustment, ambient pressure, ambient temperature
- The diagnostic function ends under the following conditions:
  - Oxygen sensor upstream of catalytic converter not ready for operation
  - Total time period (diagnostics) exceeded (depending on: engine start temperature)
- Diagnostics is interrupted for as long as the following conditions exist:
  - Engine speed > 3,500 rpm
  - Mass air flow > 750 mg/stroke
  - Overrun phase(s)

ⓘ INFORMATION

♦ The diagnostic function ends with the end of secondary-air injection.
♦ A certain number of measurements must have taken place within diagnostics, between operational readiness of the oxygen sensors and the end of secondary-air injection.
♦ If this is not the case, diagnostics is ended without a result.

Possible fault causes

♦ Catalytic converter faulty (broken)
♦ Leak in secondary-air injection line
♦ Bank 1 secondary-air valve stuck/frozen
♦ Air intake duct (engine) constricted/coked
♦ Fuel/air mixture preparation not adapted

Fault setting condition(s)

- Actual value <> setpoint lambda control deviation
  - The diagnostic function checks whether deviation of the lambda controllers is as expected upon activation.

Diagnostic information - DME (DFI) control unit

Bank 2 secondary-air system

Diagnostic conditions

- Perform all short tests from top to bottom, up to and including secondary air.

or

- The diagnostic function starts under the following conditions:
  - Engine running, with:
    - Ambient temperature > 5 °C (41 °F)
    - Engine start temperature 5 ... 32 °C (41 ... 90 °F)
    - Secondary-air injection active
  - None of the following faults stored: oxygen sensor ahead of catalytic converter, engine coolant temperature sensor, camshaft adjustment, ambient pressure, ambient temperature
- The diagnostic function ends under the following conditions:
  - Oxygen sensor ahead of catalytic converter not ready for operation
  - Total time period (diagnostics) exceeded (depending on: engine start temperature)
- Diagnostics is interrupted for as long as the following conditions exist:
  - Engine speed > 3,500 rpm
  - Mass air flow > 750 mg/stroke
  - Overrun phase(s)

ⓘ INFORMATION

♦ The diagnostic function ends with the end of secondary-air injection.
♦ A certain number of measurements must have taken place within diagnostics, between operational readiness of the oxygen sensors and the end of secondary-air injection.
♦ If this is not the case, diagnostics is ended without a result.

Possible fault causes

♦ Catalytic converter faulty (broken)
♦ Leak in secondary-air injection line
♦ Bank 2 secondary-air valve stuck/frozen
♦ Air intake duct (engine) constricted/coked
♦ Fuel-air mixture preparation not adapted

Fault setting condition(s)

- Actual value <> setpoint lambda control deviation
  - The diagnostic function checks whether deviation of the lambda controllers is as expected upon activation.

P0501

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving with:
  - Brake pedal not pressed
- None of the following faults stored: U0129, P0503

Possible fault causes
- ♦ Fault in PSM area

Fault setting condition(s)
- Delay implausible, too long (measured value), with:
  - Brake pedal not pressed

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving with:
  - Engine temperature > 30 °C (86 °F)
  - Overrun phase(s) > 1.5 second(s)
  - Engine speed 1.408 .... 3,000 rpm
- None of the following faults stored: U0129, P0503

Possible fault causes
♦ Fault in PSM area

Fault setting condition(s)
- Vehicle speed < 3 km/h or 1 mph (measured value), with:
  - Diagnostic conditions

P0503

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving
- None of the following faults stored: U0129

Possible fault causes
- Fault in PSM area

Fault setting condition(s)
- Vehicle speed > 350 km/h or 218 mph (measured value)

Diagnostic information - DME (DFI) control unit

Idle speed control at stop, lower limit value

Diagnostic conditions
- Engine temperature > 60 °C (140 °F)
- Idling > 20 second(s)
- Vehicle standstill
- Engine without load (A/C system off, steering straight ahead)
- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  ⇒ See actual value A060-Ambient pressure from DME (measured)
- None of the following functions active: Tank ventilation, Secondary air injection
- None of the following faults stored: Speed, throttle potentiometer, engine temperature, intake air temperature, tank vent valve, tank ventilation system

Possible fault causes
- Fuel quality insufficient
- Air cleaner blocked/frozen
- Air guide ahead of throttle valve blocked
- Ancillary units sluggish
- Exhaust system blocked

Fault setting condition(s)
Idle speed deviation > 20 second(s)

Diagnostic information - DME (DFI) control unit

Idle speed control at stop, upper limit value

Diagnostic conditions
- Engine temperature > 60 °C (140 °F)
- Idling > 20 second(s)
- Vehicle standstill
- Engine without load (A/C system off, steering straight ahead)
- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  ⇒ See actual value A060-Ambient pressure from DME (measured)
- None of the following functions active: Tank ventilation, Secondary air injection
- None of the following faults stored: Speed, throttle potentiometer, engine temperature, intake air temperature, tank vent valve, tank ventilation system

Possible fault causes
- ♦ Intake manifold leaking
- ♦ Positive crankcase ventilation leaking
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
Idle speed deviation > 20 second(s)

P050A

Diagnostic information - DME (DFI) control unit

Idle speed control after cold start at stop, upper limit value

Diagnostic conditions
- Engine temperature -10 °C (14 °F)
- Cold start (catalytic converter heating measure)
- Idling > 20 second(s)
- Vehicle standstill
- Engine without load (A/C system off, steering straight ahead)
- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  ⇒ See actual value A060-Ambient pressure from DME (measured)
- None of the following functions active: Tank ventilation, Secondary air injection
- None of the following faults stored: Speed, throttle potentiometer, engine temperature, intake air temperature, tank vent valve, tank ventilation system

Possible fault causes
- ♦ Intake manifold leaking
- ♦ Positive crankcase ventilation leaking
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
- Idle speed deviation > 20 second(s) during cold start

P050B

Diagnostic information - DME (DFI) control unit

Ignition timing angle after cold start

Diagnostic conditions
- Cold start
- then driving

Possible fault causes
ⓘ This fault entry is used for information purposes only; the actual cause of the fault is in another area.
♦ Significant engine running problems force the engine control system to leave the permitted ignition timing range in order to keep the engine running.

P050D

Diagnostic information - DME (DFI) control unit

Idle speed control after cold start at stop, lower limit value

Diagnostic conditions
- Engine temperature -10 °C (14 °F)
- Cold start (catalytic converter heating measure)
- Idling > 20 second(s)
- Vehicle standstill
- Engine without load (A/C system off, steering straight ahead)
- Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
  ⇒ See actual value A060-Ambient pressure from DME (measured)
- None of the following functions active: Tank ventilation, Secondary air injection
- None of the following faults stored: Speed, throttle potentiometer, engine temperature, intake air temperature, tank vent valve, tank ventilation system

Possible fault causes
- Fuel quality insufficient
- Air cleaner blocked/frozen
- Air guide ahead of throttle valve blocked
- Ancillary units sluggish
- Exhaust system blocked

Fault setting condition(s)
Idle speed deviation > 20 second(s) during cold start

P0513

Diagnostic information - DME (DFI) control unit

Immobilizer code incorrect from front-end electronics

Diagnostic conditions
- Ignition on

Possible fault causes
- Immobilizer code incorrect from front-end electronics

Fault effects
- Engine cannot be started

Diagnostic information - DME (DFI) control unit

Oil pressure sensor

Diagnostic conditions
- Idling > 1 minute(s), then:
- Engine speed > 3,010 rpm, then:
- Switch off ignition and remove ignition key > 1 minute(s)

Possible fault causes
- Engine oil pressure too low
  (oil level, oil thinning, dirt in oil circuit, oil circuit faulty)
- Oil pressure sensor faulty (incorrect trimming compared with ambient pressure sensor)

Fault setting condition(s)
- Engine oil pressure > 6.2 bar at engine speed < 1,000 rpm

or
- Engine oil pressure < 1.5 bar at engine speed > 3,008 rpm

or
- Deviation between engine oil pressure and ambient pressure > 0.4 bar in control unit run-on (after ignition off)

Diagnostic information - DME (DFI) control unit

Oil pressure sensor

Diagnostic conditions
- Engine start detected

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Oil pressure sensor faulty

P0523

Diagnostic information - DME (DFI) control unit

Oil pressure sensor

Diagnostic conditions
- Engine start detected

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Oil pressure sensor faulty

Diagnostic information - DME (DFI) control unit

Engine oil pressure too low

ⓘ INFORMATION
Technical Information 29/10 (in repair group 1703) must be observed in case of vehicles that have been stationary for an extended period (> 150 days).

Diagnostic conditions
- Engine running
- None of the following faults stored: P0521, P0522, P0523

Possible fault causes
♦ Engine oil pressure too low (oil level, oil thinning, dirt in oil circuit, oil circuit faulty)

Fault setting condition(s)
- Engine oil pressure < setpoint value for longer than 3 second(s)

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment, bank 1 after cold start
- **during catalytic converter heating measure**

ⓘ INFORMATION
If only the fault for camshaft adjustment after cold start is entered, particular attention should be paid to causes such as viscous engine oil or components that stick when cold.

ⓘ INFORMATION
♦ The catalytic converter heating measures take place for a limited time under certain conditions (cold start).
♦ These include dual injection, timing retardation, additional camshaft adjustment, ...

Diagnostic conditions
- Cold start with catalytic converter heating measure
- then engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
♦ Engine oil pressure too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or oil pump sluggish/stuck)
♦ Solenoid valve for hydraulic camshaft adjustment sluggish/stuck
♦ Camshaft adjustment sluggish/stuck
♦ Intake camshaft sluggish/stuck

Fault setting condition(s)
- Intake camshaft actual value/setpoint value deviation too high

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment, bank 2 after cold start
- **during catalytic converter heating measure**

ⓘ INFORMATION
If only the fault for camshaft adjustment after cold start is entered, particular attention should be paid to causes such as viscous engine oil or components that stick when cold.

ⓘ INFORMATION
♦ The catalytic converter heating measures take place for a limited time under certain conditions (cold start).
♦ These include dual injection, timing retardation, additional camshaft adjustment, ...

Diagnostic conditions
- Cold start with catalytic converter heating measure
- then engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0010, P0020, P2088, P2089, P2092, P2093

Possible fault causes
♦ Engine oil pressure too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or oil pump sluggish/stuck)
♦ Solenoid valve for hydraulic camshaft adjustment sluggish/stuck
♦ Camshaft adjustment sluggish/stuck
♦ Intake camshaft sluggish/stuck

Fault setting condition(s)
- Intake camshaft actual value/setpoint value deviation too high

P053A

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

P053B

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

Diagnostic information - DME (DFI) control unit

Fuel high pressure after cold start

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

ⓘ INFORMATION

♦ The catalytic converter heating measures take place for a limited time under certain conditions after the engine is started.
♦ These include dual injection, timing retardation, additional camshaft adjustment, ...

Diagnostic conditions
- Engine start (cold start + catalytic converter heating measure)
- Engine temperature > -10 °C (14 °F)
- Engine running > 5 second(s)

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Quantity control valve faulty (in fuel high-pressure pump)
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
Fuel high pressure deviation > 20% (actual value - setpoint value) during catalytic converter heating measure.

P054A

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment after cold start
- **during catalytic converter heating measure**

ⓘ INFORMATION
If only the fault for camshaft adjustment after cold start is entered, particular attention should be paid to causes such as viscous engine oil or components that stick when cold.

ⓘ INFORMATION
♦ The catalytic converter heating measures take place for a limited time under certain conditions after the engine is started.
♦ These include dual injection, timing retardation, additional camshaft adjustment, ...

Diagnostic conditions
- Cold start with catalytic converter heating measure
- then engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0013, P0023, P2090, P2091, P2094, P2095

Possible fault causes
♦ Engine oil pressure too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or oil pump sluggish/stuck)
♦ Solenoid valve for hydraulic camshaft adjustment sluggish/stuck
♦ Camshaft adjustment sluggish/stuck
♦ Exhaust camshaft sluggish/stuck

Fault setting condition(s)
- Exhaust camshaft actual value/setpoint value deviation too high

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment after cold start
- **during catalytic converter heating measure**

ⓘ INFORMATION
If only the fault for camshaft adjustment after cold start is entered, particular attention should be paid to causes such as viscous engine oil or components that stick when cold.

ⓘ INFORMATION
♦ The catalytic converter heating measures take place for a limited time under certain conditions after the engine is started.
♦ These include dual injection, timing retardation, additional camshaft adjustment, ...

Diagnostic conditions
- Cold start with catalytic converter heating measure
- then engine speed 1,200 ... 6,000 rpm
- None of the following faults stored: P0013, P0023, P2090, P2091, P2094, P2095

Possible fault causes
♦ Engine oil pressure too low
⇒ (e.g. oil thickening, wrong oil quality, oil pressure control or oil pump sluggish/stuck)
♦ Solenoid valve for hydraulic camshaft adjustment sluggish/stuck
♦ Camshaft adjustment sluggish/stuck
♦ Exhaust camshaft sluggish/stuck

Fault setting condition(s)
Exhaust camshaft actual value/setpoint value deviation too high

P0564

Diagnostic information - DME (DFI) control unit

Cruise control operating stalk

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Fault in steering wheel electronics area

Fault effects
♦ Cruise control does not work

P0568

Diagnostic information - DME (DFI) control unit

Cruise control operating stalk

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Fault in steering wheel electronics area

Fault effects
♦ Cruise control does not work

P0570

Diagnostic information - DME (DFI) control unit

Cruise control operating stalk

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Fault in steering wheel electronics area

Fault effects
♦ Cruise control does not work

P0571

Diagnostic information - DME (DFI) control unit

Brake light switch

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Fault in PSM control unit area

Fault setting condition(s)
- Brake light switch position implausible

P0597

Diagnostic information - DME (DFI) control unit

Thermostat driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Thermostat faulty

P0598

Diagnostic information - DME (DFI) control unit

Thermostat driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Thermostat faulty

P0599

Diagnostic information - DME (DFI) control unit

Thermostat driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Thermostat faulty

Diagnostic information - DME (DFI) control unit

Radiator shutter: servo motor turns freely

Diagnostic conditions
- Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- Radiator shutter was turned manually while the ignition was off
- Vanes broken

Fault setting conditions
- No increased current draw when the learned limit stops are reached

Fault effects
- New initialization
- When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

Diagnostic information - DME (DFI) control unit

Radiator shutter mechanically blocked

Diagnostic conditions
● Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
♦ Actuator iced up
♦ Foreign object stuck between the vanes
♦ Servo motor faulty

Fault setting conditions
● Increased current draw during movement

Fault effects
♦ New initialization
♦ When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

Diagnostic information - DME (DFI) control unit

Radiator shutter: perform adaptation

Diagnostic conditions
- Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- ♦ Preceding repair
- ♦ The DME control unit was reprogrammed previously
- ♦ Shutter or drive faulty

Fault setting conditions
- Initialization failed

Fault effects
- ♦ New initialization
- ♦ When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

Diagnostic information - DME (DFI) control unit

Radiator shutter: signal implausible or missing

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Implausible request from DME control unit, e.g. during reprogramming
- ♦ Servo motor signal line ◄► Open circuit in DME control unit
- ♦ Servo motor power supply or ground supply faulty
- ♦ Servo motor faulty

Fault setting conditions
- No signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the shutter as far as possible

P05A3

Diagnostic information - DME control unit

Radiator shutter, implausible state

Diagnostic conditions
- Initialization ⇒ Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- ♦ Actuator was replaced, but not yet adapted
- ♦ Actuator must be re-initialized
- ♦ Actuator faulty if adaptation and initialization were not successful

Fault setting conditions
- No ground clocking from servo motor (life detection)

P05A4

Diagnostic information - DME (DFI) control unit

Radiator louver: short circuit in the signal line

Diagnostic conditions
- Ignition on

Possible fault causes
- Servo motor signal line ◄► Short circuit to B+ or ground in DME control unit
- Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the louver as far as possible

P05A5

Diagnostic information - DME (DFI) control unit

Radiator louver: short circuit in the signal line

Diagnostic conditions
- Ignition on

Possible fault causes
- Servo motor signal line ◄► Short circuit to B+ or ground in DME control unit
- Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the louver as far as possible

P05A8

Diagnostic information - DME (DFI) control unit

Radiator shutter: current draw too high

Diagnostic conditions
- Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
- Servo motor faulty

Fault setting conditions
- Current draw too high

Fault effects
- Radiator shutter switched off

Diagnostic information - DME (DFI) control unit

Radiator shutter: servo motor overtemperature

Diagnostic conditions
● Allow the radiator shutter to move to both learned limit stops (e.g. via drive link)

Possible fault causes
♦ Ambient temperature too high
♦ Servo motor overloaded
♦ Servo motor faulty

Fault setting conditions
● Temperature in servo motor too high

Fault effects
♦ New initialization
♦ When the fault is active, the DME control unit sends the OPEN request to the radiator shutter servo motor

P0601

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P0603

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P0604

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P0605

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P0606

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Faults that lead to limp-home mode (See ⓘ)
- ♦ DME (DFI) control unit software error
  ► Re-programming (See ⓘ)

ⓘ INFORMATION
- ♦ When a serious fault is detected in the engine control system (control unit or parts such as the throttle valve, etc.), the control unit switches to a limp-home program and simultaneously stores a corresponding fault. The >Reduced engine power< warning message is displayed in the instrument cluster.
- ♦ This fault might not be detected again immediately away after a restart.
- ♦ Fault P0607 is therefore stored as well, and the control unit already switches to the limp-home program during the restart.
- ♦ If one or more **other faults** are entered in addition to fault P0607:
  - ♦ First correct the other faults,
  - ♦ then clear the fault memory and meet the diagnostic conditions (see above).
- ♦ If **only** fault P0607 is stored, there is an error in the software (DME (DFI) control unit).

P0611

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

Diagnostic information - DME (DFI) control unit

Starter relay 1 activation: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Open circuit in activation line between DME control unit and starter relay 1
- ♦ Short circuit to ground in activation line between DME control unit and starter relay 1
- ♦ Short circuit to B+ in activation line between DME control unit and starter relay 1
- ♦ Starter relay 1 faulty

Fault effects
- In case of short circuit to ground in activation line:
  - ♦ none
- In case of all other fault sources:
  - ♦ Engine cannot be started

Diagnostic information - DME (DFI) control unit

Starter relay 1 activation: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Open circuit in activation line between DME control unit and starter relay 1
- ♦ Short circuit to ground in activation line between DME control unit and starter relay 1
- ♦ Short circuit to B+ in activation line between DME control unit and starter relay 1
- ♦ Starter relay 1 faulty

Fault effects
- In case of short circuit to ground in activation line:
  - ♦ none
- In case of all other fault sources:
  - ♦ Engine cannot be started

Diagnostic information - DME (DFI) control unit

Starter relay 1 activation: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Open circuit in activation line between DME control unit and starter relay 1
- ♦ Short circuit to ground in activation line between DME control unit and starter relay 1
- ♦ Short circuit to B+ in activation line between DME control unit and starter relay 1
- ♦ Starter relay 1 faulty

Fault effects
- In case of short circuit to ground in activation line:
  - ♦ none
- In case of all other fault sources:
  - ♦ Engine cannot be started

P0642

Diagnostic information - DME (DFI) control unit

Sensor voltage 1

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- Short circuit to B+/ground or open circuit in the line
- Pedal sensor faulty
- Oil pressure sensor faulty
- Fuel high-pressure sensor faulty
- Boost pressure sensor faulty, with:
  - Turbocharger
- Clutch rpm sensor faulty , with:
  - Manual transmission

Fault setting condition(s)
- Deviation in sensor voltage:
  - < 4.7 V (P0642)

  or
  - > 5.3 V (P0643)

at:
- Connector [A], contact 40

  or
- Connector [A], contact 42

  or
- Connector [B], contact 18

P0643

Diagnostic information - DME (DFI) control unit

Sensor voltage 1

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- Short circuit to B+/ground or open circuit in the line
- Pedal sensor faulty
- Oil pressure sensor faulty
- Fuel high-pressure sensor faulty
- Boost pressure sensor faulty, with:
  - Turbocharger
- Clutch rpm sensor faulty , with:
  - Manual transmission

Fault setting condition(s)
- Deviation in sensor voltage:
  - < 4.7 V (P0642)

  or
  - > 5.3 V (P0643)

at:
  - Connector [A], contact 40

  or
  - Connector [A], contact 42

  or
  - Connector [B], contact 18

Diagnostic information - DME (DFI) control unit

Sensor voltage 2

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground or open circuit in the line
- ♦ Pedal sensor faulty
- ♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
- Deviation in sensor voltage:
  - ♦ < 4.7 V (P0652)

  or
  - ♦ > 5.3 V (P0653)

at:
- ♦ Connector [A], contact 53

  or
- ♦ Connector [B], contact 62

Diagnostic information - DME (DFI) control unit

Sensor voltage 2

Diagnostic conditions
- Ignition on > 10 second(s)

Possible fault causes
- Short circuit to B+/ground or open circuit in the line
- Pedal sensor faulty
- Throttle valve adjusting unit faulty

Fault setting condition(s)
- Deviation in sensor voltage:
  - < 4.7 V (P0652)

  or
  - > 5.3 V (P0653)

at:
  - Connector [A], contact 53

  or
  - Connector [B], contact 62

Diagnostic information - DME (DFI) control unit

Power supply, terminal 15 or 87

Diagnostic conditions
- Ignition on

or
- Engine running

Possible fault causes
- Vehicle electrical system supply voltage too high (e.g. jump-lead starting)
- Vehicle electrical system supply voltage too low
- Contact resistance, loose contact or corrosion on connectors or lines (DME (DFI) control unit)

Fault setting condition(s)
- Deviation of supply voltage at terminal 15 or 87:
  - < 10 V (P0658/P2531)

  or
  - > 16 V (P0659/P2532)

at:
- DME (DFI) control unit - connector [A], contact 34 ⇒ Terminal 15
- DME (DFI) control unit - connector [A], contact 3/5/6 ⇒ Terminal 87

Diagnostic information - DME (DFI) control unit

Power supply, terminal 15 or 87

Diagnostic conditions
- Ignition on

or
- Engine running

Possible fault causes
- Vehicle electrical system supply voltage too high (e.g. jump-lead starting)
- Vehicle electrical system supply voltage too low
- Contact resistance, loose contact or corrosion on connectors or lines (DME (DFI) control unit)

Fault setting condition(s)
- Deviation of supply voltage at terminal 15 or 87:
  - < 10 V (P0658/P2531)

  or
  - > 16 V (P0659/P2532)

at:
- DME (DFI) control unit - connector [A], contact 34 ⇒ Terminal 15
- DME (DFI) control unit - connector [A], contact 3/5/6 ⇒ Terminal 87

Diagnostic information - DME (DFI) control unit

Start delay due to undervoltage

Diagnostic conditions
- DME (DFI) control unit is viable (voltage > 5 V at A34 (terminal15) + ground)
- Ignition is switched on (voltage present at A34)

Possible fault causes
- If the actual value >A010-DME SUPPLY VOLTAGE< in the FreezeFrame of the fault entry P0685 was stored at **<** 8.0 V:
  - ♦ Voltage is too low or voltage will drop when the engine starts (see ⓘ).

- If the actual value >A010-DME SUPPLY VOLTAGE< in the FreezeFrame of the fault entry P0685 was stored at **>** 8.0 V:
  - ♦ Open circuit in power supply for main-relay control circuit
  - ♦ Short circuit to ground or open circuit in the lines between main relay and DME (DFI) control unit (DME (DFI) control unit power supply)
  - ♦ Short circuit to B+ or open circuit in the lines between DME (DFI) control unit and main relay (main relay activation)
  - ♦ Main relay faulty

Fault setting condition(s)
- A check is carried out once to determine whether the voltage at A3/A5/A6 has exceeded a minimum value:
  - ♦ Panamera
    > 6.0 V
  - ♦ Cayenne with program version up to WS5880
    > 6.0 V
  - ♦ Cayenne with program version WS5890 or higher (week 45/10)
    > 5.0 V
- Test duration 0.0 to approx. 0.5 seconds after ignition on, or after control unit reset.

Fault effects
♦ Fuel injection is blocked.

ⓘ INFORMATION
♦ According to specifications, the DME main relay must work only at 8.0 V or higher.
♦ There are also relays that work at a significantly lower voltage.
♦ The entire engine control system can work at 5.0 V or higher.
♦ If the start voltage drops, this can cause the diagnosis to detect the fault >START DELAY DUE TO UNDERVOLTAGE< and fuel injection will be blocked.
♦ The starter relay can also pick up at 3 V.
♦ This means that the starter might still turn, but the engine cannot start.
♦ The various software versions can result in various types of behavior and displays:

I. Possible behavior and displays in the Panamera and Cayenne with program version up to WS5880:

- Start voltage < 5 V:
  - Starter might turn
  - Engine does not start
  - NO DME fault entries because the DME (DFI) control unit is not viable.

- Start voltage < 5 V, but > 5 V … < 6 V before and after the start attempt
 + DME main relay does NOT work:
  - Starter might turn
  - Engine does not start
  - DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  - NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.
  - DME fault entry P1572 because the control unit voltage dropped to < 5 V and as a result, control unit run-on could not be completed.

- Start voltage < 5 V, but > 5 V … < 6 V before and after the start attempt
 + DME main relay is working:
  - Starter might turn
  - Engine does not start
  - DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< > 5 V … < 6 V
  - NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.
  - DME fault entry P1572 because the control unit voltage dropped to < 5 V and as a result, control unit run-on could not be completed.

- Start voltage > 5 V … < 6 V
 + DME main relay does NOT work:
  - Starter might turn
  - Engine does not start
  - DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  - NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.

- Start voltage > 5 V … < 6 V
 + DME main relay is working:
  - Starter turns
  - Engine does not start
  - DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< > 5 V … < 6 V
  - NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.

- Start voltage > 6V … < 8 V

+ DME main relay does NOT work:
  ♦ Starter turns
  ♦ Engine does not start
  ♦ DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  ♦ NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.

- Start voltage > 6V
+ DME main relay is working:
  ♦ Starter turns
  ♦ Engine starts
  ♦ NO DME fault entries

- Start voltage > 8 V
+ DME main relay does NOT work:
  ♦ Starter turns
  ♦ Engine does not start
  ♦ DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  ♦ DME fault entry P0686 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V

II. Behavior and displays in the E2 with WS5890 or higher:

- Start voltage < 5 V:
  ♦ Starter might turn
  ♦ Engine does not start
  ♦ NO DME fault entries because the DME (DFI) control unit is not viable.

- Start voltage > 5 V … < 8 V
+ DME main relay does NOT work:
  ♦ Starter turns
  ♦ Engine does not start
  ♦ DME fault entry P0685 with FreezeFrame actual value
>A010-DME SUPPLY VOLTAGE< = 0 V
  ♦ NO DME fault entry P0686 because these diagnostic conditions (> 8.0 V at A34) were not met.

- Start voltage > 5 V … < 8 V
+ DME main relay is working:
  ♦ Starter turns
  ♦ Engine starts
  ♦ NO DME fault entries

- Start voltage > 8 V
+ DME main relay does NOT work:
  ♦ Starter turns

- ♦ Engine does not start
- ♦ DME fault entry P0685 with FreezeFrame actual value >A010-DME SUPPLY VOLTAGE< = 0 V
- ♦ DME fault entry P0686 with FreezeFrame actual value >A010-DME SUPPLY VOLTAGE< = 0 V

- Start voltage > 8 V

+ DME main relay is working:

- ♦ Starter turns
- ♦ Engine starts
- ♦ NO DME fault entries

Diagnostic information - DME (DFI) control unit

Main relay off

Diagnostic conditions
- Vehicle voltage > 8.0 V
- Ignition off
- Control unit run-on completed (See ⓘ)
- Then ignition on

Possible fault causes
♦ Main relay faulty (contact stuck)
♦ Short circuit to B+ in line between main relay and DME (DFI) control unit (DME (DFI) control unit power supply)
♦ Short circuit to ground in line between DME (DFI) control unit and main relay (main relay activation)

Fault setting condition(s)
- Power supply for DME (DFI) control unit > 4.0 V at connector [A], contact 3/5/6, with :
- Power supply for DME (DFI) control unit > 0.0 V at connector [A], contact 34 (terminal 15)

ⓘ INFORMATION
♦ After the ignition is switched off (terminal 15), the DME control unit switches to control unit run-on mode.
♦ The run-on period depends on many underlying conditions (e.g. engine temperature for fan operation).
The run-on duration can be 1 minute when the engine is cold and up to 45 minutes when the engine is hot.

P0687

Diagnostic information - DME (DFI) control unit

Main relay ON

Diagnostic conditions
- Vehicle voltage > 8.0 V
- Ignition on

Possible fault causes
♦ Main relay faulty
♦ Open circuit in power supply for main-relay control circuit
♦ Short circuit to ground or open circuit in the lines between main relay and DME (DFI) control unit (DME (DFI) control unit power supply)
♦ Short circuit to B+ or open circuit in the lines between DME (DFI) control unit and main relay (main relay activation)

Fault setting condition(s)
- Power supply for DME (DFI) control unit < 6.0 V at connector [A], contact 3/5/6, with :
  - Power supply for DME (DFI) control unit > 8.0 V at connector [A], contact 34 (terminal 15)

P06E9

Diagnostic information - DME (DFI) control unit

Maximum starting time exceeded

Diagnostic conditions
- Engine start (key start or start/stop start)

Fault setting condition(s)
- Engine start duration > 5 seconds with more than 20 engine starts (key starts or stop/start starts)

Diagnostic information - DME (DFI) control unit

Torque intervention from transmission control unit implausible

Diagnostic conditions
- Drive with gear changes

Possible fault causes
- ♦ Shifting in PDK takes too long

Fault setting condition(s)
- The torque intervention by the PDK control unit takes too long; it is therefore implausible for the DME control unit.

Diagnostic information - DME (DFI) control unit

P/N input signal, open circuit/short circuit to B+

Diagnostic conditions
- Ignition on > 3 second(s)
- then start engine, with:
  - Brake pressed
  - Selector-lever position P or N

Possible fault causes
♦ Open circuit/short circuit to B+ in signal line

Fault setting condition(s)
Deviation in signal for P/N input signal and signal via CAN

Fault effects
♦ Starter does not turn

Diagnostic information - DME (DFI) control unit

P/N input signal, short circuit to ground

Diagnostic conditions
- Ignition on > 3 second(s)
- then start engine, with:
  - Brake pressed
  - Selector-lever position P or N

Possible fault causes
♦ Short circuit to ground in signal line

Fault setting condition(s)
Deviation in signal for P/N input signal and signal via CAN

Fault effects
♦ Engine start possible, with:
  - Selector-lever position R or D or M

Diagnostic information - DME (DFI) control unit

Torque request from PSM implausible

Diagnostic conditions
● Drive with PSM intervention for vehicle stabilization

Possible fault causes
♦ Fault in PSM control unit area

Fault setting condition(s)
● Torque request from PSM is implausibly high compared to driver setpoint torque (via accelerator pedal).

Fault effects
♦ All torque requests from the PSM are ignored for this trip ⇒ PSM interventions restricted.

Diagnostic information - DME (DFI) control unit

Fuel high pressure quantity

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Engine speed 450 .... 4,000 rpm
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Driving with different operating conditions

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Quantity control valve faulty (in fuel high-pressure pump)
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
Deviation in quantity control actual value (fuel high pressure)

Diagnostic information - DME (DFI) control unit

Fuel pressure/quantity too low at start

ⓘ INFORMATION 1

This fault entry can be caused by various reasons.
♦ If the fault was **NOT entered while the engine was starting**, but while the engine was running normally, a check must be carried out in the **crankshaft sensor** area (**See** ⓘ **2**).
♦ Fault finding in the fuel area must only be carried out if a customer complains that starting times are too long AND if the fault was entered while the engine was starting.
♦ If there is no such customer complaint, however, the only measure to be taken is to clear the fault memory.

Diagnostic conditions
● Engine start
● Engine temperature - 10 ... +100 °C (14 … 212 °F)
● Engine running > 5 second(s)

Possible fault causes
♦ Short-term failure of the engine speed signal as a result of a crankshaft sensor fault with or without a corresponding fault entry
(See ⓘ 2)
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
(See ⓘ **3**)
♦ Quantity control valve faulty (in fuel high-pressure pump)
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
● The fuel pressure required for carrying out a high-pressure start was not reached or was not reached quickly enough
ⓘ Low-pressure start is enabled; starting takes considerably longer (up to 2 sec.).

ⓘ INFORMATION 2

● If engine speed = 0, a starting setpoint value is set for the fuel high pressure that is higher than the setpoint value at idle speed or at a low load.
● An engine start is detected if the engine speed increases from 0 to > 300 rpm.
● When an engine start is detected, a check determines whether the measured fuel high pressure reaches the setpoint value within a certain number of engine revolutions.
⇒ If the engine's speed signal fails briefly (e.g. 6/1,000 seconds) and is then restored, the following things happen:
1. Engine speed = 0 ▶ Starting setpoint value for the fuel high pressure is set.
2. Engine speed increases to over 300 rpm ▶ Engine start is detected.
3. Comparison of setpoint value and actual value of the fuel high pressure ▶ Fault entry P1023, although there was no actual engine start.
4. Entries in the extended fault memory for P1023 are as follows:
♦ *40_Time after Start* > 5 s
♦ *40_Engine RPM* > 600 rpm

♦ *40_Vehicle Speed* > 0 km/h (0 mph)

ⓘ INFORMATION 3

Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

P1024

Diagnostic information - DME (DFI) control unit

Fuel high pressure too high after engine off

Diagnostic conditions
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Engine running > 5 second(s)
- then ignition off > 10 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines ▶ Fuel high-pressure sensor
- ♦ Quantity control valve faulty (in fuel high-pressure pump)

Fault setting condition(s)
- Fuel high pressure drops too slowly after engine off

Diagnostic information - DME (DFI) control unit

Fuel high pressure adaptation

ⓘ INFORMATION 1

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Engine speed 450 .... 4,000 rpm
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Driving with different operating conditions

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure adaptation required (See ⓘ 2)
♦ Fuel high-pressure pump faulty

ⓘ INFORMATION 2

♦ The old values must be deleted prior to a new adaptation of the fuel high-pressure ranges.
♦ The fuel high-pressure adaptation values can be deleted using >PIWIS Tester II< as follows: >DME< ⇒ >Maintenance/repairs< ⇒ >Delete adaptation values<

P1026

Diagnostic information - DME (DFI) control unit

Fuel high pressure implausible

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Time since engine start > 5 second(s)
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Engine running/driving

Possible fault causes (See Fault setting condition(s))
- Below limit value:
  - ♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
  - ♦ Fuel tank (driven) empty
    - ► See Extended fault memory
    - ⇒ Actual value **40-Fuel Level Input** [**0%**]

- Below limit value or above limit value :
  - ♦ Quantity control valve faulty (in fuel high-pressure pump)
  - ♦ Fuel high-pressure pump faulty

Fault setting condition(s) (See ⓘ)
♦ Below limit value:
- Continuous average fuel high pressure < 10 bar

♦ Above limit value:
- Continuous average fuel high pressure > 135 bar

ⓘ INFORMATION

► See Extended fault memory
⇒ 21-Environmental condition for first fault occurrence /B070-Fuel high pressure actual value
⇒ 21-Environmental condition for first fault occurrence /B060-Fuel high pressure setpoint value

Conversion:
♦ 10,000 hPa = 10 bar = 10,000 mbar
♦ 1,000 kPa = 10 bar = 10,000 mbar
♦ 1 MPa = 10 bar = 10,000 mbar

P1027

Diagnostic information - DME (DFI) control unit

Fuel high pressure fluctuates

Diagnostic conditions
- Engine speed 450 .... 4,000 rpm
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Driving with different operating conditions

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines ▶ Fuel high-pressure sensor
- ♦ Quantity control valve sluggish (in fuel high-pressure pump)

Fault setting condition(s)
The fuel high pressure fluctuates by +/- 25 bar from the setpoint fuel pressure.

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor stuck

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Engine running (driving)
- Engine temperature - 10 ... +100 °C (14 … 212 °F)

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure sensor faulty

Fault setting condition(s)
No change in the fuel high-pressure sensor voltage line, with:
- Engine running

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor stuck at engine start

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Engine start
- Engine temperature - 10 ... +100 °C (14 … 212 °F)

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure sensor faulty

Fault setting condition(s)
No change in the **fuel high-pressure sensor** voltage line, at:
- Engine start

P1036

Diagnostic information - DME (DFI) control unit

Fuel high pressure: too low/too high

Diagnostic conditions
- Engine running
- Fuel high-pressure pump operates normally, i.e.:
  - no engine stop
  - no overrun phase

Possible fault causes
- Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
- Loose contact or corrosion on connectors or lines ▶ **Fuel high-pressure sensor**
- **Quantity control valve** sluggish (in **fuel high-pressure pump**)
- **Fuel high-pressure pump** faulty

Fault setting condition(s)
- The actual fuel high-pressure value deviates from the setpoint fuel pressure by more than 20 bar for longer than 5 seconds.
  - Actual value too low ⇒ P1036
  - Actual value too high ⇒ P1037

ⓘ INFORMATION
•V6 Turbo engines ONLY
The >Fuel high-pressure pump< system tests can be used for testing
⇒ See Diagnostics ▶ DME ▶ Maintenance/repairs ▶ System tests
ⓘ See F1 Help there!

P1037

Diagnostic information - DME (DFI) control unit

Fuel high pressure: too low/too high

Diagnostic conditions
- Engine running
- Fuel high-pressure pump operates normally, i.e.:
  - no engine stop
  - no overrun phase

Possible fault causes
- Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
- Loose contact or corrosion on connectors or lines ▶ **Fuel high-pressure sensor**
- **Quantity control valve** sluggish (in **fuel high-pressure pump**)
- **Fuel high-pressure pump** faulty

Fault setting condition(s)
- The actual fuel high-pressure value deviates from the setpoint fuel pressure by more than 20 bar for longer than 5 seconds.
  - Actual value too low ⇒ P1036
  - Actual value too high ⇒ P1037

ⓘ INFORMATION
•V6 Turbo engines ONLY
The >Fuel high-pressure pump< system tests can be used for testing
⇒ See Diagnostics ▶ DME ▶ Maintenance/repairs ▶ System tests
ⓘ See F1 Help there!

Diagnostic information - DME (DFI) control unit

Fuel high-pressure pump: bank 2 adaptation faulty

Diagnostic conditions
● Perform system test >Fuel high-pressure pump, bank 2<

ⓘ INFORMATION
If the system test takes longer than approx. 5 minutes, it will be canceled without a result.
● This is the case if the tested fuel high-pressure pump can no longer build up high pressure, i.e. can no longer pump fuel
(e.g. low-pressure supply blocked, pump tappets broken, pump faulty, ...).

Possible fault causes
♦ Fuel high-pressure pump, bank 2 faulty

Fault setting condition(s)
ⓘ During the >Fuel high-pressure pump, bank 2< system test, the fuel high-pressure pump for bank 1 is adjusted to zero quantity (switched off) and the fuel high-pressure pump for bank 2 is adapted.
● A fault is entered if the result is not within the permissible adaptation range.

Diagnostic information - DME (DFI) control unit

Fuel high-pressure pump: bank 1 adaptation faulty

Diagnostic conditions
● Perform system test >Fuel high-pressure pump, bank 1<

ⓘ INFORMATION
If the system test takes longer than approx. 5 minutes, it will be canceled without a result.
● This is the case if the tested fuel high-pressure pump can no longer build up high pressure, i.e. can no longer pump fuel
(e.g. low-pressure supply blocked, pump tappets broken, pump faulty, ...).

Possible fault causes
♦ Fuel high-pressure pump, bank 1 faulty

Fault setting condition(s)
ⓘ During the >Fuel high-pressure pump, bank 1< system test, the fuel high-pressure pump for bank 2 is adjusted to zero quantity (switched off) and the fuel high-pressure pump for bank 1 is adapted.
● A fault is entered if the result is not within the permissible adaptation range.

P1044

Diagnostic information - DME (DFI) control unit

Acoustic simulator solenoid valve driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground or open circuit in the line (power supply or activation)
- Acoustic simulator solenoid valve faulty

P1045

Diagnostic information - DME (DFI) control unit

Acoustic simulator solenoid valve driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground or open circuit in the line (power supply or activation)
- Acoustic simulator solenoid valve faulty

P1046

Diagnostic information - DME (DFI) control unit

Acoustic simulator solenoid valve driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground or open circuit in the line (power supply or activation)
- Acoustic simulator solenoid valve faulty

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor implausible

Diagnostic conditions
● Drive with different operating conditions (idling, full-load acceleration, uniform partial-load operation and overrun phases)
then
♦ Switch off engine and wait for control unit run-on (approx. 90 seconds)
then
♦ Switch on ignition
then
♦ Engine start

Possible fault causes
♦ Tank vent pressure sensor faulty
♦ Tank vent valve stuck closed (see P0441)
♦ Both check valves stuck closed or installed backward (see P0441)

Fault setting condition(s)
Diagnostics part 1:
♦ In the area of the tank vent pressure sensor, a vacuum exists between the tank vent valve and the check valves when the engine is switched off.
♦ Immediately after the engine is switched off, the tank vent valve is opened briefly so that ambient pressure exists there.
♦ After the ignition is switched on, the pressure in the tank vent system is compared with the ambient pressure.
♦ The fault is set if the two pressure values differ by too much from each other.
♦ A deviation of the ambient pressure due to weather changes between the time when the engine is switched off and the time when the ignition is switched on again is taken into account.
♦ Diagnostics is rejected if the differences in the ambient pressure are too high.

Diagnostics part 2:
♦ When the engine is started, the pressure in the tank vent system must decrease by a certain amount due to the vacuum in the intake manifold.
♦ If this does not happen, a check is performed to determine whether the pressure in the tank vent system now decreases when the boost pressure is sufficient.
♦ The fault is set if the pressure does not change sufficiently in both cases.

P1051

Diagnostic information - DME (DFI) control unit

Tank vent system

ⓘ **For more information, see Guided Fault Finding**

Diagnostic conditions (see also ⓘ)
- Tank vent valve short test - upper partial-load range

then
- Tank vent valve short test - lower partial-load range

or:
- **Time since engine start** > 2 minute(s)
- Idling > 15 second(s)
- **Engine temperature** > 40 °C (104 °F)
- **Ambient temperature** > 4 °C (39 °F)
- Ambient pressure > 730 hPa (= location below approx. 2,400 ... 2,700 m/7,874 ... 8,858 ft.) **(A060)**
- All **oxygen sensor(s)** ready for operation
- None of the following faults stored: **Oxygen sensor(s)**, tank vent valve output stage
- Vehicle speed > 15 **km/h** (9 **mph**)
- The carbon canister is adequately flushed via the tank vent valve (see ⓘ).

Possible fault causes
- ♦ Tank vent valve faulty (stuck open or closed)
- ♦ Tank vent valve not installed or installed incorrectly
- ♦ Line between carbon canister and tank vent valve leaking/trapped/blocked
- ♦ **Purge-air line** between tank vent valve and **intake manifold** leaking/trapped/blocked
- ♦ Purge-air line between tank vent valve and turbocharger (Venturi pump) leaking/trapped/blocked
- ♦ Check valve between tank vent valve and intake manifold faulty or installed backward
- ♦ Check valve between tank vent valve and turbocharger (Venturi pump) faulty or installed backward
- ♦ Carrier-flow hose (Venturi pump) on turbocharger leaking or constricted
- ♦ Venturi pump on turbocharger faulty or constricted

Fault setting condition(s)
- The fault is set if the pressure difference between the ambient pressure and the pressure in the tank vent line is too low when the tank vent valve is activated (depending on the respective engine operating point).

ⓘ INFORMATION

♦ In the lower partial-load range, this is achieved, for example, by driving:
- in 2nd gear
- at approx. 25 km/h (16 mph)
- on a route that is as level as possible
- for approx. 20 seconds
- with tank vent valve open **(L170)**.

♦ In the upper partial-load range, this is achieved, for example, by driving:
- from vehicle standstill
- with the highest load possible (no sport mode, full throttle without kickdown, all electrical loads switched on, uphill driving, ...)
- in the M gate
- always in the highest possible gear
- at engine speeds < 2,300 rpm
- for approx. 5 seconds with tank vent valve open **(L170)**
- with a boost pressure > 150 hPa above ambient pressure **(P020 + A060)**

P1053

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Tank vent pressure sensor faulty

P1054

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Tank vent pressure sensor faulty

P1055

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Tank vent pressure sensor faulty

P1056

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Ground supply faulty
- Tank vent pressure sensor faulty

Diagnostic information - DME (DFI) control unit

Tank vent pressure sensor implausible

Diagnostic conditions
● Drive with different operating conditions (idling, full-load acceleration, uniform partial-load operation and overrun phases)
then
♦ Switch off engine and wait for control unit run-on (approx. 90 seconds)
then
♦ Switch on ignition
then
♦ Engine start

Possible fault causes
♦ Tank vent pressure sensor faulty
♦ Tank vent valve stuck closed (see P0441)
♦ Both check valves stuck closed or installed backward (see P0441)

Fault setting condition(s)
Diagnostics part 1:
♦ In the area of the tank vent pressure sensor, a vacuum exists between the tank vent valve and the check valves when the engine is switched off.
♦ Immediately after the engine is switched off, the tank vent valve is opened briefly so that ambient pressure exists there.
♦ After the ignition is switched on, the pressure in the tank vent system is compared with the ambient pressure.
♦ The fault is set if the two pressure values differ by too much from each other.
♦ A deviation of the ambient pressure due to weather changes between the time when the engine is switched off and the time when the ignition is switched on again is taken into account.
♦ Diagnostics is rejected if the differences in the ambient pressure are too high.

Diagnostics part 2:
♦ When the engine is started, the pressure in the tank vent system must decrease by a certain amount due to the vacuum in the intake manifold.
♦ If this does not happen, a check is performed to determine whether the pressure in the tank vent system now decreases when the boost pressure is sufficient.
♦ The fault is set if the pressure does not change sufficiently in both cases.

P1069

Diagnostic information - DME (DFI) control unit

Mass air flow in near idle speed range, implausibly high

Diagnostic conditions
- Idling > 2 minute(s)
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- ♦ Oil filler cap leaking
- ♦ Throttle valve adaptation performed when boundary conditions were violated (see ⓘ 3)
- ♦ Positive crankcase ventilation hose leaking (see ⓘ 1)
- ♦ Leak in intake system - between throttle valve and engine (intake valve)
- ♦ Tank vent valve faulty (open)
- ♦ Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- ♦ Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ **2**)

ⓘ INFORMATION

1. (Turbo only)
The following components are **NOT** tested when an overpressure test is carried out on the intake duct:
- ♦ Ventilation check valve (intake-air distributor)
- ♦ Ventilation check valve (turbocharger suction hose)
- ♦ Positive crankcase ventilation hose between ventilation check valve and crankcase
- ♦ Crankcase

2.
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- ♦ A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- ♦ The calculated mass air flow is compared with that measured by the pressure sensor.
- ♦ A deviation may be due to both the calculated mass air flow and the measured mass air flow.

3.
A note to this effect is stored in the environmental data for the fault entry value > *XX-Status of*

throttle valve adaptation conditions<.

♦ The value indicates whether the throttle valve was taught when boundary conditions were violated.
♦ 0 ... 127 = Throttle valve was taught under the correct boundary conditions.
♦ 128 ... 255 = Throttle valve was taught when boundary conditions were violated.

P1071

Diagnostic information - DME (DFI) control unit

Mass air flow in near idle speed range, implausibly high

Diagnostic conditions
- Idling > 30 s,
  - then engine speed > 1,500 rpm > 1 s,
    - then idling > 30 s
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Oil filler cap lost
- Positive crankcase ventilation hose leaking (see ⓘ **1**)
- Leak in intake system - between throttle valve and engine (intake valve)
- Tank vent valve faulty - open
- Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Excessive deviation of the throttle valve position during the current engine idling phase compared to the most recent and the penultimate engine idling phases (see ⓘ **2**)

ⓘ INFORMATION

1. (Turbo only)
The following components are NOT tested when an overpressure test is carried out on the intake duct:
- Ventilation check valve (intake-air distributor)
- Ventilation check valve (turbocharger suction hose)
- Positive crankcase ventilation hose between ventilation check valve and crankcase
- Crankcase

2.
The diagnostic function checks whether the value >H040-Mass air flow correction factor< recorded during the current engine idling phase deviates too much from the value during the last engine idling phase:
- If NO, the new value is used as the next reference value, and diagnostics begins again in the next engine idling phase.
- If YES, the test is repeated in the next engine idling phase and compared with the value of the penultimate engine idling phase:
  - If NO relevant deviation still exists, the new value is used as the next reference value.
- The fault is entered if a relevant deviation exists AGAIN. The following information, among other data, is stored in the extended fault memory:

1. XX-Correction value after throttle valve adaptation

This percentage is determined from a characteristic, depending on the intake air temperature, during every throttle valve adaptation.
It serves to prevent incorrect diagnoses that can occur due to adaptation taking place when the throttle valve is too warm or cold.

2. XX-Correction value for mass air flow at idle

Snapshot of the actual value H040 approx. 3 sec. after idling begins (= stabilized state). It is used for comparison with the same value of the most recent (or penultimate if a fault is suspected) idling phase.

3. XX-Difference between the correction values of two idling phases

Difference in the snapshot of actual value H040 between the current idling phase and the same value of the most recent (or penultimate if a fault is suspected) idling phase.

4. XX-Throttle value taught in case of violated environmental conditions

1=YES / 0=NO

P1072

Diagnostic information - DME (DFI) control unit

Mass air flow in near idle speed range, implausibly high

Diagnostic conditions
- Idling > 2 minute(s)
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- ♦ Oil filler cap leaking
- ♦ Throttle valve adaptation performed when boundary conditions were violated (see ⓘ 3)
- ♦ Positive crankcase ventilation hose leaking (see ⓘ 1)
- ♦ Leak in intake system - between throttle valve and engine (intake valve)
- ♦ Tank vent valve faulty (open)
- ♦ Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- ♦ Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ **2**)

ⓘ INFORMATION

1. (Turbo only)
The following components are **NOT** tested when an overpressure test is carried out on the intake duct:
- ♦ Ventilation check valve (intake-air distributor)
- ♦ Ventilation check valve (turbocharger suction hose)
- ♦ Positive crankcase ventilation hose between ventilation check valve and crankcase
- ♦ Crankcase

2.
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- ♦ A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- ♦ The calculated mass air flow is compared with that measured by the pressure sensor.
- ♦ A deviation may be due to both the calculated mass air flow and the measured mass air flow.

3.
A note to this effect is stored in the environmental data for the fault entry value > *XX-Status of*

throttle valve adaptation conditions<.

♦ The value indicates whether the throttle valve was taught when boundary conditions were violated.
♦ 0 ... 127 = Throttle valve was taught under the correct boundary conditions.
♦ 128 ... 255 = Throttle valve was taught when boundary conditions were violated.

Diagnostic information - DME (DFI) control unit

Mass air flow in lower partial-load range, implausibly high

Diagnostic conditions
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Variable intake manifold - mechanical fault (if fitted)
- Intake manifold pressure sensor - electric plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ)

ⓘ INFORMATION
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

Diagnostic information - DME (DFI) control unit

Mass air flow in upper partial-load range, implausibly high

Diagnostic conditions
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Variable intake manifold - mechanical fault (if fitted)
- Intake manifold pressure sensor - electric plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ)

ⓘ INFORMATION
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

P1077

Diagnostic information - DME (DFI) control unit

Mass air flow in upper partial-load range, implausibly low

Diagnostic conditions
- Driving with different operating conditions
- None of the following faults stored: Intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Possible fault causes
- Air cleaner dirty/blocked/frozen
- Air intake (ahead of air cleaner) constricted
- Air guide ahead of throttle valve blocked/cross-section constricted
- Exhaust system blocked/cross-section constricted
- Variable intake manifold - mechanical fault (if fitted)
- Intake manifold pressure sensor - electr. plug connection loose, oxidized, corroded, interrupted
- Fault in area of intake manifold pressure sensor, throttle valve adjusting unit, ambient pressure sensor, intake air temperature sensor, rpm sensor, valve lift control, camshaft adjustment, variable intake manifold

Fault setting condition(s)
Unacceptably large deviation between measured mass air flow and calculated mass air flow (see ⓘ)

ⓘ INFORMATION
This diagnostic function monitors the intake system between the throttle valve and engine (intake valves).
- A mass air flow is calculated from the signals from the throttle valve potentiometer, engine speed sensor, intake air temperature sensor and ambient pressure sensor as well as other engine operating values.
- The calculated mass air flow is compared with that measured by the pressure sensor.
- A deviation may be due to both the calculated mass air flow and the measured mass air flow.

Diagnostic information - DME (DFI) control unit

Ambient temperature sensor: deviation
(See Air-conditioning system regulator)

Diagnostic conditions
- Time since ignition off > 8 hours, then:
  - Drive > 25 km/h (16 mph) > 45 s within the first 6 minutes after engine start
  - NO drop in temperatures (e.g. due to drive from a garage into a cooler environment)

Possible fault causes
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Ambient temperature sensor faulty

Fault setting condition(s)
- The temperature measured by the ambient temperature sensor (T050) deviates too much from the mean value of the engine, engine oil, intake air and ambient air temperatures (T160) (See ⓘ).

Fault effects
♦ Substitute value from model

ⓘ INFORMATION

Step 1
♦ When the engine is started after the ignition has been switched off for more than 8 hours, the engine coolant, engine oil, intake air and ambient air temperatures are compared with each other.
♦ They may deviate from the calculated mean value (T160) by only a certain amount (depending on the switch-off time).
♦ A suspected fault is set if the deviation is too large. However, the fault must still be confirmed in the second step.

Step 2
♦ Within the first six minutes after ignition on, a check is performed to determine whether the following conditions were met:
- Drive > 25 km/h (16 mph) for longer than 45 seconds in total
- None of the four temperatures decreased too much (e.g. due to drive from a garage into a cooler environment)

♦ If all conditions were met, the fault is entered in the fault memory.
♦ If one of the conditions was NOT met, the diagnostic result is rejected and NO fault is entered in the fault memory.
♦ If the vehicle is NOT driven within 6 minutes after starting and the aforementioned conditions are met, the suspected fault is rejected and NO fault is entered in the fault memory.

P1114

Diagnostic information - DME (DFI) control unit

Intake air temperature sensor: deviation

Diagnostic conditions
- Time since ignition off > 8 hours, then:
  - Drive > 25 km/h (16 mph) > 45 s within the first 6 minutes after engine start
  - NO drop in temperatures (e.g. due to drive from a garage into a cooler environment)

Possible fault causes
- Short circuit to B+/ground/between lines or open circuit in the lines
- Intake air temperature sensor faulty

Fault setting condition(s)
- The temperature measured by the intake air temperature sensor (T040) deviates too much from the mean value of the engine, engine oil, intake air and ambient air temperatures (T160) (See ⓘ)

Fault effects
- Substitute value from model

ⓘ INFORMATION

Step 1
- When the engine is started after the ignition has been switched off for more than 8 hours, the engine coolant, engine oil, intake air and ambient air temperatures are compared with each other.
- They may deviate from the calculated mean value (T160) by only a certain amount (depending on the switch-off time).
- A suspected fault is set if the deviation is too large. However, the fault must still be confirmed in the second step.

Step 2
- Within the first six minutes after ignition on, a check is performed to determine whether the following conditions were met:
  - Drive > 25 km/h (16 mph) for longer than 45 seconds in total
  - None of the four temperatures decreased too much (e.g. due to drive from a garage into a cooler environment)
- If all conditions were met, the fault is entered in the fault memory.
- If one of the conditions was NOT met, the diagnostic result is rejected and NO fault is entered in the fault memory.
- If the vehicle is NOT driven within 6 minutes after starting and the aforementioned conditions are met, the suspected fault is rejected and NO fault is entered in the fault memory.

P1147

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: power supply

ⓘ INFORMATION

♦ The oil pressure control valve is supplied with 12 V while the engine is running.
♦ A short circuit to B+ can be detected only during control unit run-on.

Diagnostic conditions

- Engine running, then:
- Ignition off > 1 minute(s)

Possible fault causes

♦ Short circuit to B+ (power supply to oil pressure control valve)
♦ Oil pressure control valve faulty

P1148

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: power supply

Diagnostic conditions
- Engine running

Possible fault causes
- Open circuit/short circuit to ground (power supply to oil pressure control valve)
- Short circuit to B+/ground or open circuit in the line (oil pressure control valve activation)
- Oil pressure control valve faulty

P1149

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: power supply

Diagnostic conditions
- Engine running

Possible fault causes
- Open circuit/short circuit to ground (power supply to oil pressure control valve)
- Short circuit to B+/ground or open circuit in the line (oil pressure control valve activation)
- Oil pressure control valve faulty

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Short circuit to B+ (oil pressure control valve activation)
♦ Open circuit/short circuit to B+ (power supply to oil pressure control valve)
♦ Oil pressure control valve faulty

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.
♦ The oil pressure is reduced to the minimum pressure in the event of a short circuit to ground.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Short circuit to ground (oil pressure control valve activation)
♦ Open circuit/short circuit to ground (power supply to oil pressure control valve)
♦ Oil pressure control valve faulty

Fault effects
♦ Power supply to oil pressure control valve - is switched off

Diagnostic information - DME (DFI) control unit

Oil pressure control valve: activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Open circuit (oil pressure control valve activation)
♦ Open circuit/short circuit to ground (power supply to oil pressure control valve)
♦ Oil pressure control valve faulty

P1157

Diagnostic information - DME (DFI) control unit

Engine compartment temperature sensor

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Engine compartment temperature sensor faulty

P1158

Diagnostic information - DME (DFI) control unit

Engine compartment temperature sensor

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Engine compartment temperature sensor faulty

Diagnostic information - DME (DFI) control unit

Exhaust gas implausible, bank 1

Diagnostic conditions
Perform all short tests in sequence
or
● Engine temperature > 60 °C (140 °F)
● Time since engine start > 10 second(s)
● Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
● Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
● Active carbon filter loading < 0.7
● Engine speed < 3,000 rpm
● Lambda control ahead of catalytic converter active
● Lambda control behind catalytic converter active
● None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes
♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Fault setting condition(s)
● The oxygen sensor ahead of the bank 1 catalytic converter measures the corresponding oxygen value after mixture lean-out/enrichment.
● Despite a sufficiently long waiting time, the corresponding voltage limit value (< 150 mV / > 800 mV) is not reached at the oxygen sensor behind the bank 1 catalytic converter.

Diagnostic information - DME (DFI) control unit

Exhaust gas implausible, bank 2

Diagnostic conditions
Perform all short tests in sequence
or
● Engine temperature > 60 °C (140 °F)
● Time since engine start > 10 second(s)
● Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
● Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
● Active carbon filter loading < 0.7
● Engine speed < 3,000 rpm
● Lambda control ahead of catalytic converter active
● Lambda control behind catalytic converter active
● None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle valve adjusting unit

Possible fault causes
♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Fault setting condition(s)
● The oxygen sensor ahead of the bank 2 catalytic converter measures the corresponding oxygen value after mixture lean-out/enrichment.
● Despite a sufficiently long waiting time, the corresponding voltage limit value (< 150 mV / > 800 mV) is not reached at the oxygen sensor behind the bank 2 catalytic converter.

Diagnostic information - DME (DFI) control unit

Exhaust gas implausible, bank 1

Diagnostic conditions
Perform all short tests in sequence
or
● Engine temperature > 60 °C (140 °F)
● Time since engine start > 10 second(s)
● Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
● Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
● Active carbon filter loading < 0.7
● Engine speed < 3,000 rpm
● Lambda control ahead of catalytic converter active
● Lambda control behind catalytic converter active
● None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle adjusting unit

Possible fault causes
♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Fault setting condition(s)
● The oxygen sensor ahead of the bank 1 catalytic converter measures the corresponding oxygen value after mixture lean-out/enrichment.
● Despite a sufficiently long waiting time, the corresponding voltage limit value (< 150 mV / > 800 mV) is not reached at the oxygen sensor behind the bank 1 catalytic converter.

Diagnostic information - DME (DFI) control unit

Exhaust gas implausible, bank 2

Diagnostic conditions
Perform all short tests in sequence
or
● Engine temperature > 60 °C (140 °F)
● Time since engine start > 10 second(s)
● Catalytic converter temperature 540 ... 750 °C (1,004 ... 1,382 °F)
● Drive for 60 seconds with slight acceleration at 40 ... 130 km/h (24 … 80 mph)
● Active carbon filter loading < 0.7
● Engine speed < 3,000 rpm
● Lambda control ahead of catalytic converter active
● Lambda control behind catalytic converter active
● None of the following faults stored: Oxygen sensor(s) - electrical fault, intake manifold pressure sensor or throttle valve adjusting unit

Possible fault causes
♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Fault setting condition(s)
● The oxygen sensor ahead of the bank 2 catalytic converter measures the corresponding oxygen value after mixture lean-out/enrichment.
● Despite a sufficiently long waiting time, the corresponding voltage limit value (< 150 mV / > 800 mV) is not reached at the oxygen sensor behind the bank 2 catalytic converter.

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

P1181

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

Diagnostic information - DME (DFI) control unit

Positive crankcase ventilation driver

ⓘ INFORMATION

♦ Diagnosis only takes place when the component has been activated.
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic conditions

- Ambient temperature < 0 °C (32 °F)
- Engine start detected
- Vehicle voltage > 12 V

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Positive crankcase ventilation heating tube faulty

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234, P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

- **Turbo only**
  - Only if fault P1189 or P1190 (boost pressure sensor) is entered at the same time:
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve leaking
- ♦ Wastegate leaking

Fault setting condition(s)
- The actual value exceeds the defined upper or lower limit (H065)

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234, P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

- **Turbo only**
  - Only if fault P1189 or P1190 (boost pressure sensor) is entered at the same time:
- ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
- ♦ Boost pressure control cycle valve leaking
- ♦ Wastegate leaking

Fault setting condition(s)
- The actual value exceeds the defined upper or lower limit (H065)

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- Fault P0069 also entered:
  - ♦ Intake manifold pressure sensor fault

- No fault P0069 entered:
  - ♦ DME (DFI) control unit faulty

Fault effects
- ♦ Substitute value from model

P1187

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
♦ DME (DFI) control unit faulty

Fault setting condition(s)
- The actual value exceeds the defined upper or lower limit.
  > *A060-Ambient pressure from DME (measured)* <

Fault effects
♦ Substitute value from model

P1188

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
♦ DME (DFI) control unit faulty

Fault setting condition(s)
- The actual value exceeds the defined upper or lower limit.
  > *A060-Ambient pressure from DME (measured)* <

Fault effects
♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve): electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234, P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Ground supply faulty
- ♦ Boost pressure sensor faulty

- **Only if fault P1183 or P1184** (intake manifold pressure sensor) **is entered at the same time**:
  - ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
  - ♦ Boost pressure control cycle valve leaking
  - ♦ Wastegate leaking

Fault setting condition(s)
The actual value exceeds the defined upper or lower limit (H210).

Fault effects
- ♦ Substitute value from model

P1190

Diagnostic information - DME (DFI) control unit

Boost pressure sensor (pressure sensor ahead of throttle valve): electrical fault

Diagnostic conditions
- Ignition on or engine running
- None of the following faults stored: P0234, P1638, P1639, P0107, P0108, P2228, P2229

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Ground supply faulty
- ♦ Boost pressure sensor faulty

- **Only if fault P1183 or P1184** (intake manifold pressure sensor) **is entered at the same time**:
  - ♦ Leak in vacuum hose at boost pressure control cycle valve or wastegate
  - ♦ Boost pressure control cycle valve leaking
  - ♦ Wastegate leaking

Fault setting condition(s)
The actual value exceeds the defined upper or lower limit (H210).

Fault effects
- ♦ Substitute value from model

P119A

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor faulty

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Intake manifold pressure sensor faulty

Fault effects
♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ 5 V power supply faulty
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

Fault effects
- ♦ Substitute value from model

P119C

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor faulty

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Intake manifold pressure sensor faulty

Fault effects
♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ 5 V power supply faulty
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

Fault effects
- ♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ 5 V power supply faulty
- ♦ Ground supply faulty
- ♦ Intake manifold pressure sensor faulty

Fault effects
- ♦ Substitute value from model

P119F

Diagnostic information - DME (DFI) control unit

Intake manifold pressure sensor faulty

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Intake manifold pressure sensor faulty

Fault effects
♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Intake air temperature implausible

Diagnostic conditions
- Vehicle has NOT been and is NOT standing in the sun.
- Engine off > 9 hour(s)
- Engine coolant temperature cooling > 35 °C (95 °F), with:
  - Engine off
- then cold start, at:
  - Coolant temperature < 37 °C (98.6 °F)
  - Difference between intake air temperature <=> engine coolant temperature < 6 °C (42.8 °F)
- then driving, with:
  - Engine running > 23 minute(s)
  - Distance driven > 7 km (4 mi.)
  - Engine coolant temperature up to > 94 °C (201 °F)

Possible fault causes
- ♦ Intake air temperature sensor faulty (in intake manifold pressure sensor)
- ♦ Resistor installed (instead of intake air temperature sensor)

Fault setting condition(s)
- Change in intake air temperature < 1.5 °C (34.7 °F), at:
  - Diagnostic conditions

Fault effects
- ♦ Substitute coolant temperature value

P11A1

Diagnostic information - DME (DFI) control unit

Pressure sensor ahead of throttle valve faulty

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Pressure sensor ahead of throttle valve faulty

Fault effects
♦ Substitute value from model

Diagnostic information - DME (DFI) control unit

Pressure sensor ahead of throttle valve: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ 5 V power supply faulty
- ♦ Ground supply faulty
- ♦ Pressure sensor ahead of throttle valve faulty

Fault effects
- ♦ Substitute value from model

P11A3

Diagnostic information - DME (DFI) control unit

Pressure sensor ahead of throttle valve faulty

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Pressure sensor ahead of throttle valve faulty

Fault effects
♦ Substitute value from model

P11A4

Diagnostic information - DME (DFI) control unit

Pressure sensor ahead of throttle valve: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ 5 V power supply faulty
- ♦ Ground supply faulty
- ♦ Pressure sensor ahead of throttle valve faulty

Fault effects
- ♦ Substitute value from model

P11A5

Diagnostic information - DME (DFI) control unit

Pressure sensor ahead of throttle valve: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ 5 V power supply faulty
- ♦ Ground supply faulty
- ♦ Pressure sensor ahead of throttle valve faulty

Fault effects
- ♦ Substitute value from model

P11A6

Diagnostic information - DME (DFI) control unit

Pressure sensor ahead of throttle valve faulty

Diagnostic conditions
- Ignition on

Possible fault causes
♦ Pressure sensor ahead of throttle valve faulty

Fault effects
♦ Substitute value from model

P1280

Diagnostic information - DME (DFI) control unit

Fuel pump control unit

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
♦ Fuel pump control unit implausible

Fault effects
♦ The control unit attempts to bring the fuel pump to the setpoint value.

P1281

Diagnostic information - DME (DFI) control unit

Fuel pump control unit: overtemperature

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- Overloading of fuel pump control unit

Fault effects
- The control unit attempts to bring the fuel pump to the setpoint value.

P1282

Diagnostic information - DME (DFI) control unit

Electric fuel pump: sluggish

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- Foreign body in electric fuel pump
- Fuel line blocked
- Electric fuel pump faulty

Fault setting condition(s)
- Current draw max. 30% > setpoint value

Fault effects
- The control unit attempts to bring the fuel pump to the setpoint value.

P1283

Diagnostic information - DME (DFI) control unit

Electric fuel pump: blocked

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- Foreign body in electric fuel pump
- Electric fuel pump faulty

Fault setting condition(s)
- Current draw at least 30% > setpoint value

Fault effects
- The control unit attempts to bring the fuel pump to the setpoint value.

P1284

Diagnostic information - DME (DFI) control unit

Electric fuel pump: electrical fault

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- ♦ Short circuit in lines for fuel pump control unit ⇒ Electric fuel pump
- ♦ Electric fuel pump faulty

Fault effects
- ♦ Electric fuel pump switched off
- ♦ Electric fuel pump activated and tested after 50 ... 150 millisecond(s)

P1285

Diagnostic information - DME (DFI) control unit

Electric fuel pump: electrical fault

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Open circuit in lines for fuel pump control unit ⇒ Electric fuel pump
- ♦ Open circuit in ground line for electric fuel pump
- ♦ Electric fuel pump faulty

Fault effects
- ♦ Electric fuel pump switched off
- ♦ Electric fuel pump activated and tested after 50 ... 150 millisecond(s)

P1286

Diagnostic information - DME (DFI) control unit

Speed deviation

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
- Supply voltage for fuel pump control unit too low
- Loose contact or corrosion on connectors or lines
- Leak in fuel line
- Fuel line blocked
- Foreign body in electric fuel pump
- Electric fuel pump sluggish

Fault setting condition(s)
- Speed of electric fuel pump deviates from setpoint speed, at:
  - Supply voltage for fuel pump control unit < 12.5 V
  - Fuel counter-pressure too high
  - Fuel counter-pressure too low
  - Electric fuel pump sluggish

Fault effects
- The control unit attempts to bring the fuel pump to the setpoint value.

P1287

Diagnostic information - DME (DFI) control unit

Electric fuel pump: brief failure

Diagnostic conditions
- Switch on ignition or engine start (electric fuel pump activated)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines

Fault setting condition(s)
- Electric fuel pump failed briefly while driving

Fault effects
♦ The control unit attempts to bring the fuel pump to the setpoint value.

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor implausible

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Time since engine start > 250 second(s)
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Engine speed 450 .... 4,000 rpm
- Lambda control active

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure system leaking
♦ Fuel high-pressure sensor faulty
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
Long-term deviation in fuel high-pressure actual value - setpoint value
(The setpoint value is calculated using several variables, e.g. lambda control, quantity control valve, ...).

Diagnostic information - DME (DFI) control unit

Fuel high-pressure sensor implausible

ⓘ INFORMATION

♦ Faults in the fuel high-pressure injection system area are frequently caused by defects in the pre-delivery circuit (fuel low pressure).
♦ Therefore, the pre-delivery circuit must be checked first in case of problems in the area of the fuel high-pressure injection system.

Diagnostic conditions
- Time since engine start > 250 second(s)
- Engine temperature - 10 ... +100 °C (14 … 212 °F)
- Engine speed 450 .... 4,000 rpm
- Lambda control active

Possible fault causes
♦ Pre-delivery quantity or pressure in the fuel low-pressure circuit too low
♦ Fuel high-pressure system leaking
♦ Fuel high-pressure sensor faulty
♦ Fuel high-pressure pump faulty

Fault setting condition(s)
Long-term deviation in fuel high-pressure actual value - setpoint value
(The setpoint value is calculated using several variables, e.g. lambda control, quantity control valve, ...).

Diagnostic information - DME (DFI) control unit

Bank 2 intake camshaft timing

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- ♦ Timing wrong (chain jump)
- ♦ Camshaft sensor loose
- ♦ Timing set incorrectly (after repairs)
- ♦ Hall sender rotor (camshaft) wrong or damaged

Fault setting condition(s)
Current timing <> stored timing (last engine run)

P1340

Diagnostic information - DME (DFI) control unit

Bank 1 intake camshaft timing

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- ♦ Timing wrong (chain jump)
- ♦ Camshaft sensor loose
- ♦ Timing set incorrectly (after repairs)
- ♦ Hall sender rotor (camshaft) wrong or damaged

Fault setting condition(s)
Current timing <> stored timing (last engine run)

P1342

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft timing

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- ♦ Timing wrong (chain jump)
- ♦ Camshaft sensor loose
- ♦ Timing set incorrectly (after repairs)
- ♦ Hall sender rotor (camshaft) wrong or damaged

Fault setting condition(s)
Current timing <> stored timing (last engine run)

P1343

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft timing

Diagnostic conditions
- Time since engine start > 10 second(s)

Possible fault causes
- ♦ Timing wrong (chain jump)
- ♦ Camshaft sensor loose
- ♦ Timing set incorrectly (after repairs)
- ♦ Hall sender rotor (camshaft) wrong or damaged

Fault setting condition(s)
Current timing <> stored timing (last engine run)

P1346

Diagnostic information - DME (DFI) control unit

Valve lift control, bank 1 + bank 2

Diagnostic conditions
ⓘ Diagnostics is interrupted if the tank vent valve is > 35% activated (L170) **and** the carbon canister load is > 0.50 (L150).

- **Time since engine start** > 5 minute(s)

The following conditions must be met and must be valid at least 3 times (See ⓘ):
- Driving with engine speed and load conditions as constant as possible for > 10 seconds with:
  - Minimum acceleration
  - Small lift (actual value A220 = 0)
  - **Engine speed** 1,000 ... 2,000 rpm (A020)
  - Mass air flow 320 … 120 mg/stroke (A050)

immediately afterwards:
- Drive for > 5 seconds with:
  - Acceleration
  - Large lift (actual value A220 = 1)
  - **Engine speed** up to max. 3,500 rpm (A020)

Possible fault causes
♦ Engine oil pressure too high or too low
♦ Loose contact or corrosion on connectors or lines (power supply for solenoid valve for hydraulic valve lift control)

Fault setting condition(s)
- A check is performed to determine whether the lambda controllers of both banks each exhibit a deviation of > +/- 20% approx. 4 seconds before and after valve lift switchover.
- The fault is entered if this occurs 3 times during a drive under the diagnostic conditions.

ⓘ If the deviation occurs on only one bank, another fault is entered (see P1372/P1373).

ⓘ INFORMATION
A drive with the aforementioned conditions can be performed as follows, for example:
- Engine at operating temperature
- Selector lever set to M in the highest possible gear
- NO kickdown, so that the gear is held
- Level route
- Vehicle rolls at approx. 50 km/h (30 mph) for approx. 10 seconds
- Then acceleration to max. 3,500 rpm with:
  - Acceleration not too low (large lift - actual value A220 = 1)

Diagnostic information - DME (DFI) control unit

Valve lift control, bank 1 + bank 2

Diagnostic conditions
ⓘ Diagnostics is interrupted if the tank vent valve is > 35% activated (L170) **and** the carbon canister load is > 0.50 (L150).

- **Time since engine start** > 5 minute(s)

The following conditions must be met and must be valid at least 3 times (See ⓘ):
- Driving with engine speed and load conditions as constant as possible for > 10 seconds with:
  - Minimum acceleration
  - Small lift (actual value A220 = 0)
  - **Engine speed** 1,000 ... 2,000 rpm (A020)
  - Mass air flow 320 … 120 mg/stroke (A050)

immediately afterwards:
- Drive for > 5 seconds with:
  - Acceleration
  - Large lift (actual value A220 = 1)
  - **Engine speed** up to max. 3,500 rpm (A020)

Possible fault causes
♦ Engine oil pressure too high or too low
♦ Loose contact or corrosion on connectors or lines (power supply for solenoid valve for hydraulic valve lift control)

Fault setting condition(s)
- A check is performed to determine whether the lambda controllers of both banks each exhibit a deviation of > +/- 20% approx. 4 seconds before and after valve lift switchover.
- The fault is entered if this occurs 3 times during a drive under the diagnostic conditions.

ⓘ If the deviation occurs on only one bank, another fault is entered (see P1372/P1373).

ⓘ INFORMATION
A drive with the aforementioned conditions can be performed as follows, for example:
- Engine at operating temperature
- Selector lever set to M in the highest possible gear
- NO kickdown, so that the gear is held
- Level route
- Vehicle rolls at approx. 50 km/h (30 mph) for approx. 10 seconds
- Then acceleration to max. 3,500 rpm with:
  - Acceleration not too low (large lift - actual value A220 = 1)

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder X - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder X - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
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- then idling
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Possible fault causes
- Fuel injector faulty or borderline
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- Leak in intake-air distributor
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  - Engine speed 500 … 1,000 rpm
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Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
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- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder X - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder X - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder X - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

P1372

Diagnostic information - DME (DFI) control unit

Valve lift control, bank 1
- V6 Turbo only

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature < 120 °C (248 °F) (T030)
- Air conditioning [OFF]

- Small lift:
  - Engine speed 1,000 .... 2,500 rpm (A020)
  - Mass air flow (A050)
    - > 300 … > 135 mg/stroke (depending on: engine speed)
  - Intake camshaft adjustment > 16° (N060)

- Large lift:
  - Engine speed 1,000 .... 2,400 rpm (A020)
  - Mass air flow (A050)
    - > 400 … > 170 mg/stroke (depending on: engine speed)

Possible fault causes
♦ Oil supply too low
⇒ (e.g. dirty (oil circuit), scavenging restrictor faulty (cylinder head), ...)
♦ Large differences in exhaust backpressure between banks (e.g. due to constricted or blocked passage of an exhaust branch).
♦ Wrong timing, one bank (intake camshaft or exhaust camshaft)
♦ Solenoid valve for hydraulic valve lift control faulty
⇒ (mechanical fault or electrical fault in circuit)

Fault setting condition(s)
Based on the lambda controllers, the diagnostic function detects that all the valves on this bank have either not switched to the other lift or have not switched quickly enough during valve lift switchover.

P1373

Diagnostic information - DME (DFI) control unit

Valve lift control, bank 2
- V6 Turbo only

Diagnostic conditions
- Perform a short test

or:
- Engine oil temperature < 120 °C (248 °F) (T030)
- Air conditioning [OFF]

- Small lift:
  - Engine speed 1,000 .... 2,500 rpm (A020)
  - Mass air flow (A050)
    - > 300 … > 135 mg/stroke (depending on: engine speed)
  - Intake camshaft adjustment > 16° (N060)

- Large lift:
  - Engine speed 1,000 .... 2,400 rpm (A020)
  - Mass air flow (A050)
    - > 400 … > 170 mg/stroke (depending on: engine speed)

Possible fault causes
♦ Oil supply too low
⇒ (e.g. dirty (oil circuit), scavenging restrictor faulty (cylinder head), ...)
♦ Large differences in exhaust backpressure between banks (e.g. due to constricted or blocked passage of an exhaust branch).
♦ Wrong timing, one bank (intake camshaft or exhaust camshaft)
♦ Solenoid valve for hydraulic valve lift control faulty
⇒ (mechanical fault or electrical fault in circuit)

Fault setting condition(s)
Based on the lambda controllers, the diagnostic function detects that all the valves on this bank have either not switched to the other lift or have not switched quickly enough during valve lift switchover.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder X - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Valve lift control, cylinder X - large lift

Diagnostic conditions
- Short test for valve lift of individual cylinders (if available)

or
- Driving in partial-load range
  - > 5 minute(s)
  - Engine speed 1,250 … 3,000 rpm
  - Mass air flow 180 … 500 mg/stroke

- then idling
  - Air conditioning [OFF]
  - > 2 minute(s)
  - Engine speed 500 … 1,000 rpm
  - Mass air flow 90 … 250 mg/stroke

Possible fault causes
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)
- Bar ignition module faulty
- Leak in intake-air distributor
- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)
- Valve lifter faulty
  (Intake valve has not switched to the other lift or has not switched quickly enough)

Fault setting condition(s)
- The diagnostic function detects uneven running for the specified cylinder.
- Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
- Uneven running is interpreted as a misfire or valve lift fault, depending on type.

P1380

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

Diagnostic information - DME (DFI) control unit

Valve lift control - one bank in wrong lift
- Panamera V8T from MY E
- Cayenne V8T from MY F

ⓘ INFORMATION
Based on the lambda controllers, the diagnostic function detects that all the valves on **ONE** bank have either not switched to the other lift or have not switched quickly enough during valve lift switchover.
♦ The diagnostic function **CANNOT** detect which of the two banks is faulty **while the vehicle is moving**.
♦ **After** the fault memory has been erased **AND** a **valve lift short test** is then performed, the diagnostic function detects which bank is working incorrectly. The following codes **then** mean:
- Fault code P1381 = bank 1 faulty
- Fault code P1382 = bank 2 faulty

Diagnostic conditions
- Perform a short test

or
- Engine oil temperature < 120 °C (248 °F) (T030)
- Air conditioning [OFF]

- Small lift:
  - Engine idling ▶ Engine speed 550 ... 850 rpm (A020)
  - Mass air flow (A050)
    - > 130 … > 140 mg/stroke
    - < 250 … < 150 mg/stroke (depending on: engine speed)

- Large lift:
  - Engine speed 1,400 ... 6,500 rpm (A020)
  - Mass air flow (A050)
    - > 750 … > 325 mg/stroke (depending on: engine speed)

Possible fault causes
♦ Oil supply too low
⇒ (e.g. dirty (oil circuit), scavenging restrictor faulty (cylinder head), ...)
♦ Large differences in exhaust backpressure between banks (e.g. due to constricted or blocked passage of an exhaust branch).
♦ Wrong timing, one bank (intake camshaft or exhaust camshaft)
♦ Solenoid valve for hydraulic valve lift control faulty
⇒ (mechanical fault or electrical fault in circuit)

Fault setting condition(s)
Based on the lambda controllers, the diagnostic function detects that all the valves on this bank have either not switched to the other lift or have not switched quickly enough during valve lift switchover.

Diagnostic information - DME (DFI) control unit

Valve lift control - one bank in wrong lift
- Panamera V8T from MY E
- Cayenne V8T from MY F

ⓘ INFORMATION
Based on the lambda controllers, the diagnostic function detects that all the valves on **ONE** bank have either not switched to the other lift or have not switched quickly enough during valve lift switchover.
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- Fault code P1381 = bank 1 faulty
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Diagnostic conditions
- Perform a short test

or
- Engine oil temperature < 120 °C (248 °F) (T030)
- Air conditioning [OFF]

- Small lift:
  - Engine idling ▶ Engine speed 550 ... 850 rpm (A020)
  - Mass air flow (A050)
    - > 130 … > 140 mg/stroke
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- Large lift:
  - Engine speed 1,400 ... 6,500 rpm (A020)
  - Mass air flow (A050)
    - > 750 … > 325 mg/stroke (depending on: engine speed)

Possible fault causes
♦ Oil supply too low
⇒ (e.g. dirty (oil circuit), scavenging restrictor faulty (cylinder head), ...)
♦ Large differences in exhaust backpressure between banks (e.g. due to constricted or blocked passage of an exhaust branch).
♦ Wrong timing, one bank (intake camshaft or exhaust camshaft)
♦ Solenoid valve for hydraulic valve lift control faulty
⇒ (mechanical fault or electrical fault in circuit)

Fault setting condition(s)
Based on the lambda controllers, the diagnostic function detects that all the valves on this bank have either not switched to the other lift or have not switched quickly enough during valve lift switchover.

Diagnostic information - DME (DFI) control unit

Bank 1 misfire after cold start

Diagnostic conditions
- Cold start (catalytic converter heating measure)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Bank 2 misfire after cold start

Diagnostic conditions
- Cold start (catalytic converter heating measure)
- Idle speed up to the red range on the tachometer
- No overrun phase(s)
- None of the following faults stored: P0335, P0336, P0371, P0373

Possible fault causes

♦ Affected by block heater

♦ Loose contact or corrosion on connectors or lines
♦ Power supply or ground supply faulty

♦ Spark plug(s) oily due to oil entrainment in the cylinder
♦ Wrong spark plug(s)
♦ Mechanical or electrical fault in spark plug(s)
♦ Bar ignition module faulty
♦ Power supply or ground supply faulty

♦ Wrong fuel quality
♦ Fuel tank empty
♦ Water in fuel tank
♦ Fuel line dirty/blocked
♦ Mechanical fault in electric fuel pump
♦ Mechanical fault in fuel high-pressure pump

♦ Fuel injector faulty or borderline
(opens too late/not long enough/not enough or leaking)
♦ Oxygen sensor(s) faulty

♦ Exhaust system constricted/blocked
♦ Catalytic converter faulty

♦ Leak in intake-air distributor
♦ Foreign bodies in intake-air distributor
♦ Camshaft adjustment fault
♦ Wrong timing - exhaust camshaft
♦ Valve lift control fault
♦ Valve lifter faulty
(Intake valve has not switched to the other lift or has not switched quickly enough)
♦ Mechanical fault in valve drive
♦ Insufficient compression
(e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)

● The diagnostic function detects uneven running for the specified cylinder.
● Uneven running is calculated from the expected and actual crankshaft acceleration due to combustion.
● Uneven running is interpreted as a misfire or valve lift fault, depending on type.

Diagnostic information - DME (DFI) control unit

Ignition timing angle after cold start

Diagnostic conditions
- Cold start
- then driving

Possible fault causes
ⓘ This fault entry is used for information purposes only; the actual cause of the fault is in another area.
♦ Significant engine running problems force the engine control system to leave the permitted ignition timing range in order to keep the engine running.

P1460

Diagnostic information - DME (DFI) control unit

Radiator fan: overtemperature

⚠WARNING
Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!
♦ **ALWAYS** keep hair or clothing out of the rotating range of the fan.
♦ DO NOT reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.

ⓘ INFORMATION
♦ The control unit is activated by the DME control unit via a signal line.
♦ In the opposite direction, the control unit can report faults to the DME control unit.

Diagnostic conditions
● Radiator fan activated > 5 minute(s)

Possible fault causes
♦ Radiator air intake covered (car cover)
♦ Radiator fan control unit faulty

Fault setting condition(s)
● Overtemperature in radiator fan control unit

Fault effects
● 1st threshold exceeded:
  ♦ Radiator fan speed = 1,800 rpm (lowest power loss)
● 2nd threshold exceeded:
  ♦ Radiator fan switched off

P1461

Diagnostic information - DME (DFI) control unit

Radiator fan: electrical fault

⚠WARNING

Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!

- **ALWAYS** keep hair or clothing out of the rotating range of the fan.
- DO NOT reach into the rotating fan.
- **DO NOT** place tools or other items in the rotating range of the fan.
- Perform work on the fan only with the ignition switched off.
- Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE

Sensitive electronics!
Risk of irreparable damage to electronic components!

- **DO NOT** carry out electrical tests.
- **DO NOT** connect external power sources.

ⓘ INFORMATION

- The control unit is activated by the DME control unit via a signal line.
- In the opposite direction, the control unit can report faults to the DME control unit.

Diagnostic conditions

- Radiator fan activated > 5 minute(s)

Possible fault causes

- Radiator fan faulty
- Radiator fan control unit faulty

Fault effects

- Radiator fan switched off

Diagnostic information - DME (DFI) control unit

Radiator fan: internal power supply

⚠WARNING

Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!

- ♦ **ALWAYS** keep hair or clothing out of the rotating range of the fan.
- ♦ DO NOT reach into the rotating fan.
- ♦ **DO NOT** place tools or other items in the rotating range of the fan.
- ♦ Perform work on the fan only with the ignition switched off.
- ♦ Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE

Sensitive electronics!
Risk of irreparable damage to electronic components!

- ♦ **DO NOT** carry out electrical tests.
- ♦ **DO NOT** connect external power sources.

ⓘ INFORMATION

- ♦ The control unit is activated by the DME control unit via a signal line.
- ♦ In the opposite direction, the control unit can report faults to the DME control unit.

Diagnostic conditions

- ● Radiator fan activated > 5 minute(s)

Possible fault causes

- ♦ Radiator fan faulty
- ♦ Radiator fan control unit faulty

P1466

Diagnostic information - DME (DFI) control unit

Radiator fan: mechanical fault

⚠WARNING
Exposed running fan blades!
Danger of limbs being severed!
Risk of serious injury due to ejected foreign bodies!
♦ **ALWAYS** keep hair or clothing out of the rotating range of the fan.
♦ DO NOT reach into the rotating fan.
♦ **DO NOT** place tools or other items in the rotating range of the fan.
♦ Perform work on the fan only with the ignition switched off.
♦ Secure the ignition to prevent it from being switched on accidentally by other persons.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.

ⓘ INFORMATION
♦ The control unit is activated by the DME control unit via a signal line.
♦ In the opposite direction, the control unit can report faults to the DME control unit.

Diagnostic conditions
● Radiator fan activated > 5 minute(s)

Possible fault causes
♦ Radiator fan sluggish or blocked
♦ Radiator fan faulty

Fault setting condition(s)
● Radiator fan current draw too high

Fault effects
● Sluggish:
  ♦ Radiator fan speed reduced to 0 rpm
● Blocked:
  ♦ Engine shakes loose

P1476

Diagnostic information - DME (DFI) control unit

Insufficient vacuum for leakage diagnosis pump

Diagnostic conditions

- Perform tank leak short test

or

- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 50 °C (41 … 122 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
    ⇒ See actual value A060-Ambient pressure from DME (measured)
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 0 ... 120 km/h (0 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes

- ♦ Vacuum system leaking (See ⓘ)
- ♦ Vacuum pump faulty

Fault setting condition(s)

- Reed switch signal missing or delayed

ⓘ INFORMATION

The vacuum system includes:

- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Variable intake manifold (not Turbo)
  - ♦ Boost pressure control cycle valve (Turbo only)
  - ♦ Diverter solenoid valve (Turbo only)
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Exhaust flap: mechanical fault

Diagnostic conditions
- Open and close exhaust flap (e.g. via drive link)

Possible fault causes
- ♦ Foreign object in flap
- ♦ Mechanism sluggish or faulty
- ♦ Servo motor faulty

Fault setting conditions
- The servo motor reports a flap actual position that deviates from the specified setpoint position
- The flap actual position is implausible

Diagnostic information - DME (DFI) control unit

Exhaust flap: mechanical fault

Diagnostic conditions
● Open and close exhaust flap (e.g. via drive link)

Possible fault causes
♦ Foreign object in flap
♦ Mechanism sluggish or faulty
♦ Servo motor faulty

Fault setting conditions
● The servo motor reports a flap actual position that deviates from the specified setpoint position
● The flap actual position is implausible

P1502

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1506

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1507

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1508

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Power supply or ground supply faulty ⇒ See P1559
- ♦ DME (DFI) control unit software error ▶ Re-program

ⓘ INFORMATION
- ♦ All calculations for functions in the control unit are monitored by a higher-level unit.
- ♦ A fault is entered if monitoring detects implausible calculations.

P1509

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Power supply or ground supply faulty ⇒ See P1559
- ♦ DME (DFI) control unit software error ▶ Re-program

ⓘ INFORMATION
- ♦ All calculations for functions in the control unit are monitored by a higher-level unit.
- ♦ A fault is entered if monitoring detects implausible calculations.

P1512

Diagnostic information - DME (DFI) control unit

Starter activation with powertrain closed

Diagnostic conditions
- Restart by Start/Stop system

Possible fault causes
- DME (DFI) control unit faulty

Fault setting condition(s)
- The starter was actuated by the Start/Stop system although a closed powertrain was detected (gear engaged + clutch closed).

Fault effects
- Start/Stop system deactivated

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - adaptation aborted due to environmental condition

Diagnostic conditions

- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes

♦ Adaptation aborted due to environmental condition

Fault setting condition(s)

One or more of the stated conditions were not met (see ⓘ)

Fault effects

♦ Engine **cannot** be started

ⓘ INFORMATION

Forced adaptation can be performed using the PIWIS Tester.

Diagnostic information - DME (DFI) control unit

Ambient temperature via CAN
- Panamera from MY E (NOT Panamera GTS)
- Cayenne from MY F

Diagnostic conditions
- Ignition on > 15 second(s)

Possible fault causes
♦ Air-conditioning regulator does not work or is faulty

Fault setting condition(s)
Ambient temperature of air-conditioning regulator is not received for > 12 seconds
▶ Initialization value of 77 °C (171 °F) is output.

Fault effects

♦ Substitute value from model
♦ If a fault is present when recording the ambient temperature, positive crankcase ventilation is continuously activated.

Diagnostic information - DME (DFI) control unit

Switch-off time fault

Diagnostic conditions
- Engine running
- then switch off ignition
- immediately afterwards: ignition on > 10 minute(s)

Possible fault causes
♦ The power supply of the DME (DFI) control unit was interrupted during control unit run-on (See P1572)
♦ DME (DFI) control unit faulty

ⓘ INFORMATION
1. The DME control unit receives time information from the instrument cluster at regular intervals (approx. 4 sec.) when the ignition is on.

2. The switch-off time A145_Time since engine stop (manual via ignition lock) is calculated in the DME control unit.

Diagnostic information - DME (DFI) control unit

Oil pump activation

ⓘ INFORMATION

♦ The measured oil pressure is compared with the setpoint oil pressure.
♦ The setpoint oil pressure depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine …
♦ A fault is detected if the PWM signal is outside a defined range for > 30 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Dynamic driving style when oil level is near minimum (oil foaming)
♦ Engine oil pressure too low (oil level, oil quality, oil thinning, dirt in oil circuit, oil circuit faulty - increased leakage inside the engine)
♦ Engine oil pressure too high (oil quality, oil thickening, dirt in oil circuit, oil circuit faulty)
♦ Oil pressure sensor faulty (incorrect trimming)
♦ Oil pressure control valve faulty
♦ Oil pump faulty

Diagnostic information - DME (DFI) control unit

Oil pump activation

ⓘ INFORMATION

♦ The measured oil pressure is compared with the setpoint oil pressure.
♦ The setpoint oil pressure depends, among other things, on the ambient conditions (temperatures, off time, etc.), operating point of the engine …
♦ A fault is detected if the PWM signal is outside a defined range for > 30 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Dynamic driving style when oil level is near minimum (oil foaming)
♦ Engine oil pressure too low (oil level, oil quality, oil thinning, dirt in oil circuit, oil circuit faulty - increased leakage inside the engine)
♦ Engine oil pressure too high (oil quality, oil thickening, dirt in oil circuit, oil circuit faulty)
♦ Oil pressure sensor faulty (incorrect trimming)
♦ Oil pressure control valve faulty
♦ Oil pump faulty

P1538

Diagnostic information - DME (DFI) control unit

Oil pump activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Engine oil pressure too low (oil level, oil quality, oil thinning, dirt in oil circuit, oil circuit faulty)
♦ Engine oil pressure too high (oil quality, oil thickening, dirt in oil circuit, oil circuit faulty)
♦ Oil pressure sensor faulty
♦ Oil pressure control valve faulty
♦ Oil pump faulty

Diagnostic information - DME (DFI) control unit

Oil pump activation

ⓘ INFORMATION

♦ The oil pressure control valve is controlled via a PWM signal.
♦ The PWM signal depends, among other things, on the ambient conditions (temperatures, off time, etc), operating point of the engine (rpm, load, oil temperature), measured oil pressure (at the oil pressure sensor) …
♦ A fault is detected if the PWM signal is outside a defined range for > 8 seconds.

Diagnostic conditions
● Engine running

Possible fault causes
♦ Engine oil pressure too low (oil level, oil quality, oil thinning, dirt in oil circuit, oil circuit faulty)
♦ Engine oil pressure too high (oil quality, oil thickening, dirt in oil circuit, oil circuit faulty)
♦ Oil pressure sensor faulty
♦ Oil pressure control valve faulty
♦ Oil pump faulty

P1540

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

P1541

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit

Diagnostic conditions
- Vehicle standstill
- Coolant temperature 5 ... 100 °C (41 … 212 °F)
- Intake air temperature 5 ... 40 °C (41 … 104 °F)
- Accelerator pedal not pressed (0%)
- Ignition off
- then switch on ignition > 60 second(s) with engine off

Possible fault causes
- ♦ Adaptation was not performed (successfully).
- ♦ Throttle valve adjusting unit faulty

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - start test

Diagnostic conditions
- **Throttle valve adjusting unit** adapted
- Switch on ignition , then
  - Switch off ignition for > 1 **min.**
    - Switch on ignition

Possible fault causes
♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
The start test was faulty twice in a row (See ⓘ).

ⓘ INFORMATION
Start test: When the ignition is switched on , the throttle valve is opened by a certain value, and must then close on its own.

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - start test

Diagnostic conditions
- **Throttle valve adjusting unit** adapted
- Switch on ignition , then
  - Switch off ignition for > 1 **min.**
    - Switch on ignition

Possible fault causes
♦ Throttle valve adjusting unit faulty

Fault setting condition(s)
The start test was faulty twice in a row (See ⓘ).

ⓘ INFORMATION
Start test: When the ignition is switched on , the throttle valve is opened by a certain value, and must then close on its own.

P1544

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit stuck

Diagnostic conditions
- Throttle valve adjusting unit adapted
- Vehicle standstill
- No gear engaged or selector-lever position P or N
- Intake air temperature > 5 °C (41 °F)
- Idle speed
- then short acceleration
- then engine speed > 2,200 rpm

Possible fault causes
- Throttle valve adjusting unit frozen
- Throttle valve adjusting unit faulty

P1546

Diagnostic information - DME (DFI) control unit

Wheel speed implausible

Diagnostic conditions
- Driving

Possible fault causes
- ♦ Fault in PSM area

Fault setting condition(s)
- The wheel speed deviates from the other wheel speeds for too long.

P1547

Diagnostic information - DME (DFI) control unit

Wheel speed implausible

Diagnostic conditions
- Driving

Possible fault causes
- Fault in PSM area

Fault setting condition(s)
- The wheel speed deviates from the other wheel speeds for too long.

P1548

Diagnostic information - DME (DFI) control unit

Wheel speed implausible

Diagnostic conditions
- Driving

Possible fault causes
- Fault in PSM area

Fault setting condition(s)
- The wheel speed deviates from the other wheel speeds for too long.

P1549

Diagnostic information - DME (DFI) control unit

Wheel speed implausible

Diagnostic conditions
- Driving

Possible fault causes
- Fault in PSM area

Fault setting condition(s)
- The wheel speed deviates from the other wheel speeds for too long.

P1550

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Power supply or ground supply faulty ⇒ See P1559
- ♦ DME (DFI) control unit software error ▶ Re-program

ⓘ INFORMATION
- ♦ All calculations for functions in the control unit are monitored by a higher-level unit.
- ♦ A fault is entered if monitoring detects implausible calculations.

P1552

Diagnostic information - DME (DFI) control unit

Control unit function monitoring

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill

Possible fault causes
- ♦ Power supply or ground supply faulty ⇒ See P1559
- ♦ DME (DFI) control unit software error ▶ Re-program

ⓘ INFORMATION
- ♦ All calculations for functions in the control unit are monitored by a higher-level unit.
- ♦ A fault is entered if monitoring detects implausible calculations.

P1556

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1557

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1558

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1559

Diagnostic information - DME (DFI) control unit

Control unit restart during operation (warm reset)

Diagnostic conditions
- Engine start

Possible fault causes
♦ Vehicle electrical system voltage < 6 V during starting process (e.g. battery discharged or faulty), e.g. due to contact resistance in the lines to the DME control unit.
♦ Excessive difference in internal monitoring processes in the control unit, e.g. in case of reversal of the engine's direction of rotation due to inadvertent shifting into reverse gear when the vehicle is driving forward.

Fault setting condition(s)
This fault is entered if the DME control unit performs a restart during operation (soft reboot/warm reset).

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving with:
  - Engine temperature > 30 °C (86 °F)
  - Overrun phase(s) > 1.5 second(s)
  - Engine speed 1.408 .... 3,000 rpm
- None of the following faults stored: U0129, P0503

Possible fault causes
♦ Fault in PSM area

Fault setting condition(s)
- Vehicle speed < 3 km/h or 1 mph (measured value), with:
  - Diagnostic conditions

P1563

Diagnostic information - DME (DFI) control unit

Cruise control coding

Diagnostic conditions
- Ignition on

Possible fault causes
- Vehicle data incorrect
  (See PIWIS Tester II ▶ Additional menu [F7] ▶ Maintenance of vehicle data)
- Vehicle equipment wrong
- DME (DFI) control unit coded incorrectly - The data record does not match the vehicle.
- Steering wheel electronics control unit coded incorrectly

Diagnostic information - DME (DFI) control unit

Cruise control request despite main switch being off

Diagnostic conditions
- Driving
- Main cruise control switch [OFF]

Possible fault causes
- For cruise control ⇒ DME control unit faulty
- For ACC ⇒ Fault in ACC control unit (adaptive cruise control)

Fault setting condition(s)
- Torque request from cruise control (ACC or cruise control) although the main switch on the steering-column stalk is set to [OFF]

Fault effects
- ♦ No throttle response
- ♦ Increased idle speed (approx. 1,000 .... 1,600 rpm)
- ♦ Electronic throttle emergency mode (see ⓘ)

ⓘ INFORMATION

Electronic throttle emergency mode
During electronic throttle emergency mode, no power is supplied to the throttle valve, which then drops to emergency air position.
- ♦ Idle speed increases to approx. 1,000 .... 1,200 rpm.
- ♦ If the accelerator pedal is pressed, the engine will run at max. 1,600 rpm (set via ignition, injection, ...). ▶ **Limp home**.
- ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.
- ♦ If the engine speed exceeds 1,600 rpm, cylinders will be deactivated.
- ♦ If cylinder deactivation is not sufficient, the DME control unit performs a reset and fault code **P1559** is stored in the fault memory (the original faults were previously stored as reset-resistant faults in the fault memory).

P1565

Diagnostic information - DME (DFI) control unit

Adaptive cruise control (ACC) implausible

Diagnostic conditions
- Driving

Possible fault causes
- Fault in adaptive cruise control (ACC) area

Fault setting condition(s)
- Simultaneous detection of
  - Request: Acceleration - adaptive cruise control (ACC)

  and
  - Input signal: Brake light switch

P1575

Diagnostic information - DME (DFI) control unit

Accelerator pedal potentiometer implausible

Diagnostic conditions
- Ignition on > 3 second(s)
- then accelerator pedal pressed down fully > 3 second(s)
- then release accelerator pedal fully
- then idling > 10 second(s)

Possible fault causes
- ♦ Short circuit to B+/ground/between lines or open circuit in wiring to potentiometer 1 and 2
- ♦ Accelerator pedal potentiometer 1 and 2 faulty

Fault setting condition(s)
- Both potentiometers detected as faulty.
- Individual faults are also entered in most cases.

Fault effects
- ♦ Engine does not respond to throttle, engine speed 1,000 rpm

Diagnostic information - DME V8 DFI

Kickdown adaptation

INFORMATION
♦ A fault is detected if an adaptation process is terminated unsuccessfully 20 times.

Diagnostic conditions

- Ignition switched on
- Adaptation requested via Tester
- Accelerator pedal pressed down fully

Possible fault causes

♦ Adaptation requested, but started too late (max. 10 sec.)
♦ Accelerator pedal not kept constantly pressed down fully for at least 1 sec.
♦ Accelerator pedal not pressed down fully
♦ Accelerator pedal module loose

P1582

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1600

Diagnostic information - DME (DFI) control unit

Vehicle speed PSM

Diagnostic conditions
- Driving
- None of the following faults stored: U0129

Possible fault causes
- Fault in PSM area

Fault setting condition(s)
- Vehicle speed > 350 km/h or 218 mph (measured value)

P1620

Diagnostic information - DME (DFI) control unit

Crash signal monitoring

Diagnostic conditions
- Engine start

Possible fault causes
- Airbag drive link test
- Engine switch-off following:
  - Accident detection

P1641

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1642

Diagnostic information - DME (DFI) control unit

Control unit faulty

Diagnostic conditions
- Ignition on > 10 second(s)
- then idling > 30 second(s)
- then engine speed > 1,000 rpm > 60 seconds with:
  - Vehicle standstill
- then driving > 60 second(s)

Possible fault causes
♦ DME (DFI) control unit faulty

P1657

Diagnostic information - DME (DFI) control unit

Diverter solenoid valve

Diagnostic conditions
- Driving with 1 full-load acceleration and 1 overrun phase

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Diverter solenoid valve faulty

P1658

Diagnostic information - DME (DFI) control unit

Diverter solenoid valve

Diagnostic conditions
- Driving with 1 full-load acceleration and 1 overrun phase

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Diverter solenoid valve faulty

P1659

Diagnostic information - DME (DFI) control unit

Diverter solenoid valve

Diagnostic conditions
- Driving with 1 full-load acceleration and 1 overrun phase

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Diverter solenoid valve faulty

P1680

Diagnostic information - DME (DFI) control unit

Exhaust flap: short circuit in signal line

Diagnostic conditions
- Switch on ignition 5 x

Possible fault causes
- ♦ Servo motor signal line ◄► Short circuit to B+ or ground in DME control unit
- ♦ Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the flap as far as possible

P1681

Diagnostic information - DME (DFI) control unit

Exhaust flap: short circuit in signal line

Diagnostic conditions
- Switch on ignition 5 x

Possible fault causes
- ♦ Servo motor signal line ◄► Short circuit to B+ or ground in DME control unit
- ♦ Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the flap as far as possible

P1682

Diagnostic information - DME (DFI) control unit

Exhaust flap: no signal

Diagnostic conditions
- Switch on ignition 5 x

Possible fault causes
- ♦ Servo motor signal line ◄► Open circuit in DME control unit
- ♦ Servo motor power supply or ground supply faulty
- ♦ Servo motor faulty

Fault setting conditions
- No signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the flap as far as possible

Diagnostic information - DME (DFI) control unit

Exhaust flap: short circuit in signal line

Diagnostic conditions
- Switch on ignition 5 x

Possible fault causes
- ♦ Servo motor signal line ◄► Short circuit to B+ or ground in DME control unit
- ♦ Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the flap as far as possible

Diagnostic information - DME (DFI) control unit

Exhaust flap: short circuit in signal line

Diagnostic conditions
- Switch on ignition 5 x

Possible fault causes
- ♦ Servo motor signal line ◄► Short circuit to B+ or ground in DME control unit
- ♦ Servo motor faulty

Fault setting conditions
- Static signal on the servo motor signal line ◄► DME control unit

Fault effects
- ♦ If it still functions, the servo motor opens the flap as far as possible

Diagnostic information - DME (DFI) control unit

Exhaust flap: no signal

Diagnostic conditions
- Switch on ignition 5 x

Possible fault causes
- Servo motor signal line ◄► Open circuit in DME control unit
- Servo motor power supply or ground supply faulty
- Servo motor faulty

Fault setting conditions
- No signal on the servo motor signal line ◄► DME control unit

Fault effects
- If it still functions, the servo motor opens the flap as far as possible

P1696

Diagnostic information - DME (DFI) control unit

Generator - electrical fault

Diagnostic conditions
- Engine running

Fault setting condition(s)
- Fault in gateway control unit

P1699

Diagnostic information - DME (DFI) control unit

Generator - no communication

Diagnostic conditions
- Engine running

Fault setting condition(s)
- Fault in gateway control unit

P2088

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 1

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2089

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 1

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2090

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2091

Diagnostic information - DME (DFI) control unit

Bank 1 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2092

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 2

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2093

Diagnostic information - DME (DFI) control unit

Intake camshaft adjustment output stage, bank 2

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2094

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2095

Diagnostic information - DME (DFI) control unit

Bank 2 exhaust camshaft adjustment output stage

Diagnostic conditions
- Time since engine start > 10 second(s)
- None of the following faults stored: P1556, P1557, P1558

Possible fault causes
- Short circuit to B+/ground or open circuit in the line (activation)
- Short circuit to ground or open circuit in the lines (power supply)
- Fuse faulty
- Solenoid valve for hydraulic camshaft adjustment faulty

P2096

Diagnostic information - DME (DFI) control unit

Lambda correction behind catalytic converter bank 1 - control limit exceeded (too lean)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- None of the following faults stored:
  - Camshaft adjustment faults
  - Valve lift control faults
  - P2270, P2271 or P0041

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 1

♦ Camshaft adjustment fault

♦ Valve lift control fault

♦ Mechanical fault in valve drive

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty (aged)

Fault setting condition(s)

♦ Adaptation limit (4%) exceeded

P2097

Diagnostic information - DME (DFI) control unit

Lambda correction behind catalytic converter bank 1 - control limit exceeded (too rich)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- None of the following faults stored:
  - Camshaft adjustment faults
  - Valve lift control faults
  - P2270, P2271 or P0041

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 1

♦ Camshaft adjustment fault

♦ Valve lift control fault

♦ Mechanical fault in valve drive

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty (aged)

Fault setting condition(s)

♦ Adaptation limit (4%) exceeded

P2098

Diagnostic information - DME (DFI) control unit

Lambda correction behind catalytic converter bank 2 - control limit exceeded (too lean)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- None of the following faults stored:
  - Camshaft adjustment faults
  - Valve lift control faults
  - P2270, P2271 or P0041

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - lambda control (behind catalytic converter) active
- None of the following faults stored: P2272, P2273, P0041

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 2

♦ Camshaft adjustment fault

♦ Valve lift control fault

♦ Mechanical fault in valve drive

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty (aged)

Fault setting condition(s)

♦ Adaptation limit (4%) exceeded

P2099

Diagnostic information - DME (DFI) control unit

Lambda correction behind catalytic converter bank 2 - control limit exceeded (too rich)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- None of the following faults stored:
  - Camshaft adjustment faults
  - Valve lift control faults
  - P2270, P2271 or P0041

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 2

♦ Camshaft adjustment fault

♦ Valve lift control fault

♦ Mechanical fault in valve drive

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty (aged)

Fault setting condition(s)

♦ Adaptation limit (4%) exceeded

P2100

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Short circuit between lines (servo motor)
- Throttle valve adjusting unit faulty

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2101

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - position deviation/control range

Diagnostic conditions
- Throttle valve adjusting unit adapted
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit between lines (servo motor)
- Throttle valve adjusting unit faulty

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2103

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - position deviation/control range

Diagnostic conditions
- Throttle valve adjusting unit adapted
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit between lines (servo motor)
- Throttle valve adjusting unit faulty

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

Diagnostic information - DME (DFI) control unit

Throttle valve potentiometer 1 implausible

Diagnostic conditions
- Engine running
- None of the following faults stored: P2127 or P2128 (throttle valve potentiometer 2)

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines (potentiometer)
- Throttle valve adjusting unit faulty

Fault setting condition(s)
- Throttle valve potentiometer 1 (measured) - mass air flow (calculated)
  ⇒ Deviation too high

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2122

Diagnostic information - DME (DFI) control unit

Throttle potentiometer 1

Diagnostic conditions
- Ignition on > 5 second(s)
- then engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (**potentiometer**)
- ♦ **Throttle valve adjusting unit** faulty

Fault effects
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm).
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

P2123

Diagnostic information - DME (DFI) control unit

Throttle potentiometer 1

Diagnostic conditions
- Ignition on > 5 second(s)
- then engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (**potentiometer**)
- ♦ **Throttle valve adjusting unit** faulty

Fault effects
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm).
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

Diagnostic information - DME (DFI) control unit

Throttle valve potentiometer 2 implausible

Diagnostic conditions
- Engine running
- None of the following faults stored: P2122 or P2123 (throttle valve potentiometer 1)

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines (potentiometer)
- Throttle valve adjusting unit faulty

Fault setting condition(s)
- Throttle valve potentiometer 2 (measured) - mass air flow (calculated)
  ⇒ Deviation too high

Fault effects
The vehicle is in limp-home mode, i.e. the engine is running at 1,200 to 1,800 rpm.

P2127

Diagnostic information - DME (DFI) control unit

Throttle potentiometer 2

Diagnostic conditions
- Ignition on > 5 second(s)
- then engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (**potentiometer**)
- ♦ **Throttle valve adjusting unit** faulty

Fault effects
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm).
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

Diagnostic information - DME (DFI) control unit

Throttle potentiometer 2

Diagnostic conditions
- Ignition on > 5 second(s)
- then engine running

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines (**potentiometer**)
- ♦ **Throttle valve adjusting unit** faulty

Fault effects
- ♦ No acceleration initially + increased idle speed (approx. 800 rpm)
  - ▶ until the accelerator pedal is released fully.
  - ♦ Then acceleration, with
    - ♦ significantly reduced engine torque (max. approx.100 ... 180 Nm)
    - ♦ and limited engine speed (max. approx. 5,000 rpm).
  - ♦ If the accelerator and brake are pressed at the same time, the engine will run at idle speed.

Diagnostic information - DME (DFI) control unit

Throttle valve adjusting unit - channel comparison

Diagnostic conditions
- Throttle valve adjusting unit adapted
- Idling and short acceleration
- then driving with different operating conditions

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Throttle valve adjusting unit faulty

Fault setting condition(s)
- The two potentiometer values differ too greatly from each other.
- It is not clear which value is incorrect.

Fault effects
- No throttle response
- Increased idle speed (approx. 1,000 .... 1,600 rpm)
- Electronic throttle emergency mode (see ⓘ)

ⓘ INFORMATION

Electronic throttle emergency mode

During electronic throttle emergency mode, no power is supplied to the throttle valve, which then drops to emergency air position.
- Idle speed increases to approx. 1,000 .... 1,200 rpm.
- If the accelerator pedal is pressed, the engine will run at max. 1,600 rpm (set via ignition, injection, ...). ▶ **Limp home**.
- If the accelerator and brake are pressed at the same time, the engine will run at idle speed.
- If the engine speed exceeds 1,600 rpm, cylinders will be deactivated.
- If cylinder deactivation is not sufficient, the DME control unit performs a reset and fault code **P1559** is stored in the fault memory (the original faults were previously stored as reset-resistant faults in the fault memory).

P2181

Diagnostic information - DME (DFI) control unit

Thermostat stuck open

Diagnostic conditions
- Driving > 10 minutes, with:
  - Engine start temperature (T072) -10 °C... +60 °C (+14 °F... +140 °C)
  - Ambient temperature (T050) > -10 °C (+14 °F)
  - Average vehicle speed (A100) > 35 ... 60 km/h (22 ... 37 mph)
    (depending on outside temperature > +60 °C ... < +20 °C/> +140 °F ... < +68 °F)
  - Vehicle speed max. 100 km/h (62 mph)
  - As few overrun phases as possible (< 100 second(s) in total)
  - Average mass air flow (H020) > 25 ... 35 kg/h
    (depending on outside temperature > +30 °C ... < -10 °C/> +86 °F ... < +14 °F)
  - With heating until engine coolant temperature > 80 °C/176 °F (T020)

or
- System test of thermal management (if available)

Possible fault causes
- ♦ Influence by block heater
- ♦ 3/2-way valve faulty, with :
  - Original auxiliary heater
- ♦ Seal in thermostat housing faulty
- ♦ Thermostat housing faulty
- ♦ Thermostat faulty
- ♦ Engine coolant temperature sensor faulty or loose contact or corrosion on plugs or lines

Fault setting condition(s)
- Engine coolant temperature (T020) < setpoint 80 °C (176 °F), at:
  - End of diagnostics (see ⓘ)

Fault effects
- ♦ Radiator shutter is opened
- ♦ Radiator shutter remains open until the fault has been healed or deleted from the fault memory

ⓘ INFORMATION
- ♦ Diagnostics had ended when the calculated temperature model has reached 80 °C (176 °F).
- ♦ Diagnostics is evaluated only if the aforementioned diagnostic conditions were met.

P2183

Diagnostic information - DME (DFI) control unit

Coolant temperature at radiator outlet implausible
- Only Panamera V6S up to MY D

Diagnostic conditions
- Thermal management system test (if available)

or
- Drive > 10 minute(s) with:
  - Engine start temperature < 40 °C (104 °F)
  - Engine speed > 2,000 rpm
  - Vehicle speed 20 ... 60 km/h (12 … 37 mph)
  - With heating until coolant temperature > 70 °C (158 °F)
- None of the following faults stored: P0116, P0117, P0118, P0119, P050C, P3081, P3082

Possible fault causes
- ♦ Engine coolant temperature sensor (See ⓘ 1)
- ♦ Radiator air intake covered
- ♦ Radiator outlet coolant temperature sensor faulty

Fault setting condition(s)
- Coolant temperature at radiator outlet > 25 °C (77 °F) warmer than engine temperature (See ⓘ 1), at:
  - Engine start

or
- Engine coolant temperature at radiator outlet heats up to < setpoint value (calculated), at:
  - End of diagnostics (See ⓘ 2)

ⓘ INFORMATION

1.
Engine temperature = intake air temperature (as substitute value for engine coolant temperature):
- If fault P0116, P0117, P0118, P0119, P050C, P3080 or P3081 has been previously detected in the system

⇒ The following fault can occur during the next drive:
♦ > *P2183* - Engine coolant temperature *at radiator outlet implausible* <

2.
The diagnostic function ends under the following conditions:
- Engine coolant temperature > 70 °C (158 °F), then:
  - Certain conditions must be met for an overall period (vehicle speed, engine speed, power supply to thermostat).

Diagnostic information - DME (DFI) control unit

Radiator outlet coolant temperature sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Radiator outlet coolant temperature sensor faulty

Fault setting condition(s)
- Coolant temperature at radiator outlet (measured) < -40 °C (-40 °F) (P2184), with:
  - Ignition on or engine running

  and
  - Intake air temperature > -30 °C (-22 °F)

  or
  - Engine running > 31 minute(s)

or
- Coolant temperature at radiator outlet (measured) > +140 °C (284 °F) (P2185), with:
  - Ignition on or engine running

Diagnostic information - DME (DFI) control unit

Radiator outlet coolant temperature sensor: electrical fault

Diagnostic conditions
- Ignition on

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Radiator outlet coolant temperature sensor faulty

Fault setting condition(s)
- Coolant temperature at radiator outlet (measured) < -40 °C (-40 °F) (P2184), with:
  - Ignition on or engine running
  - and
  - Intake air temperature > -30 °C (-22 °F)
  - or
  - Engine running > 31 minute(s)

or
- Coolant temperature at radiator outlet (measured) > +140 °C (284 °F) (P2185), with:
  - Ignition on or engine running

Diagnostic information - DME (DFI) control unit

Radiator outlet coolant temperature sensor: loose contact

Diagnostic conditions
- Ignition on
- None of the following faults stored: P2184, P2185

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Radiator outlet coolant temperature sensor faulty

Fault setting condition(s)
Coolant temperature at radiator outlet: actual-value jumps > 3 °C (37 °F)

Fault effects
- ♦ Substitute value = last actual value that was detected as OK, with:
  - Actual-value jumps > 9.75 °C (49.5 °F)

P2195

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Engine running > 3 minute(s) with:
  - No overrun phase(s)
  - All oxygen sensor(s) ready for operation
  - Lambda control active
  - Engine speed 640 .... 4,000 rpm
  - Load 15 ... 70%
  - Catalytic converter temperature > 400 °C (752 °F)
  - Mass air flow 10 ... 520 kg/h
- None of the following faults stored: P2270, P2271, P0041

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time. (Significant deviation occurs suddenly)

P2196

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Engine running > 3 minute(s) with:
  - No overrun phase(s)
  - All oxygen sensor(s) ready for operation
  - Lambda control active
  - Engine speed 640 .... 4,000 rpm
  - Load 15 ... 70%
  - Catalytic converter temperature > 400 °C (752 °F)
  - Mass air flow 10 ... 520 kg/h
- None of the following faults stored: P2270, P2271, P0041

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time. (Significant deviation occurs suddenly)

P2197

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 3 minute(s) with:
  - No overrun phase(s)
  - All oxygen sensor(s) ready for operation
  - Lambda control active
  - Engine speed 640 .... 4,000 rpm
  - Load 15 ... 70%
  - Catalytic converter temperature > 400 °C (752 °F)
  - Mass air flow 10 ... 520 kg/h
- None of the following faults stored: P2272, P2273, P0041

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time. (Significant deviation occurs suddenly)

P2198

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 3 minute(s) with:
  - No overrun phase(s)
  - All oxygen sensor(s) ready for operation
  - Lambda control active
  - Engine speed 640 .... 4,000 rpm
  - Load 15 ... 70%
  - Catalytic converter temperature > 400 °C (752 °F)
  - Mass air flow 10 ... 520 kg/h
- None of the following faults stored: P2272, P2273, P0041

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Fault setting condition(s)

The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time. (Significant deviation occurs suddenly)

Diagnostic information - DME (DFI) control unit

Deviation in air/fuel mixture, cylinder 1

Diagnostic conditions
- Perform short test >Individual cylinder mixture adaptation<

or
- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes
- Spark plugs oily (e.g. due to oil entrainment in the cylinder)
- Wrong spark plug(s)
- Mechanical or electrical fault in spark plug(s)
- Bar ignition module faulty
- Power supply or ground supply faulty

- Wrong fuel injector
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)

- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)
The specified cylinder deviates from the ideal fuel/air mixture by more than 12% of the injection quantity (see ⓘ).

ⓘ INFORMATION
- For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
- The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
- This takes place in sequence for each cylinder a total of 3 times.
- The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
- The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
- Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  - The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  - Fault type >No signal< means that the mixture is too rich
  - Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Deviation in air/fuel mixture, cylinder 2

Diagnostic conditions
- Perform short test >Individual cylinder mixture adaptation<

or
- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes
- Spark plugs oily (e.g. due to oil entrainment in the cylinder)
- Wrong spark plug(s)
- Mechanical or electrical fault in spark plug(s)
- Bar ignition module faulty
- Power supply or ground supply faulty

- Wrong fuel injector
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)

- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)
The specified cylinder deviates from the ideal fuel/air mixture by more than 12% of the injection quantity (see ⓘ).

ⓘ INFORMATION
- For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
- The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
- This takes place in sequence for each cylinder a total of 3 times.
- The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
- The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
- Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  - The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  - Fault type >No signal< means that the mixture is too rich
  - Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Deviation in air/fuel mixture, cylinder 3

Diagnostic conditions
- Perform short test >Individual cylinder mixture adaptation<

or
- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes
- Spark plugs oily (e.g. due to oil entrainment in the cylinder)
- Wrong spark plug(s)
- Mechanical or electrical fault in spark plug(s)
- Bar ignition module faulty
- Power supply or ground supply faulty

- Wrong fuel injector
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)

- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)
The specified cylinder deviates from the ideal fuel/air mixture by more than 12% of the injection quantity (see ⓘ).

ⓘ INFORMATION
- For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
- The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
- This takes place in sequence for each cylinder a total of 3 times.
- The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
- The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
- Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  - The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  - Fault type >No signal< means that the mixture is too rich
  - Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Deviation in air/fuel mixture, cylinder 4

Diagnostic conditions
- Perform short test >Individual cylinder mixture adaptation<

or
- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes
- Spark plugs oily (e.g. due to oil entrainment in the cylinder)
- Wrong spark plug(s)
- Mechanical or electrical fault in spark plug(s)
- Bar ignition module faulty
- Power supply or ground supply faulty

- Wrong fuel injector
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)

- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)
The specified cylinder deviates from the ideal fuel/air mixture by more than 12% of the injection quantity (see ⓘ).

ⓘ INFORMATION
- For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
- The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
- This takes place in sequence for each cylinder a total of 3 times.
- The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
- The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
- Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  - The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  - Fault type >No signal< means that the mixture is too rich
  - Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Deviation in air/fuel mixture, cylinder 5

Diagnostic conditions
- Perform short test >Individual cylinder mixture adaptation<

or
- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes
- Spark plugs oily (e.g. due to oil entrainment in the cylinder)
- Wrong spark plug(s)
- Mechanical or electrical fault in spark plug(s)
- Bar ignition module faulty
- Power supply or ground supply faulty

- Wrong fuel injector
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)

- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)
The specified cylinder deviates from the ideal fuel/air mixture by more than 12% of the injection quantity (see ⓘ).

ⓘ INFORMATION
- For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
- The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
- This takes place in sequence for each cylinder a total of 3 times.
- The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
- The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
- Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  - The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  - Fault type >No signal< means that the mixture is too rich
  - Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Deviation in air/fuel mixture, cylinder 6

Diagnostic conditions
- Perform short test >Individual cylinder mixture adaptation<

or
- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes
- Spark plugs oily (e.g. due to oil entrainment in the cylinder)
- Wrong spark plug(s)
- Mechanical or electrical fault in spark plug(s)
- Bar ignition module faulty
- Power supply or ground supply faulty

- Wrong fuel injector
- Fuel injector faulty or borderline
  (opens too late/not long enough/not enough or leaking)

- Insufficient compression
  (e.g. cylinder liner damaged, valve seat ring faulty, ...)

Fault setting condition(s)
The specified cylinder deviates from the ideal fuel/air mixture by more than 12% of the injection quantity (see ⓘ).

ⓘ INFORMATION
- For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
- The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
- This takes place in sequence for each cylinder a total of 3 times.
- The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
- The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
- Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  - The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  - Fault type >No signal< means that the mixture is too rich
  - Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor implausible

Diagnostic conditions
- Ignition on > 10 second(s)
- then: Acceleration with wide-open throttle for as long as possible, immediately followed by an overrun phase lasting as long as possible
- None of the following faults stored: P1638, P1639, P0107, P0108, P2228, P2229, P1183, P1184, P1187, P1188, P1189, P1190

Possible fault causes
- Fault P0069 also entered:
  - ♦ Intake manifold pressure sensor fault

- No fault P0069 entered:
  - ♦ DME (DFI) control unit faulty

Fault effects
- ♦ Substitute value from model

P2228

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- DME (DFI) control unit faulty

Fault effects
- Substitute value from model

P2229

Diagnostic information - DME (DFI) control unit

Ambient pressure sensor: electrical fault

Diagnostic conditions
- Ignition on or engine running

Possible fault causes
- DME (DFI) control unit faulty

Fault effects
- Substitute value from model

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1: open circuit in pumping current (APE)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in pumping current line (APE - contact 1)

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2: open circuit in pumping current (APE)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in pumping current line (APE - contact 1)

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1: open circuit in signal (RE+/IPN)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in signal line (RE+/IPN - contact 6/contact 2)

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2: open circuit in signal (RE+/IPN)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in line (RE+/IPN - contact 6/contact 2)

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

P2257

Diagnostic information - DME (DFI) control unit

Secondary-air pump relay driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in lines for secondary-air pump relay activation
- Secondary-air pump relay faulty

P2258

Diagnostic information - DME (DFI) control unit

Secondary-air pump relay driver

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in lines for secondary-air pump relay activation
- Secondary-air pump relay faulty

P2263

Diagnostic information - DME (DFI) control unit

Basic boost pressure too low

Diagnostic conditions
- 3 full-load accelerations:
  - in 3rd gear (no gearshift)
  - Engine speed between 1,500 rpm and max. engine speed
- then steady driving

Possible fault causes
- ♦ Insufficient vacuum supply due to leak in vacuum system or faulty vacuum pump (see ⓘ)
- ♦ Leak between turbocharger (on pressure side) and intake valve (engine)
- ♦ Vacuum hose leaking at boost pressure control cycle valve or diverter solenoid valve
- ♦ Diverter solenoid valve not installed or installed incorrectly
- ♦ Diverter solenoid valve leaking or stuck
- ♦ Diverter valve not installed or installed incorrectly
- ♦ Diverter valve leaking or stuck
- ♦ Boost pressure control cycle valve stuck open electrically or mechanically
- ♦ Wastegate mechanical fault, leaking or stuck open
- ♦ Turbocharger (1 or 2) stiff or stuck

Fault setting condition(s)
- Boost pressure (calculated) < setpoint value (depending on operating condition)

ⓘ INFORMATION
The vacuum system includes:
- ♦ Mechanical vacuum pump
- ♦ Main load circuit:
  - ♦ Brake booster
- ♦ Auxiliary load circuit:
  - ♦ Boost pressure control cycle valve
  - ♦ Diverter solenoid valve
  - ♦ Exhaust flap (if fitted)
  - ♦ Acoustic simulator (V6 Turbo only)
  - ♦ Tank leakage diagnosis pump (USA, Canada and South Korea only)

P2270

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 1

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Fault setting condition(s)

♦ The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

P2271

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 1 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 1

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor downstream of catalytic converter, bank 1 faulty

Fault setting condition(s)

♦ The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

P2272

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 2

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Fault setting condition(s)

♦ The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

P2273

Diagnostic information - DME (DFI) control unit

Oxygen sensor downstream of catalytic converter, bank 2 - signal too lean/too rich

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Perform all short tests in sequence (without tank leak test).

or

- Steady driving > 20 minute(s) at:
  - approx. 80 km/h (50 mph)
  - in the highest gear
  - Lambda control (behind catalytic converter) active

Possible fault causes

♦ Leak in exhaust system between oxygen sensor upstream of catalytic converter and oxygen sensor downstream of catalytic converter, bank 2

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor downstream of catalytic converter, bank 2 faulty

Fault setting condition(s)

♦ The oxygen sensor signal deviates by a certain value from the control value (rich/lean mixture) within a certain time.

P2294

Diagnostic information - DME (DFI) control unit

Bank 2 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 2 fuel high-pressure pump)

P2295

Diagnostic information - DME (DFI) control unit

Bank 2 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 2 fuel high-pressure pump)

P2296

Diagnostic information - DME (DFI) control unit

Bank 2 quantity control valve output stage

Diagnostic conditions
- Ignition on > 5 second(s)

Possible fault causes
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ Quantity control valve faulty (in bank 2 fuel high-pressure pump)

Diagnostic information - DME (DFI) control unit

Implausible signal for oxygen sensor ahead of bank 1 catalytic converter (during overrun shutoff)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor ahead of the catalytic converter with the sensor behind the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Exhaust temperature > 200 °C (392 °F)
  - Overrun phase(s) > 8 second(s)

Possible fault causes

♦ Unintentional fuel supply, e.g. due to:
  ♦ dripping fuel injector
  ♦ high fuel content in engine oil
  ♦ large quantity of evaporating engine oil

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor ahead of bank 1 catalytic converter faulty (aged)

P2298

Diagnostic information - DME (DFI) control unit

Implausible signal for oxygen sensor ahead of bank 1 catalytic converter (during overrun shutoff)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor ahead of the catalytic converter with the sensor behind the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Driving with:
  - Exhaust temperature > 200 °C (392 °F)
  - Overrun phase(s) > 8 second(s)

Possible fault causes

♦ Unintentional fuel supply, e.g. due to:
  ♦ dripping fuel injector
  ♦ high fuel content in engine oil
  ♦ large quantity of evaporating engine oil

♦ Short circuit to B+/ground/between lines or open circuit in the lines

♦ Oxygen sensor ahead of bank 2 catalytic converter faulty (aged)

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 1

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 1 faulty

P2301

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 1

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 1 faulty

P2302

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 1 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2302:
  - ♦ Bar ignition module on cylinder 1 faulty

- P2302 + P0351 or P2300 or P2301:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 1 faulty

P2303

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 2

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 2 faulty

P2304

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 2

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 2 faulty

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 2 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2305:
  - ♦ Bar ignition module on cylinder 2 faulty

- P2305 + P0352 or P2303 or P2304:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 2 faulty

P2306

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 3

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 3 faulty

P2307

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 3

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 3 faulty

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 3 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2308:
  - ♦ Bar ignition module on cylinder 3 faulty

- P2308 + P0353 or P2306 or P2307:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 3 faulty

P2309

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 4

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 4 faulty

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
♦ This takes place in sequence for each cylinder a total of 3 times.
♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

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Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
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- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

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♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
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♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
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Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
♦ This takes place in sequence for each cylinder a total of 3 times.
♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

● Perform short test >Individual cylinder mixture adaptation<
or
● Driving with engine speed and load conditions that are as constant as possible:
  ● 4th ... 7th gear
  ● Engine speed 1,090 ... 3,000 rpm
  ● Engine load 155 … 544 mg/stroke
  ● Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

● If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
● The function is repeated up to 2 times in this highway cycle.
● If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
♦ This takes place in sequence for each cylinder a total of 3 times.
♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

Diagnostic information - DME (DFI) control unit

Misfiring during mixture adaptation phase

Diagnostic conditions

- Perform short test >Individual cylinder mixture adaptation<

or

- Driving with engine speed and load conditions that are as constant as possible:
  - 4th ... 7th gear
  - Engine speed 1,090 ... 3,000 rpm
  - Engine load 155 … 544 mg/stroke
  - Active carbon filter load < 0.8

Possible fault causes

♦ Mixture in the specified cylinder is too lean

Fault setting condition(s)

- If, during mixture adaptation of the individual cylinders (see ⓘ), rough running of a cylinder close to misfiring is detected, the function is aborted for the affected bank and a suspected fault is logged.
- The function is repeated up to 2 times in this highway cycle.
- If the function is aborted again in each of the 4 highway cycles over several drives, the fault entry >Misfiring during mixture adaptation phase, cylinder X< (P230A … F) will appear.

ⓘ INFORMATION

♦ For fuel trim adaptation of the individual cylinders, the mixture of one individual cylinder is always "leaned out" by a certain percentage.
♦ The other cylinders of the bank are enriched until the lambda value is balanced again and the mixture control unit no longer has to regulate.
♦ This takes place in sequence for each cylinder a total of 3 times.
♦ The adaptation function now takes the mean value of each cylinder and adapts the injection time by the corresponding percentage, but by no more than 5%.
♦ The diagnostic function evaluates the 3 mixture lean-out cycles and uses this to produce the respective actual value >Injection quantity deviation, cylinder X< **(L500 ... L550)**.
♦ Cylinders that deviate by more than 12% are entered as faulty (P219C ... P21A1):
  ♦ The mixture adaptation value of this bank and the 3 actual values >Injection quantity deviation, cylinder X< of the bank with the faulty cylinder are entered in the fault environments 1 ... 4.
  ♦ Fault type >No signal< means that the mixture is too rich
  ♦ Fault type >Signal implausible< means that the mixture is too lean

P2310

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 4

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 4 faulty

P2311

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 4 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2311:
  - ♦ Bar ignition module on cylinder 4 faulty

- P2311 + P0354 or P2309 or P2310:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 4 faulty

P2312

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 5

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 5 faulty

P2313

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 5

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 5 faulty

P2314

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 5 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2314:
  - ♦ Bar ignition module on cylinder 5 faulty

- P2314 + P0355 or P2312 or P2313:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 5 faulty

P2315

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 6

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 6 faulty

P2316

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 6

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 6 faulty

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 6 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2317:
  - ♦ Bar ignition module on cylinder 6 faulty

- P2317 + P0356 or P2315 or P2316:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 6 faulty

P2318

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 7

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 7 faulty

P2319

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 7

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 7 faulty

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 7 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2320:
  - ♦ Bar ignition module on cylinder 7 faulty

- P2320 + P0357 or P2318 or P2319:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 7 faulty

P2321

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 8

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 8 faulty

P2322

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 8

⚠WARNING
High voltage !
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)

Possible fault causes
♦ Loose contact or corrosion on connectors or lines
♦ Short circuit to B+ or open circuit in the lines (ground supply)
♦ Short circuit to ground or open circuit in the lines (power supply)
♦ Short circuit to B+/ground or open circuit in the line (activation)
♦ Bar ignition module on cylinder 8 faulty

P2323

Diagnostic information - DME (DFI) control unit

Bar ignition module on cylinder 8 - SoftShutDown

⚠WARNING
High voltage!
Risk of death or serious injury due to high voltage or high current!
♦ Start engine only if all the bar ignition modules have been installed and connected.

NOTE
Sensitive electronics!
Risk of irreparable damage to electronic components!
♦ **DO NOT** carry out electrical tests.
♦ **DO NOT** connect external power sources.
♦ Check ground supply.

Diagnostic conditions
- Time since engine start > 2 second(s)
- Engine temperature > -30 °C (-22 °F)
- None of the following faults stored: P0351, P2300, P2301

Possible fault causes
- Only P2323:
  - ♦ Bar ignition module on cylinder 8 faulty

- P2323 + P0358 or P2321 or P2322:
  - ♦ Loose contact or corrosion on connectors or lines
  - ♦ Short circuit to B+ or open circuit in the lines (ground supply)
  - ♦ Short circuit to ground or open circuit in the lines (power supply)
  - ♦ Short circuit to B+/ground or open circuit in the line (activation)
  - ♦ Bar ignition module on cylinder 8 faulty

Diagnostic information - DME (DFI) control unit

Leakage diagnosis pump driver

Diagnostic conditions

- Perform tank vent valve and tank leak short tests

or:

- Time since engine start > 10 second(s)
- Leakage diagnosis pump activated
- No fault entered for: P1556, P1557, P1558

Possible fault causes

- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Short circuit to B+ or open circuit in the lines (power supply or leakage diagnosis pump activation)
- Leakage diagnosis pump faulty

ⓘ INFORMATION

The vacuum system includes:

- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Leakage diagnosis pump driver: below limit value

Diagnostic conditions
- Perform tank vent valve and tank leak short tests

or:
- Time since engine start > 10 second(s)
- Leakage diagnosis pump not activated
- No fault entered for: P1556, P1557, P1558

Possible fault causes
- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Short circuit to ground (leakage diagnosis pump activation)
- Leakage diagnosis pump faulty

ⓘ INFORMATION
The vacuum system includes:
- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Leakage diagnosis pump driver

Diagnostic conditions

- Perform tank vent valve and tank leak short tests

or:

- Time since engine start > 10 second(s)
- Leakage diagnosis pump activated
- No fault entered for: P1556, P1557, P1558

Possible fault causes

- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Short circuit to B+ or open circuit in the lines (power supply or leakage diagnosis pump activation)
- Leakage diagnosis pump faulty

ⓘ INFORMATION

The vacuum system includes:

- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

P2403

Diagnostic information - DME (DFI) control unit

Reed switch for leakage diagnosis pump

Diagnostic conditions

- Perform tank leak short test

or

- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 50 °C (41 … 122 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
    ⇒ See actual value > A060-Ambient pressure from DME (measured) <
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 0 ... 120 km/h (0 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes

- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Open circuit/short circuit to B+ (signal line)
- Leakage diagnosis pump faulty (reed switch)

Fault setting condition(s)

- Reed switch signal missing

ⓘ INFORMATION

The vacuum system includes:

- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Reed switch for leakage diagnosis pump

Diagnostic conditions

- Perform tank leak short test

or

- Driving > 150 second(s) with:
  - Engine start temperature 5 ... 50 °C (41 … 122 °F)
  - Time since engine start 5 second(s) ... 20 minute(s)
  - Ambient pressure > 730 hPa (= location below approx 2,400 ... 2,700 m/7,874 ... 8,858 ft.)
    ⇒ See actual value > A060-Ambient pressure from DME (measured) <
  - Height difference < 20 m (66 ft.)
  - Intake air temperature > 5 °C (41 °F)
  - Intake air temperature: fluctuation(s) < 10 °C (50 °F)
  - Vehicle speed 0 ... 120 km/h (0 … 75 mph)
  - Acceleration/deceleration max. -2 m/s² … +2 m/s²
  - High partial-load share

Possible fault causes

- Vacuum system leaking (See ⓘ)
- Vacuum pump faulty
- Tank vent valve stuck closed
- Purge-air line between tank vent valve and intake manifold trapped/blocked
- Short circuit to ground (signal line)
- Leakage diagnosis pump faulty (reed switch)

Fault setting condition(s)

- Reed switch signal permanently present

ⓘ INFORMATION

The vacuum system includes:

- Mechanical vacuum pump
- Main load circuit:
  - Brake booster
- Auxiliary load circuit:
  - Variable intake manifold (not Turbo)
  - Boost pressure control cycle valve (Turbo only)
  - Diverter solenoid valve (Turbo only)
  - Exhaust flap (if fitted)
  - Acoustic simulator (V6 Turbo only)
  - Tank leakage diagnosis pump (USA, Canada and South Korea only)

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1 - sensor in air

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Lambda control active
- Driving > 10 second(s) with:
  - No overrun phase(s)
- No fault entered for: oxygen sensor(s) or mixture preparation

Possible fault causes

♦ Fuel injector mechanical fault/blocked
(e.g. due to chip in the fuel rail)

♦ Oxygen sensor upstream of catalytic converter bank 1 not installed (only electrically connected)

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2 - sensor in air

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Lambda control active
- Driving > 10 second(s) with:
  - No overrun phase(s)
- No fault entered for: oxygen sensor(s) or mixture preparation

Possible fault causes

♦ Fuel injector mechanical fault/blocked
(e.g. due to chip in the fuel rail)

♦ Oxygen sensor upstream of catalytic converter bank 2 not installed (only electrically connected)

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oil level sensor

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Oil level sensor faulty

Diagnostic information - DME (DFI) control unit

Oil level sensor

Diagnostic conditions
- Ignition on

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to ground or open circuit in the lines
- Oil level sensor faulty

Diagnostic information - DME (DFI) control unit

Power supply, terminal 15 or 87

Diagnostic conditions
- Ignition on

or
- Engine running

Possible fault causes
- Vehicle electrical system supply voltage too high (e.g. jump-lead starting)
- Vehicle electrical system supply voltage too low
- Contact resistance, loose contact or corrosion on connectors or lines (DME (DFI) control unit)

Fault setting condition(s)
- Deviation of supply voltage at terminal 15 or 87:
  - < 10 V (P0658/P2531)

  or
  - > 16 V (P0659/P2532)

at:
- DME (DFI) control unit - connector [A], contact 34 ⇒ Terminal 15
- DME (DFI) control unit - connector [A], contact 3/5/6 ⇒ Terminal 87

P2532

Diagnostic information - DME (DFI) control unit

Power supply, terminal 15 or 87

Diagnostic conditions
- Ignition on

or
- Engine running

Possible fault causes
- Vehicle electrical system supply voltage too high (e.g. jump-lead starting)
- Vehicle electrical system supply voltage too low
- Contact resistance, loose contact or corrosion on connectors or lines (DME (DFI) control unit)

Fault setting condition(s)
- Deviation of supply voltage at terminal 15 or 87:
  - < 10 V (P0658/P2531)

  or
  - > 16 V (P0659/P2532)

at:
- DME (DFI) control unit - connector [A], contact 34 ⇒ Terminal 15
- DME (DFI) control unit - connector [A], contact 3/5/6 ⇒ Terminal 87

P2533

Diagnostic information - DME (DFI) control unit

Start request from front-end electronics: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Open circuit in request line between front-end electronics and DME control unit
- ♦ Short circuit to ground in request line between front-end electronics and DME control unit
- ♦ Short circuit to B+ in request line between front-end electronics and DME control unit

P2535

Diagnostic information - DME (DFI) control unit

Start request from front-end electronics: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Open circuit in request line between front-end electronics and DME control unit
- ♦ Short circuit to ground in request line between front-end electronics and DME control unit
- ♦ Short circuit to B+ in request line between front-end electronics and DME control unit

P2539

Diagnostic information - DME (DFI) control unit

Fuel low-pressure sensor: electrical fault

Diagnostic conditions
- Ignition on

or
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Fuel low-pressure sensor faulty

P2541

Diagnostic information - DME (DFI) control unit

Fuel low-pressure sensor: electrical fault

Diagnostic conditions
- Ignition on

or
- Engine running

Possible fault causes
- Loose contact or corrosion on connectors or lines
- Short circuit to B+/ground/between lines or open circuit in the lines
- Fuel low-pressure sensor faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1: open circuit in compensating current (RT)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - Exhaust temperature > 200 °C (392 °F)
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in compensating current line (RT - contact 5)

♦ Oxygen sensor upstream of catalytic converter bank 1 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2: open circuit in compensating current (RT)

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Drive > 10 minute(s) with:
  - Engine at operating temperature
  - Exhaust temperature > 200 °C (392 °F)
  - at least 1 overrun phase(s) > 6 second(s)
- then idling > 40 second(s)

Possible fault causes

♦ Open circuit in line (RT - contact 5)

♦ Oxygen sensor upstream of catalytic converter bank 2 faulty

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 1 - electrical fault

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 30 second(s), at:
  - Exhaust temperature > 100 °C (212 °F)
  - Oxygen sensor upstream of catalytic converter ready for operation
  - No overrun phase(s)

Possible fault causes

♦ Fault in oxygen sensor upstream of catalytic converter, bank 1 area

Fault setting condition(s)

♦ Temperature implausible (oxygen sensor upstream of catalytic converter)

Fault effects

♦ Since oxygen sensing is interrupted the moment a fault is detected, the DME (DFI) control unit stores this fault as information.

♦ Further faults are entered

ⓘ The vehicle must be driven in the same driving cycle (without ignition reset) for this purpose.

Diagnostic information - DME (DFI) control unit

Oxygen sensor upstream of catalytic converter, bank 2 - electrical fault

NOTE

Plug connection disconnected = reference-air duct open!

Damage to oxygen sensor!

♦ **DO NOT** use spray, grease, fluid or similar products on the oxygen sensor plug connections.

ⓘ INFORMATION

♦ Do not interchange the oxygen sensor upstream of the catalytic converter with the sensor downstream of the catalytic converter as this will result in implausible fault entries.

♦ The connectors themselves are coded and cannot be interchanged.

Diagnostic conditions

- Engine running > 30 second(s), at:
  - Exhaust temperature > 100 °C (212 °F)
  - Oxygen sensor upstream of catalytic converter ready for operation
  - No overrun phase(s)

Possible fault causes

♦ Fault in oxygen sensor upstream of catalytic converter, bank 2 area

Fault setting condition(s)

♦ Temperature implausible (oxygen sensor upstream of catalytic converter)

Fault effects

♦ Since oxygen sensing is interrupted the moment a fault is detected, the DME (DFI) control unit stores this fault as information.

♦ Further faults are entered

ⓘ The vehicle must be driven in the same driving cycle (without ignition reset) for this purpose.

P3046

Diagnostic information - DME (DFI) control unit

Starter relay 1 stuck closed

Diagnostic conditions

- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes

♦ Starter relay 1 faulty
♦ Short circuit to B+ between starter relay 1 and starter relay 2

Fault effects

♦ None

Diagnostic information - DME (DFI) control unit

Starter relay 1 activation: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Open circuit in activation line between DME control unit and starter relay 1
- ♦ Short circuit to ground in activation line between DME control unit and starter relay 1
- ♦ Short circuit to B+ in activation line between DME control unit and starter relay 1
- ♦ Starter relay 1 faulty

Fault effects
- In case of short circuit to ground in activation line:
  - ♦ none
- In case of all other fault sources:
  - ♦ Engine cannot be started

Diagnostic information - DME (DFI) control unit

Starter relay 1 activation: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Open circuit in activation line between DME control unit and starter relay 1
- ♦ Short circuit to ground in activation line between DME control unit and starter relay 1
- ♦ Short circuit to B+ in activation line between DME control unit and starter relay 1
- ♦ Starter relay 1 faulty

Fault effects
- In case of short circuit to ground in activation line:
  - ♦ none
- In case of all other fault sources:
  - ♦ Engine cannot be started

Diagnostic information - DME (DFI) control unit

Starter relay 1 activation: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Open circuit in activation line between DME control unit and starter relay 1
- ♦ Short circuit to ground in activation line between DME control unit and starter relay 1
- ♦ Short circuit to B+ in activation line between DME control unit and starter relay 1
- ♦ Starter relay 1 faulty

Fault effects
- In case of short circuit to ground in activation line:
  - ♦ none
- In case of all other fault sources:
  - ♦ Engine cannot be started

P3050

Diagnostic information - DME (DFI) control unit

Starter relay 2 stuck closed

Diagnostic conditions

- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes

♦ Starter relay 2 faulty

Fault effects

♦ none

Diagnostic information - DME (DFI) control unit

Terminal 50 starter activation feedback line: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
♦ Open circuit in feedback line between DME control unit and starter relay 1; fuse might be faulty
♦ Short circuit to ground in feedback line between DME control unit and starter relay 1 or front-end electronics or DC/DC converter
♦ Short circuit to B+ in feedback line between DME control unit and starter relay 1
♦ Short circuit to B+ in activation line between starter relay 1 and starter terminal 50

Fault effects
♦ Fault entry in front-end electronics and DC/DC converter as well
♦ Monitoring of starter activation not possible

P3053

Diagnostic information - DME (DFI) control unit

Terminal 50 starter activation feedback line: electrical fault

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
♦ Open circuit in feedback line between DME control unit and starter relay 1; fuse might be faulty
♦ Short circuit to ground in feedback line between DME control unit and starter relay 1 or front-end electronics or DC/DC converter
♦ Short circuit to B+ in feedback line between DME control unit and starter relay 1
♦ Short circuit to B+ in activation line between starter relay 1 and starter terminal 50

Fault effects
♦ Fault entry in front-end electronics and DC/DC converter as well
♦ Monitoring of starter activation not possible

P3054

Diagnostic information - DME (DFI) control unit

Starter or crankshaft mechanically blocked

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
♦ Starter or crankshaft mechanically blocked

Fault effects
♦ Engine start not possible

P3081

Diagnostic information - DME (DFI) control unit

Engine coolant temperature implausible

Diagnostic conditions
- Thermal management system test (if available)

or
- Intake air temperature at engine start < 70 °C (158 °F) or coolant temperature at engine start < 70 °C (158 °F) (See ⓘ 1)
- Engine running > 3 minute(s) (with no overrun phase(s))
- None of the following faults stored: Coolant temperature sensor or intake air temperature sensor

Possible fault causes
- ♦ Affected by block heater
- ♦ 3/2-way valve faulty, with:
  - Original auxiliary heater
- ♦ Seal in thermostat housing faulty
- ♦ Thermostat housing faulty
- ♦ Thermostat faulty
- ♦ Air in the cooling system

Fault setting condition(s)
- Engine coolant temperature < 70 °C (158 °F), at:
  - End of diagnostics (See ⓘ 2)

Fault effects
- ♦ Engine temperature = temperature model (as substitute value for engine coolant temperature)
- ♦ The fault can be healed only if the thermostat has been tested and found to be OK.

ⓘ INFORMATION

1.

The diagnostic function starts under the following conditions:
- If the system was free of faults before
  - Engine coolant temperature at engine start < 70 °C (158 °F)
- If fault has been previously detected in the system
  - Intake air temperature at engine start < 70 °C (158 °F) (engine temperature substitute value only for engine start)

2.

Diagnostics is ended,
- after engine running > 3 minute(s) (with no overrun phase(s)),

and if:
- the calculated temperature model reaches 70 °C (158 °F) before the measured coolant temperature has reached 70 °C (158 °F) (fault entry),

or
- the measured coolant temperature reaches 70 °C (158 °F) before the calculated temperature model has reached 70 °C (158 °F) (NO fault entry).

Diagnostic information - DME (DFI) control unit

Engine coolant temperature stuck

Diagnostic conditions

- Thermal management system test (if available)

or

- Time since ignition off > 6 hour(s)
- Intake air temperature at engine start < 45 °C (113 °F)
- Intake air temperature at engine start = ambient temperature +/- 20 °C (68 °F)
- Engine running > 30 second(s)

Possible fault causes

- ♦ Switch-off time incorrect = gateway control unit faulty (See ⓘ 1)
- ♦ 3/2-way valve faulty, with:
  - Original auxiliary heater
- ♦ Loose contact or corrosion on connectors or lines
- ♦ Engine coolant temperature sensor faulty
- ♦ Affected by block heater

Fault setting condition(s)

- Engine start temperature > 35 ... > 65 °C (95 … 149 °F) (See ⓘ 2)

ⓘ INFORMATION

1.

If the engine switch-off time (formed in the gateway control unit) that is output is greater than the actual value, the engine does not appear to have cooled down sufficiently.
This can be checked by switching the vehicle off - with the engine at operating temperature - for longer than 6 hours (ignition off). After this time:

- ♦ Switch on ignition and connect the PIWIS Tester.
- ♦ Select the following actual values: T020, T030, T040.
- ♦ Compare the actual values:
  - The engine temperature (T020) deviates significantly
  - ⇒ Check and repair the temperature sensor and wiring.
  - The values are similar
  - ⇒ If an auxiliary heater is installed in the vehicle,
    - ♦ switch on the auxiliary heater and leave it on for at least 15 minutes, then:
    - ♦ Compare the actual values again:
      - The engine temperature (T020) deviates significantly
      - ⇒ Replace 3/2-way directional-control valve
      - The values are similar. The calculation of the shut-off time is probably incorrect
      - ⇒ Replace gateway control unit.
  - ⇒ If no auxiliary heater is installed in the vehicle:
    - ♦ the switch-off time calculation is probably incorrect
      - ⇒ Replace gateway control unit.

2.

Setpoint value depends on:

- Time since ignition off

and

- Intake air temperature at engine start

Example: Engine start temperature setpoint value: max. 65 °C (149 °F)

- Time since ignition off: 6.1 hour(s)

and

- Intake air temperature at engine start: 44 °C (111 °F)

P3088

Diagnostic information - DME (DFI) control unit

Starter relay 1 or 2 does not close

Diagnostic conditions
- PDK only: brake applied + selector lever position P or N
- Manual transmission only: completely depress clutch
- Ignition on > 3 second(s)
- Then start the engine

Possible fault causes
- ♦ Starter relay 1 faulty
- ♦ Starter relay 2 faulty
- ♦ Open circuit in power supply to starter relay 1 terminal 86
- ♦ Open circuit in power supply to starter relay 2 terminal 86
- ♦ Open circuit in power supply to starter relay 2 terminal 30

Fault effects
- ♦ Engine start not possible

U0073

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0101

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0111

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0114

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0121

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0126

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0128

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0129

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0133

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0137

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0141

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0142

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0146

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0155

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0159

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0164

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0166

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0167

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0199

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0200

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0201

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0202

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0212

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0235

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnosis information DME control module

U0300 Programming

Diagnostic conditions

- Diagnostics runs continuously

The data/programming version does not match the vehicle equipment.
► Program the **DME control unit** using the correct data record.

U0302

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0314

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0318

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U0402

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0412

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0414

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0415

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0417

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0418

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0421

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0423

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0424

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0425

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0428

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0429

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0431

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0433

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0434

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0438

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0443

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U0447

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U1017

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U1103

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

U1104

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

U1113

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U1122

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U1123

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Cayenne, MY 2011 =>

Diagnosis information - Adaptive cruise control (ACC)

C11000..... 1
C11001..... 2
C11003..... 3
C11005..... 4
C11006..... 5
D00000..... 6
D00000..... 7
D00001..... 8
D00002..... 9
D00003..... 10
D00004..... 11
D00006..... 12
D00007..... 13
D00008..... 14
D00009..... 15

C11000

Diagnosis information - Adaptive cruise control (ACC)

Supply voltage Below limit

NOTE
● This fault is set if the vehicle electrical system voltage falls below 8.5 V even for fractions of a second.
Due to this short debounce time, a low vehicle electrical system voltage will occur first or only in the ACC control unit.
If this fault occurs frequently, the cause may therefore be both the line connection to the ACC control unit or low battery capacity.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Supply voltage** less than 8.5 V, longer than 240 milliseconds
● Fuse F23, Fuse carrier right
● Battery capacity exhausted

Fault effects

♦ System switches off
♦ Display on instrument cluster

C11001

Diagnosis information - Adaptive cruise control (ACC)

Supply voltage Limit exceeded

NOTE
This fault is set if the vehicle electrical system voltage exceeds 16 V even for fractions of a second.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Engine running

Fault setting condition(s)

- **Supply voltage** more than 16 V, longer than 320 milliseconds
- Incorrect jump starting
- **Alternator**

Fault effects

- System switches off
- Display on instrument cluster

Diagnosis information - Adaptive cruise control (ACC)

Control module Temperature - Limit value exceeded

NOTE
This fault is set if the temperature in the control unit exceeds 115 °C (239 °F) for longer than 1.5 minutes.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Device temperature** higher than 115° C (239 °F) for longer than 1.5 minutes
- Sensor ventilation faulty

Fault effects

- System switches off
- Display on instrument cluster

C11005

Diagnosis information - Adaptive cruise control (ACC)

Control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ System switches off
♦ Display on instrument cluster

Diagnosis information - Adaptive cruise control (ACC)

Vehicle reaction implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Vehicle reaction not as expected upon acceleration
- Distance sensor control unit incorrectly coded, engine type naturally aspirated engine or turbo engine
- Vehicle reaction not as expected upon braking
- In trailer mode; trailer not detected
- DME control unit and / or PSM incorrectly coded

Fault effects

♦ System switches off
♦ Display on instrument cluster

D00000

Diagnosis information - Adaptive cruise control (ACC)

Control module Temperature - Limit value exceeded

NOTE
This fault is set if the temperature in the control unit exceeds 115 °C (239 °F) for longer than 1.5 minutes.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Device temperature** higher than 115° C (239 °F) for longer than 1.5 minutes
- Sensor ventilation faulty

Fault effects

- System switches off
- Display on instrument cluster

D00000

Diagnosis information - Adaptive cruise control (ACC)

Sensor Malfunction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- System in diagnostic mode
- Sensor not available
- Function block active
- System malfunctioning

Fault effects

♦ System switches off
♦ Display on instrument cluster

D00001

Diagnosis information - Adaptive cruise control (ACC)

Sensor Malfunction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- System in diagnostic mode
- Sensor not available
- Function block active
- System malfunctioning

Fault effects

- System switches off
- Display on instrument cluster

D00002

Diagnosis information - Adaptive cruise control (ACC)

Sensor blind

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Preceding trip with distance control

Fault setting condition(s)

- Sensor lens covered
- Sensor lens dirty
- Sensor lens covered in ice
- Sensor does not see obstacle for a long time
- Sensor lens damaged irreparably
- Sensor incorrectly adjusted

Fault effects

♦ System switches off
♦ Display on instrument cluster

D00003

Diagnosis information - Adaptive cruise control (ACC)

Sensor Malfunction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- System in diagnostic mode
- Sensor not available
- Function block active
- System malfunctioning

Fault effects

♦ System switches off
♦ Display on instrument cluster

D00004

Diagnosis information - Adaptive cruise control (ACC)

Sensor Incorrectly adjusted

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Preceding drive with distance control

Fault setting condition(s)

- Deviation between driving axis and sensor beam larger (1.5°<)
  See also Workshop Manual
- Distance measuring sensor out of adjustment
- **Control module** New, initial adjustment/setting procedure (under “Maintenance/Adjustment” in the PIWIS Tester) not carried out
- Distance measuring sensor mount loose or bent
- Driving axis of chassis displaced
- Wheel settings of rear axle not correct

Fault effects

- System switches off
- Display on instrument cluster

Diagnosis information - Adaptive cruise control (ACC)

Vehicle reaction implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Vehicle reaction not as expected upon acceleration
- Distance sensor control unit incorrectly coded, engine type naturally aspirated engine or turbo engine
- Vehicle reaction not as expected upon braking
- In trailer mode; trailer not detected
- DME control unit and / or PSM incorrectly coded

Fault effects

♦ System switches off
♦ Display on instrument cluster

D00007

Diagnosis information - Adaptive cruise control (ACC)

Sensor Malfunction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- System in diagnostic mode
- Sensor not available
- Function block active
- System malfunctioning

Fault effects

♦ System switches off
♦ Display on instrument cluster

Diagnosis information - Adaptive cruise control (ACC)

Sensor Incorrectly adjusted

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Preceding drive with distance control

Fault setting condition(s)

- Deviation between driving axis and sensor beam larger (1.5°<)
  See also Workshop Manual
- Distance measuring sensor out of adjustment
- **Control module** New, initial adjustment/setting procedure (under “Maintenance/Adjustment” in the PIWIS Tester) not carried out
- Distance measuring sensor mount loose or bent
- Driving axis of chassis displaced
- Wheel settings of rear axle not correct

Fault effects

- System switches off
- Display on instrument cluster

D00009

Diagnosis information - Adaptive cruise control (ACC)

Vehicle identification, different Vehicle Identification Number (VIN)
Vehicle Identification Number (VIN) , implausible

NOTE
This fault is set when the control unit's Vehicle Identification Number (VIN) is not identical to the one reported over CAN.
A new control unit receives the Vehicle Identification Number (VIN) when it is connected for the first time.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Coded Vehicle Identification Number (VIN) in the control unit is not identical to the vehicle's VIN sent via CAN.
- Control unit is new, initial commissioning / vehicle handover not yet performed.
- Control unit originates from another vehicle.
- Vehicle Identification Number (VIN) not correctly entered in the **Control module Adaptive cruise control (ACC)** .

► Check and correct the Vehicle Identification Number (VIN) of the **Control module Adaptive cruise control (ACC)** (in the PIWIS Tester ⇒ **Control module Adaptive cruise control (ACC)** ⇒ Extended identification ⇒ Chassis number)

Fault effects

- System does not function
- Display on instrument cluster

Cayenne , MY 2011 =>

Diagnosis information - Power electronics

P056100..... 1
P056200..... 2
P056300..... 3
P060400..... 4
P060600..... 5
P060B00..... 6
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P064F00..... 8
P068600..... 9
P068A00..... 10
P06B000..... 11
P06B100..... 12
P06B200..... 13
P06B400..... 14
P06B500..... 15
P0A0800..... 16
P0A1100..... 17
P0A1B00..... 18
P0A2B00..... 19
P0A2C00..... 20
P0A2D00..... 21
P0A4000..... 22
P0A4100..... 23
P0A4200..... 24
P0A5200..... 25
P0A5300..... 26
P0A5400..... 27
P0A8E00..... 28
P0A9000..... 29
P0A9400..... 30
P0AEE00..... 31
P0AEF00..... 32
P0AF000..... 33
P0AF300..... 34
P0AF400..... 35
P0AF500..... 36
P0BD300..... 37
P0BD400..... 39
P0BE600..... 41

P0BE700..... 42
P0BE800..... 43
P0BEA00..... 44
P0BEB00..... 45
P0BEC00..... 46
P0BEE00..... 47
P0BEF00..... 48
P0BF000..... 49
P0BFD00..... 50
P0BFF00..... 51
P0C0100..... 52
P0C0500..... 53
P0C1700..... 54
P0C3900..... 55
P0C4E00..... 56
P0C5200..... 57
P0C5300..... 58
P0C5C00..... 59
P0C5D00..... 60
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P151A00..... 66
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P30A000..... 70
P33CB00..... 71
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P33CE00..... 74
P33CF00..... 75
P33D000..... 77
P33D100..... 79
P33D200..... 80
P33D400..... 81
P33D500..... 82
P33D700..... 83

P33D800..... 84
U000100..... 85
U000200..... 86
U002800..... 87
U002900..... 88
U010000..... 89
U011100..... 90
U012200..... 91
U014600..... 92
U040100..... 93
U041200..... 94
U041600..... 95
U045200..... 96
U112300..... 97

P056100

Diagnosis information - High-voltage power electronics control unit

Voltage monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Difference between the terminal 30 voltage (supply voltage) and the terminal 30 voltage (vehicle electrical system supply) too high

Possible fault causes

♦ Load in 12-V vehicle electrical system too high
♦ **High-voltage power electronics control unit**

Fault effects

Hybrid functionality restricted

P056200

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P056300

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P060400

Diagnostic information - high-voltage power electronics control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Internal fault in **high-voltage power electronics control unit**

Fault effects

♦ No function

P060600

Diagnostic information - high-voltage power electronics control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Internal fault in **high-voltage power electronics control unit**

Fault effects

♦ No function

P060B00

Diagnostic information - high-voltage power electronics control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Internal fault in **high-voltage power electronics control unit**

Fault effects

♦ No function

P062F00

Diagnostic information - high-voltage power electronics control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Internal fault in **high-voltage power electronics control unit**

Fault effects

♦ No function

P064F00

Diagnosis information - High-voltage power electronics control unit

Coding

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

INFORMATION
The following codes of the DME, high-voltage battery and high-voltage power electronics control units must agree:

- Vehicle manufacturer
- Country
- Model
- Type of cooling

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

P068600

Diagnosis information - High-voltage power electronics control unit

Contactors

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

P068A00

Diagnosis information - High-voltage power electronics control unit

Contactors

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

P06B000

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P06B100

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P06B200

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P06B400

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P06B500

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P0A0800

Diagnosis information - High-voltage power electronics control unit

DC/DC converter

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Electrical fault in circuit
♦ Open circuit

Fault effects

♦ No function

P0A1100

Diagnosis information - High-voltage power electronics control unit

DC/DC converter

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Electrical fault in circuit
♦ Open circuit

Fault effects

♦ No function

P0A1B00

Diagnostic information - high-voltage power electronics control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Internal fault in **high-voltage power electronics control unit**

Fault effects

♦ No function

P0A2B00

Diagnosis information - High-voltage power electronics control unit

Temperature recording Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground
♦ Open circuit
♦ Signal implausible

P0A2C00

Diagnosis information - High-voltage power electronics control unit

Temperature recording Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground
♦ Open circuit
♦ Signal implausible

P0A2D00

Diagnosis information - High-voltage power electronics control unit

Temperature recording Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground
♦ Open circuit
♦ Signal implausible

P0A4000

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0A4100

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0A4200

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0A5200

Diagnosis information - High-voltage power electronics control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground
♦ Signal implausible

Fault effects

♦ No function

P0A5300

Diagnosis information - High-voltage power electronics control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground
♦ Signal implausible

Fault effects

♦ No function

P0A5400

Diagnosis information - High-voltage power electronics control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground
♦ Signal implausible

Fault effects

♦ No function

P0A8E00

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P0A9000

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Electrical fault in circuit

Fault effects

♦ No function

P0A9400

Diagnosis information - High-voltage power electronics control unit

DC/DC converter

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Electrical fault in circuit
♦ Open circuit

Fault effects

♦ No function

P0AEE00

Diagnosis information - High-voltage power electronics control unit

Temperature recording

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Temperature**, Limit exceeded
♦ **Temperature**, Below limit
♦ **Cooling system** Faulty
♦ **High-voltage power electronics control unit** faulty

P0AEF00

Diagnosis information - High-voltage power electronics control unit

Temperature recording

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Temperature**, Limit exceeded
♦ **Temperature**, Below limit
♦ **Cooling system** Faulty
♦ **High-voltage power electronics control unit** faulty

P0AF000

Diagnosis information - High-voltage power electronics control unit

Temperature recording

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Temperature**, Limit exceeded
♦ **Temperature**, Below limit
♦ **Cooling system** Faulty
♦ **High-voltage power electronics control unit** faulty

P0AF300

Diagnosis information - High-voltage power electronics control unit

Temperature recording

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Temperature**, Limit exceeded
♦ **Temperature**, Below limit
♦ **Cooling system** Faulty
♦ **High-voltage power electronics control unit** faulty

P0AF400

Diagnosis information - High-voltage power electronics control unit

Temperature recording

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Temperature**, Limit exceeded
♦ **Temperature**, Below limit
♦ **Cooling system** Faulty
♦ **High-voltage power electronics control unit** faulty

P0AF500

Diagnosis information - High-voltage power electronics control unit

Temperature recording

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Temperature**, Limit exceeded
♦ **Temperature**, Below limit
♦ **Cooling system** Faulty
♦ **High-voltage power electronics control unit** faulty

P0BD300

Diagnosis information - High-voltage power electronics control unit

Temperature sensor/s **Electric machine**

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor** , Limit exceeded
● **Temperature sensor** , Below limit
● **Temperature sensor** stuck

Possible fault causes

♦ Fault in cooling circuit (high temperature)
♦ **Temperature sensor**, Short circuit to B+
♦ **Temperature sensor**, Short circuit to ground
♦ **Temperature sensor**, Open circuit
♦ **Temperature sensor** Faulty
♦ **Electric machine**
♦ **High-voltage power electronics control unit**

Fault effects

♦ Hybrid functionality restricted

P0BD400

Diagnosis information - High-voltage power electronics control unit

Temperature sensor/s **Electric machine**

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor** , Limit exceeded
● **Temperature sensor** , Below limit
● **Temperature sensor** stuck

Possible fault causes

♦ Fault in cooling circuit (high temperature)
♦ **Temperature sensor**, Short circuit to B+
♦ **Temperature sensor**, Short circuit to ground
♦ **Temperature sensor**, Open circuit
♦ **Temperature sensor** Faulty
♦ **Electric machine**
♦ **High-voltage power electronics control unit**

Fault effects

♦ Hybrid functionality restricted

P0BE600

Diagnosis information - High-voltage power electronics control unit

Electric machine Phase control

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Signal implausible
♦ A triggering event (accident or similar) has occurred

Fault effects

♦ No function

P0BE700

Diagnosis information - High-voltage power electronics control unit

Electric machine Phase control

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Signal implausible
♦ A triggering event (accident or similar) has occurred

Fault effects

♦ No function

P0BE800

Diagnosis information - High-voltage power electronics control unit

Electric machine Phase control

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Signal implausible
♦ A triggering event (accident or similar) has occurred

Fault effects

♦ No function

P0BEA00

Diagnostic information - electric machine

Electric machine - electrical fault

DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Electric machine** faulty

Fault effects

♦ Hybrid functionality restricted

P0BEB00

Diagnostic information - high-voltage power electronics control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Internal fault in **high-voltage power electronics control unit**

Fault effects

♦ No function

P0BEC00

Diagnostic information - high-voltage power electronics control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Internal fault in **high-voltage power electronics control unit**

Fault effects

♦ No function

P0BEE00

Diagnosis information - High-voltage power electronics control unit

Electric machine Phase control

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Signal implausible
♦ A triggering event (accident or similar) has occurred

Fault effects

♦ No function

P0BEF00

Diagnosis information - High-voltage power electronics control unit

Electric machine Phase control

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Signal implausible
♦ A triggering event (accident or similar) has occurred

Fault effects

♦ No function

P0BF000

Diagnosis information - High-voltage power electronics control unit

Electric machine Phase control

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Signal implausible
♦ A triggering event (accident or similar) has occurred

Fault effects

♦ No function

P0BFD00

Diagnosis information - High-voltage power electronics control unit

Electric machine Phase control

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Signal implausible
♦ A triggering event (accident or similar) has occurred

Fault effects

♦ No function

P0BFF00

Diagnostic information - electric machine

Electric machine - electrical fault

DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Electric machine** faulty

Fault effects

♦ Hybrid functionality restricted

P0C0100

Diagnostic information - electric machine

Electric machine - electrical fault

DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Electric machine** faulty

Fault effects

♦ Hybrid functionality restricted

P0C0500

Diagnosis information - High-voltage power electronics control unit

Electric machine Phase control

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Signal implausible
♦ A triggering event (accident or similar) has occurred

Fault effects

♦ No function

P0C1700

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ not calibrated

Fault effects

♦ No function

P0C3900

Diagnosis information - High-voltage power electronics control unit

Temperature recording Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground
♦ Open circuit
♦ Signal implausible

P0C4E00

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0C5200

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0C5300

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0C5C00

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0C5D00

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0C7900

Diagnosis information - High-voltage power electronics control unit

Voltage monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Limit exceeded

Fault effects

♦ No function

P0CDC00

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0CDD00

Diagnosis information - High-voltage power electronics control unit

Electric machine

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Rotor-position detection
♦ Signal scattering into the engine wiring harness

Fault effects

♦ No function

P0D2E00

Diagnosis information - High-voltage power electronics control unit

DC/DC converter

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Electrical fault in circuit
♦ Open circuit

Fault effects

♦ No function

P0D3000

Diagnosis information - High-voltage power electronics control unit

High voltage Voltage monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Traction network Limit exceeded

Possible fault causes

♦ **High-voltage battery**
♦ **High-voltage battery control unit**
♦ **High-voltage power electronics control unit**

Fault effects

♦ High-voltage system switch-off
♦ No charging of the 12-V vehicle electrical system battery

P151A00

Diagnosis information - High-voltage power electronics control unit

Coding

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

INFORMATION
The following codes of the DME, high-voltage battery and high-voltage power electronics control units must agree:

- Vehicle manufacturer
- Country
- Model
- Type of cooling

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

P157000

Diagnosis information - High-voltage power electronics control unit

Engine control unit blocked

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Immobilizer not taught or incorrectly taught

Fault effects

♦ No hybrid functionality

P160900

Diagnosis information - High-voltage power electronics control unit

Crash signal

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Crash signal from POSIP triggering unit detected via CAN bus.

Possible fault causes

♦ Crash event
♦ **POSIP triggering unit** Faulty

Fault effects

♦ High-voltage system switch-off

P178E00

Diagnosis information - High-voltage power electronics control unit

Temperature recording

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Temperature**, Limit exceeded
♦ **Temperature**, Below limit
♦ **Cooling system** Faulty
♦ **High-voltage power electronics control unit** faulty

P30A000

Diagnosis information - High-voltage power electronics control unit

High-voltage load switch-off

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● HV network discharge time too long (after load switch-off)

Possible fault causes

♦ Component in the HV network does not respond to switch-off request
♦ **High-voltage battery control unit**
♦ **High-voltage power electronics control unit**

Fault effects

♦ High-voltage system switch-off

P33CB00

Diagnostic information - high-voltage power electronics control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Internal fault in **high-voltage power electronics control unit**

Fault effects

♦ No function

P33CC00

Diagnostic information - high-voltage power electronics control unit

High-voltage power electronics (DC/DC converter) control unit reset overflow

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Reset overflow

Possible fault causes

● If the following fault codes are currently stored, correct these faults first:
⇒ P33D500 12-V vehicle electrical system supply voltage, polarity reversed (004AE4)
⇒ P33CB00 High-voltage power electronics control unit, function restriction (004ACB)
⇒ P33CB00 High-voltage power electronics control unit, function restriction (004ACD)
⇒ P32B300 High-voltage system input current, above limit value (0060C1)
⇒ P33CB00 High-voltage power electronics control unit, function restriction (004AE2)
● **High-voltage power electronics control unit**

Fault effects

♦ High-voltage system switch-off

P33CE00

Diagnosis information - High-voltage power electronics control unit

Power supply

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Power supply**, Limit exceeded
♦ **Power supply**, Below limit

P33CF00

Diagnosis information - High-voltage power electronics control unit

12-V output voltage

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Output voltage, Limit exceeded
- Output voltage, Below limit

Possible fault causes

♦ Overvoltage:
- external power source
- **High-voltage power electronics control unit** Faulty

♦ Undervoltage:
- Short circuit to ground or open circuit in lines
- Fuse
- **Vehicle electrical system** - Battery
- **High-voltage power electronics control unit** Faulty

Fault effects

♦ Hybrid functionality restricted

P33D000

Diagnosis information - High-voltage power electronics control unit

12-V output voltage

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Output voltage, Limit exceeded
- Output voltage, Below limit

Possible fault causes

♦ Overvoltage:
- external power source
- **High-voltage power electronics control unit** Faulty

♦ Undervoltage:
- Short circuit to ground or open circuit in lines
- Fuse
- **Vehicle electrical system** - Battery
- **High-voltage power electronics control unit** Faulty

Fault effects

♦ Hybrid functionality restricted

P33D100

Diagnosis information - High-voltage power electronics control unit

High input voltage

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● High input voltage, Limit exceeded
● High input voltage, Below limit

Possible fault causes

♦ **High-voltage battery**
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage power electronics control unit** Faulty

Fault effects

♦ Hybrid functionality restricted

P33D200

Diagnosis information - High-voltage power electronics control unit

High input voltage

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● High input voltage, Limit exceeded
● High input voltage, Below limit

Possible fault causes

♦ **High-voltage battery**
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage power electronics control unit** Faulty

Fault effects

♦ Hybrid functionality restricted

P33D400

Diagnosis information - Electric machine

Function restriction

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Electric machine** demagnetized

Fault effects

♦ High-voltage system switch-off

P33D500

Diagnosis information - High-voltage power electronics control unit

12-V vehicle electrical system polarity reversed

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- 12-V vehicle electrical system polarity reversed

Possible fault causes

- Plus and minus poles interchanged

Fault effects

♦ 12-V vehicle electrical system cannot be charged

P33D700

Diagnostic information - electric machine

Electric machine - electrical fault

DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Electric machine** faulty

Fault effects

♦ Hybrid functionality restricted

P33D800

Diagnostic information - electric machine

Electric machine - electrical fault

DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Electric machine** faulty

Fault effects

♦ Hybrid functionality restricted

U000100

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U000200

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U002800

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U002900

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U010000

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U011100

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U012200

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U014600

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U040100

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U041200

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U041600

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U045200

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U112300

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Cayenne , MY 2015 =>

Diagnosis information - High-voltage battery

0054CD..... 1
0054CE..... 2
0054CF..... 3
0054D0..... 4
0054D1..... 5
0054D2..... 6
0054D3..... 7
0054D4..... 9
0054D5..... 11
0054D6..... 13
00552E..... 15
00552F..... 16
005530..... 18
005531..... 19
005532..... 20
005533..... 21
005534..... 22
005535..... 23
005536..... 24
005537..... 25
005538..... 26
005539..... 27
00553A..... 28
00553B..... 29
00553C..... 30
00553D..... 31
00553E..... 32
00553F..... 33
005540..... 34
005541..... 35
005542..... 36
005543..... 37
005544..... 38
005545..... 39
005546..... 40
005547..... 41
005548..... 42
005549..... 43
00554A..... 44

00554B..... 45
005550..... 46
005551..... 47
005552..... 48
005553..... 49
005554..... 50
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005556..... 52
005557..... 53
005558..... 54
005559..... 56
00555C..... 57
00555D..... 59
00555E..... 61
00555F..... 63
005560..... 65
005561..... 67
005564..... 69
005565..... 71
005566..... 73
005567..... 75
00556E..... 77
00556F..... 79
00557A..... 81
00557B..... 83
00557E..... 85
00557F..... 87
005580..... 89
005581..... 91
005582..... 93
005583..... 95
005586..... 97
005587..... 99
005588..... 101
005589..... 103
005590..... 105
005591..... 107
00559C..... 109
00559D..... 111

00559E..... 113
00559F..... 115
0055A0..... 116
0055A1..... 118
0055A2..... 120
0055A3..... 122
0055A4..... 124
0055A5..... 126
0055A6..... 128
0055A7..... 130
0055A8..... 132
0055A9..... 134
0055AA..... 136
0055AB..... 138
0055C0..... 140
0055C1..... 142
0055C2..... 144
0055C3..... 146
0055C4..... 148
0055C5..... 150
0055C6..... 152
0055C7..... 154
0055C8..... 156
0055C9..... 158
0055CA..... 160
0055CB..... 162
0055CC..... 164
0055CD..... 166
0055CE..... 168
0055CF..... 170
0057D1..... 172
0057D2..... 173
0057D3..... 174
0057D4..... 175
0057D5..... 176
0057D6..... 177
0057D7..... 178
0057D8..... 179
0057DA..... 180

0057DB..... 181
0057DC..... 182
0057DD..... 183
0057DE..... 184
0057DF..... 185
0057E0..... 186
0057E1..... 187
0057E2..... 189
0057E3..... 191
005881..... 193
005882..... 194
005883..... 195
005884..... 196
005885..... 197
005886..... 198
00588A..... 199
00588B..... 200
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00588E..... 203
00588F..... 204
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005892..... 207
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005895..... 210
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005899..... 214
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00589B..... 216
00589C..... 217
00589D..... 218
00589E..... 219
00589F..... 220
0058A0..... 221
0058A1..... 222

0058A2 223
0058A3 224
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0058A7 228
0058A8 229
0058A9 230
0058AA 231
0058AB 232
0058AC 233
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0058AF 236
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0058B1 238
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0058BC 247
0058BD 248
0058BE 249
0058BF 250
0058C0 251
0058C1 252
0058C2 253
0058C3 254
0058C4 255
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0058C7 258
0058C8 259
0058C9 260
0058CA 261

0058CB..... 262
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0058DB..... 273
0058DC..... 274
0058DD..... 275
0058DE..... 276
0058DF..... 277
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0058EB..... 289
0058EC..... 290
0058ED..... 291
0058EE..... 292
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0058FA..... 296
0058FB..... 298
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0058FD..... 301
0058FE..... 302
0058FF..... 303

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005904 308
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00590D 316
00590E 317
00590F 318
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00592B 351

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005ABB..... 368
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00AA8F..... 708
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00AACD 764
00AACE 765
00AACF 766
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00AAD4 771
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00AAD6 773
00AAD7 774
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00AAD9 776
00AADA 777

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00AAEE..... 795
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00AAF5..... 802
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00AB7B 885

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00ABB1..... 977
00ABB2..... 979
00ABB3..... 981
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00ABB5..... 985
00ABB6..... 987
00ABB7..... 989
00ABB8..... 991
00ABB9..... 993
00ABBC..... 995
00ABBD..... 997
00ABBE..... 999
00ABC2..... 1001
00ABC4..... 1002
00ABC5..... 1004
00ABC6..... 1005
00ABC7..... 1006

0054CD

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

0054CE

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

0054D1

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

0054D2

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

• Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

0054D3

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0054D4

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0054D5

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0054D6

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, temperature - above limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleed low-temperature water cooling circuit< procedure if necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● **High-voltage battery** , temperature - above limit value

Possible fault causes

♦ Fault in cooling system (check/bleed low-temperature water cooling circuit)
♦ **Temperature sensor(s)** faulty
♦ **High-voltage battery control unit** faulty
♦ **Cell module(s)** faulty

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

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Risk of death or serious injuries due to high voltage or high current!

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Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

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Possible fault causes

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♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

00553D

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

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Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

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Possible fault causes

♦ **Cell module controller** faulty
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♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

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- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
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Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

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High-voltage battery - cell voltage out of tolerance

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Possible fault causes

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♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

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♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

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- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

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Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

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Possible fault causes

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♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

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Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

005550

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005551

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005552

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005553

ⓘ INFORMATION

No information is available at present for this fault code.

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005554

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005555

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005556

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005557

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

Diagnostic information - high-voltage battery control unit

High-voltage battery, temperature - above limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleed low-temperature water cooling circuit< procedure if necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

• **High-voltage battery** , temperature - above limit value

Possible fault causes

♦ Fault in cooling system (check/bleed low-temperature water cooling circuit)
♦ **Temperature sensor(s)** faulty
♦ **High-voltage battery control unit** faulty
♦ **Cell module(s)** faulty

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, temperature - below limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

• **High-voltage battery** , temperature - below limit value

Possible fault causes

♦ **Temperature sensor(s)** faulty
♦ **High-voltage battery heater** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

00555C

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00555D

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

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♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00555F

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005565

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00556E

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00556F

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00557A

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00557B

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00557F

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005580

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005581

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005582

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005583

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005586

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005588

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005589

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

005591

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00559C

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00559D

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery control unit

High-voltage battery, temperature - above limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleed low-temperature water cooling circuit< procedure if necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

• **High-voltage battery** , temperature - above limit value

Possible fault causes

♦ Fault in cooling system (check/bleed low-temperature water cooling circuit)
♦ **Temperature sensor(s)** faulty
♦ **High-voltage battery control unit** faulty
♦ **Cell module(s)** faulty

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, temperature - below limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● **High-voltage battery** , temperature - below limit value

Possible fault causes

♦ **Temperature sensor(s)** faulty
♦ **High-voltage battery heater** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

0055A0

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055A1

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055A2

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055A3

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055A5

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055A7

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055A8

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055A9

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055AA

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055AB

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C0

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C1

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C2

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C3

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C4

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C5

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C6

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C7

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C8

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055C9

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055CA

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055CB

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055CC

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055CD

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055CE

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

0055CF

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0057DD

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0057DE

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0057DF

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - high-voltage battery control unit

High-voltage system, pilot line

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Service connector, **not** closed
♦ Pilot line - open circuit
♦ Pilot line - short circuit to ground
♦ Pilot line - short circuit to B+
♦ **High-voltage battery control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **Front-axle high-voltage power electronics control unit** faulty (only for the 918S)
♦ **High-voltage charger control unit**
♦ **High-voltage A/C compressor**
♦ **High-voltage evaporator (chiller)**
♦ **High-voltage interior heater** (not for the 918S)
♦ **High-voltage battery heater**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnostic information - high-voltage battery control unit

High-voltage system, pilot line

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Service connector, **not** closed
♦ Pilot line - open circuit
♦ Pilot line - short circuit to ground
♦ Pilot line - short circuit to B+
♦ **High-voltage battery control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **Front-axle high-voltage power electronics control unit** faulty (only for the 918S)
♦ **High-voltage charger control unit**
♦ **High-voltage A/C compressor**
♦ **High-voltage evaporator (chiller)**
♦ **High-voltage interior heater** (not for the 918S)
♦ **High-voltage battery heater**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnostic information - high-voltage battery control unit

High-voltage system, pilot line

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Service connector, **not** closed
♦ Pilot line - open circuit
♦ Pilot line - short circuit to ground
♦ Pilot line - short circuit to B+
♦ **High-voltage battery control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **Front-axle high-voltage power electronics control unit** faulty (only for the 918S)
♦ **High-voltage charger control unit**
♦ **High-voltage A/C compressor**
♦ **High-voltage evaporator (chiller)**
♦ **High-voltage interior heater** (not for the 918S)
♦ **High-voltage battery heater**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

005881

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005882

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005883

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005884

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005885

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005886

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00588A

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00588B

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00588C

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00588D

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00588E

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00588F

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005890

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005891

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005892

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005893

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005894

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005895

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005896

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005897

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

005898

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

005899

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058A0

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0058A1

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058AA

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058AE

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058B0

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0058B1

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0058B3

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0058B7

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058BB

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058BD

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058BF

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058D0

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0058D1

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0058D3

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058DA

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058DB

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0058DC

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

0058DD

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058DF

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058E1

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058E7

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

0058F1

Diagnostic information - high-voltage battery control unit

High-voltage battery, current monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Measured current outside of measuring range
- Difference in the measured current between current sensors is too high
- Current sensor offset too high
- Measured value stuck
- No signal or implausible signal

Possible fault causes

♦ Short circuit in current sensor (shunt or Hall)
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery** faulty

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

Diagnostic information - high-voltage battery control unit

High-voltage battery, state of charge

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ **High-voltage battery** , high voltage - below limit value

Possible fault causes

♦ Charging manager faulty
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery**

Fault effects

Depending on the state of charge, the **high-voltage battery control unit** reacts in several stages:
♦ Stage 1: Indication of state of charge ⇒ No function restriction
♦ Stage 2: Red hybrid warning lamp in the instrument cluster ⇒ Switch-off of the high-voltage system with

advance warning

♦ Stage 3: Red hybrid warning lamp in the instrument cluster ⇒ Switch-off of the high-voltage system without advance warning; the vehicle is no longer ready to drive

0058FB

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

0058FD

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

0058FF

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, temperature - above limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleed low-temperature water cooling circuit< procedure if necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

• **High-voltage battery** , temperature - above limit value

Possible fault causes

♦ Fault in cooling system (check/bleed low-temperature water cooling circuit)
♦ **Temperature sensor(s)** faulty
♦ **High-voltage battery control unit** faulty
♦ **Cell module(s)** faulty

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
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Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
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Diagnostic conditions
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● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (Hall), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

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Possible fault causes

♦ Current sensor (shunt), Short circuit
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♦ **High-voltage battery** Faulty

Fault effects

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Diagnosis information - High-voltage battery control unit

Current monitoring

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Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

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Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

♦ Voltage sensor in **high-voltage E-box** faulty
♦ **High-voltage battery control unit**
♦ **High-voltage battery**

Fault effects

♦ No function restriction
♦ If fault code 'P0B1500' is stored, DC charging is no longer possible

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

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- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

♦ Voltage sensor in **high-voltage E-box** faulty
♦ **High-voltage battery control unit**
♦ **High-voltage battery**

Fault effects

♦ No function restriction
♦ If fault code 'P0B1500' is stored, DC charging is no longer possible

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

- Voltage sensor in **high-voltage E-box** faulty
- **High-voltage battery control unit**
- **High-voltage battery**

Fault effects

- No function restriction
- If fault code 'P0B1500' is stored, DC charging is no longer possible

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

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Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

- Voltage sensor in **high-voltage E-box** faulty
- **High-voltage battery control unit**
- **High-voltage battery**

Fault effects

- No function restriction
- If fault code 'P0B1500' is stored, DC charging is no longer possible

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

⚠DANGER

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

- Voltage sensor in **high-voltage E-box** faulty
- **High-voltage battery control unit**
- **High-voltage battery**

Fault effects

- No function restriction
- If fault code 'P0B1500' is stored, DC charging is no longer possible

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

- Voltage sensor in **high-voltage E-box** faulty
- **High-voltage battery control unit**
- **High-voltage battery**

Fault effects

- No function restriction
- If fault code 'P0B1500' is stored, DC charging is no longer possible

00592A

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

♦ Voltage sensor in **high-voltage E-box** faulty
♦ **High-voltage battery control unit**
♦ **High-voltage battery**

Fault effects

♦ No function restriction
♦ If fault code 'P0B1500' is stored, DC charging is no longer possible

00592B

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

- Voltage sensor in **high-voltage E-box** faulty
- **High-voltage battery control unit**
- **High-voltage battery**

Fault effects

- No function restriction
- If fault code 'P0B1500' is stored, DC charging is no longer possible

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

⚠DANGER

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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

♦ Voltage sensor in **high-voltage E-box** faulty
♦ **High-voltage battery control unit**
♦ **High-voltage battery**

Fault effects

♦ No function restriction
♦ If fault code 'P0B1500' is stored, DC charging is no longer possible

005AB2

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

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Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

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Diagnostic conditions
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- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

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♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

00A7F8

Diagnostic information - high-voltage charger control unit

High-voltage system voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High voltage (DC) during the charging process, above limit value (U > 450 V)
- High voltage (DC) during the charging process, below limit value (U < 220 V)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ Infrastructure faulty
♦ Fault in charging station
♦ **High-voltage battery** voltage
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

♦ High-voltage DC voltage sensor 1 - above limit value
♦ High-voltage DC voltage sensor 1 - below limit value
♦ High-voltage DC voltage sensor 1 - short circuit to B+
♦ High-voltage DC voltage sensor 1 - short circuit to ground
♦ High-voltage DC voltage sensor 2 - above limit value
♦ High-voltage DC voltage sensor 2 - below limit value
♦ High-voltage DC voltage sensor 2 - short circuit to B+
♦ High-voltage DC voltage sensor 2 - short circuit to ground
♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage DC voltage sensor 1 or 2 faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Reduced charging power
- ♦ Active charging process is cancelled or charging is not possible

00A7FC

Diagnostic information - high-voltage charger control unit

High-voltage system voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High voltage (DC) during the charging process, above limit value (U > 450 V)
- High voltage (DC) during the charging process, below limit value (U < 220 V)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ Infrastructure faulty
♦ Fault in charging station
♦ **High-voltage battery** voltage
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

Diagnostic information - high-voltage charger control unit

High-voltage system voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High voltage (DC) during the charging process, above limit value (U > 450 V)
- High voltage (DC) during the charging process, below limit value (U < 220 V)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ Infrastructure faulty
♦ Fault in charging station
♦ **High-voltage battery** voltage
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

Diagnostic information - high-voltage battery control unit

High-voltage system, pilot line

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Service connector, **not** closed
♦ Pilot line - open circuit
♦ Pilot line - short circuit to ground
♦ Pilot line - short circuit to B+
♦ **High-voltage battery control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **Front-axle high-voltage power electronics control unit** faulty (only for the 918S)
♦ **High-voltage charger control unit**
♦ **High-voltage A/C compressor**
♦ **High-voltage evaporator (chiller)**
♦ **High-voltage interior heater** (not for the 918S)
♦ **High-voltage battery heater**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnostic information - high-voltage battery control unit

High-voltage system, pilot line

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Service connector, **not** closed
♦ Pilot line - open circuit
♦ Pilot line - short circuit to ground
♦ Pilot line - short circuit to B+
♦ **High-voltage battery control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **Front-axle high-voltage power electronics control unit** faulty (only for the 918S)
♦ **High-voltage charger control unit**
♦ **High-voltage A/C compressor**
♦ **High-voltage evaporator (chiller)**
♦ **High-voltage interior heater** (not for the 918S)
♦ **High-voltage battery heater**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnosis information - High-voltage battery control unit

Charge state

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery**, High voltage - Limit exceeded
♦ **High-voltage battery**, High voltage - Below limit

Fault effects

♦ No function

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

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♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, worsening (performance)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **Cell module(s)** , voltage implausible
♦ Battery ageing (replace **high-voltage battery**)

Fault effects

♦ Function not available or available only to a limited extent

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

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Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

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Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

00A85D

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

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Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

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- Contactor does not close
- Contactor does not open
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- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

00A85F

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

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- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

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Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

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- Working circuit - short circuit to ground
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- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

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- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

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- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ For more information, see Guided Fault Finding

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- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

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- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnosis information - High-voltage battery control unit

Crash signal

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Crash signal from POSIP triggering unit detected via CAN bus.
or
● Crash signal from POSIP triggering unit detected via signal line.

Possible fault causes

♦ Signal lead Short circuit to ground
♦ Signal lead Short circuit to B+
♦ **POSIP triggering unit** Faulty
♦ Crash event

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (Hall), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (Hall), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

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Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

Coding

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

ⓘ INFORMATION
The following coding values for the DME, high-voltage battery and high-voltage power electronics control units must match:

- Vehicle manufacturer
- Country
- Model
- Type of cooling

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

Diagnostic information - high-voltage battery control unit

High-voltage system, pilot line

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Service connector, **not** closed
♦ Pilot line - open circuit
♦ Pilot line - short circuit to ground
♦ Pilot line - short circuit to B+
♦ **High-voltage battery control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **Front-axle high-voltage power electronics control unit** faulty (only for the 918S)
♦ **High-voltage charger control unit**
♦ **High-voltage A/C compressor**
♦ **High-voltage evaporator (chiller)**
♦ **High-voltage interior heater** (not for the 918S)
♦ **High-voltage battery heater**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage battery heater**
♦ **High-voltage interior heater**
♦ **High-voltage evaporator**
♦ **High-voltage (A/C) compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery**
♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnosis information - High-voltage battery

Insulation fault Self-test

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Self-test failed

Possible fault causes

♦ High-voltage line
♦ **High-voltage battery control unit**

Fault effects

♦ none

Diagnosis information - High-voltage battery

Insulation fault Self-test

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Self-test failed

Possible fault causes

♦ High-voltage line
♦ **High-voltage battery control unit**

Fault effects

♦ none

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Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage battery heater**
♦ **High-voltage interior heater**
♦ **High-voltage evaporator**
♦ **High-voltage (A/C) compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery**
♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage battery heater**
♦ **High-voltage interior heater**
♦ **High-voltage evaporator**
♦ **High-voltage (A/C) compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery**
♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage battery heater**
♦ **High-voltage interior heater**
♦ **High-voltage evaporator**
♦ **High-voltage (A/C) compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery**
♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage battery heater**
♦ **High-voltage interior heater**
♦ **High-voltage evaporator**
♦ **High-voltage (A/C) compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery**
♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, temperature - below limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

• **High-voltage battery** , temperature - below limit value

Possible fault causes

♦ **Temperature sensor(s)** faulty
♦ **High-voltage battery heater** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

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♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, reference voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **High-voltage battery** , reference voltage - above limit value
♦ **High-voltage battery** , reference voltage - below limit value
♦ **High-voltage battery** , reference voltage - signal implausible

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage network, plus harness implausible

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Voltage in the high-voltage line (plus) rises too rapidly

Possible fault causes

♦ No load present

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ For more information, see Guided Fault Finding

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ For more information, see Guided Fault Finding

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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Diagnostic conditions
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- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
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- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
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Possible fault causes

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♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

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Fault setting condition(s)

- Contactor does not close
- Contactor does not open
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Possible fault causes

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♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

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Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Programming

⚠DANGER

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- No data record programmed
- Wrong data record programmed
- Programmed data record does not match a control unit of the high-voltage system
- Programmed data record does not match the immobilizer system.

Fault effects

♦ High-voltage system switch-off

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
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♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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► **Please read the following documents in the PIWIS information system:**

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - high-voltage battery control unit

Programming

⚠DANGER

High voltage!
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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- No data record programmed
- Wrong data record programmed
- Programmed data record does not match a control unit of the high-voltage system
- Programmed data record does not match the immobilizer system.

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

Programming

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- Ignition on

Fault setting condition(s)

- No data record programmed
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- Programmed data record does not match a control unit of the high-voltage system
- Programmed data record does not match the immobilizer system.

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

Programming

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- No data record programmed
- Wrong data record programmed
- Programmed data record does not match a control unit of the high-voltage system
- Programmed data record does not match the immobilizer system.

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

00A937

Diagnostic information - high-voltage charger control unit

Charge, efficiency too low

⚠DANGER

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Efficiency too low < 80%

Possible fault causes

♦ Poor mains quality
♦ Check infrastructure
♦ Check charging cable
♦ Check lines
♦ Check charging socket
♦ Check **high-voltage battery control unit** fault memory
♦ **High-voltage charger control unit**

Fault effects

♦ Charging power very low ⇒ Charging time correspondingly much too long

Diagnostic information - high-voltage charger control unit

High-voltage AC voltage sensors

Applies to the following sensors:

♦ High-voltage AC voltage sensor L1
♦ High-voltage AC voltage sensor L2
♦ High-voltage voltage sensor, capacitor 1 (rail 1)
♦ High-voltage voltage sensor, capacitor 2 (rail 1)
♦ High-voltage voltage sensor, capacitor 1 (rail 2)
♦ High-voltage voltage sensor, capacitor 2 (rail 2)

⚠DANGER

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Diagnostic conditions

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In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- Above limit value
- Below limit value
- Short circuit to B+
- Short circuit to ground
- Open circuit
- Signal implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage AC voltage sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Reduced charging power
♦ Active charging process is cancelled or charging is not possible

Diagnostic information - high-voltage charger control unit

Proximity line (plug detection)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Control-Pilot (communication line) active, but no or implausible signal via proximity line (plug detection)
♦ Proximity line (plug detection) - short circuit or open circuit detected

Possible fault causes

♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ PRX resistor (2.7 kohm) between CP/PE pin in charging socket faulty
♦ Contact resistance between charging plug and charging socket too high (dirty or foreign objects present)
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Vehicle wiring harness faulty (open circuit or short circuit in the proximity line (plug detection) due to possible previous repair work)
♦ Short circuit between lines
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

Diagnostic information - high-voltage charger control unit

Control-Pilot (communication line)

⚠DANGER

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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ No or implausible signal via Control-Pilot (communication line)
♦ Short circuit to B+
♦ Short circuit to B- or open circuit

Possible fault causes

♦ Operating error (charging station not activated within 4 minutes of inserting the plug)
♦ Charging cable not properly plugged in at the vehicle or at the charging station
♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ Charging cable faulty
♦ Charging socket faulty
♦ Vehicle wiring harness faulty (open circuit in Control-Pilot (communication line) due to possible previous repair work)
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, temperature - above limit value

⚠DANGER

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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal temperature , above limit value (T > 120 °C/248 °F)

Possible fault causes

♦ Internal components too hot
♦ Ambient temperature of the **high-voltage battery control unit** too high
♦ Check low-temperature cooling circuit system ⇒ Bleed if necessary
♦ Temperature sensor faulty
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Cancellation of charging process or charging not possible

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - high-voltage charger control unit

Charging-socket plug lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Plug lock - mechanical fault
♦ Lines - short circuit to ground
♦ Lines - short circuit to B+
♦ Lines - open circuit
♦ **Plug lock actuator** faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

Diagnostic information - high-voltage charger control unit

Charging socket temperature sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - signal implausible
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground or open circuit

Possible fault causes

♦ Check **temperature sensor** plug connection for loose contacts, soiling and corrosion
♦ Check **temperature sensor** wiring for short circuit to B+
♦ Check **temperature sensor** wiring for short circuit to ground and open circuit
♦ **Temperature sensor** faulty

Fault effects

♦ Reduced charging power

00A93F

Diagnostic information - high-voltage charger control unit

Charging-socket temperature

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

P31D1:
● **Temperature sensor** - signal implausible
● **Temperature sensor** - above limit value
● **Temperature sensor** - below limit value

P31D2:
● Temperature > 60 °C (140 °F)

Possible fault causes

P31D1:
♦ Signal line, loose contact
♦ Vehicle wiring harness faulty (short circuit/open circuit in the signal line due to possible previous repair work)
♦ **Temperature sensor** faulty

P31D2:
♦ Contact resistance of the high-voltage line too high
♦ **Temperature sensor** faulty

Fault effects

P31D1:
♦ Charging power restricted
♦ Active charging process is cancelled or charging is not possible

P31D2:
♦ Active charging process is cancelled or charging is not possible

Diagnostic information - high-voltage charger control unit

Charge-now button

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Operating error (button pressed for a long time)
♦ Charge-now button stuck/jammed
♦ Wiring harness faulty（open circuit/short circuit in the signal line to the Charge-now button due to due to possible previous repair work)
♦ Charge-now button faulty

Fault effects

♦ Change between time-shifted charging and immediate charging not possible
♦ Time-shifted charging can be cancelled only via the menu in the instrument cluster to permit immediate charging

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - high-voltage charger control unit

Proximity line (plug detection)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Control-Pilot (communication line) active, but no or implausible signal via proximity line (plug detection)
♦ Proximity line (plug detection) - short circuit or open circuit detected

Possible fault causes

♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ PRX resistor (2.7 kohm) between CP/PE pin in charging socket faulty
♦ Contact resistance between charging plug and charging socket too high (dirty or foreign objects present)
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Vehicle wiring harness faulty (open circuit or short circuit in the proximity line (plug detection) due to possible previous repair work)
♦ Short circuit between lines
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - high-voltage charger control unit

Control-Pilot (communication line)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ No or implausible signal via Control-Pilot (communication line)
♦ Short circuit to B+
♦ Short circuit to B- or open circuit

Possible fault causes

♦ Operating error (charging station not activated within 4 minutes of inserting the plug)
♦ Charging cable not properly plugged in at the vehicle or at the charging station
♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ Charging cable faulty
♦ Charging socket faulty
♦ Vehicle wiring harness faulty (open circuit in Control-Pilot (communication line) due to possible previous repair work)
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

00A94F

Diagnostic information - high-voltage charger control unit

Charge, efficiency too low

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Efficiency too low < 80%

Possible fault causes

♦ Poor mains quality
♦ Check infrastructure
♦ Check charging cable
♦ Check lines
♦ Check charging socket
♦ Check **high-voltage battery control unit** fault memory
♦ **High-voltage charger control unit**

Fault effects

♦ Charging power very low ⇒ Charging time correspondingly much too long

00A951

Diagnostic information - high-voltage charger control unit

Charging socket temperature sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - signal implausible
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground or open circuit

Possible fault causes

♦ Check **temperature sensor** plug connection for loose contacts, soiling and corrosion
♦ Check **temperature sensor** wiring for short circuit to B+
♦ Check **temperature sensor** wiring for short circuit to ground and open circuit
♦ **Temperature sensor** faulty

Fault effects

♦ Reduced charging power

Diagnostic information - high-voltage charger control unit

Charging socket temperature sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - signal implausible
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground or open circuit

Possible fault causes

♦ Check **temperature sensor** plug connection for loose contacts, soiling and corrosion
♦ Check **temperature sensor** wiring for short circuit to B+
♦ Check **temperature sensor** wiring for short circuit to ground and open circuit
♦ **Temperature sensor** faulty

Fault effects

♦ Reduced charging power

Diagnostic information - high-voltage charger control unit

High-voltage AC voltage sensors

Applies to the following sensors:

♦ High-voltage AC voltage sensor L1
♦ High-voltage AC voltage sensor L2
♦ High-voltage voltage sensor, capacitor 1 (rail 1)
♦ High-voltage voltage sensor, capacitor 2 (rail 1)
♦ High-voltage voltage sensor, capacitor 1 (rail 2)
♦ High-voltage voltage sensor, capacitor 2 (rail 2)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- Above limit value
- Below limit value
- Short circuit to B+
- Short circuit to ground
- Open circuit
- Signal implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage AC voltage sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Reduced charging power
♦ Active charging process is cancelled or charging is not possible

Diagnostic information - high-voltage charger control unit

High-voltage AC voltage sensors

Applies to the following sensors:

♦ High-voltage AC voltage sensor L1
♦ High-voltage AC voltage sensor L2
♦ High-voltage voltage sensor, capacitor 1 (rail 1)
♦ High-voltage voltage sensor, capacitor 2 (rail 1)
♦ High-voltage voltage sensor, capacitor 1 (rail 2)
♦ High-voltage voltage sensor, capacitor 2 (rail 2)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- Above limit value
- Below limit value
- Short circuit to B+
- Short circuit to ground
- Open circuit
- Signal implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage AC voltage sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Reduced charging power
♦ Active charging process is cancelled or charging is not possible

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

00A966

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A98D

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
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► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A98F

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

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♦ **Temperature sensor** - open circuit
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Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

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If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

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In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
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♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

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If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

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♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A995

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A996

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
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♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

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♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

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Possible fault causes

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♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A99A

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

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♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A99D

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A99F

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A9A0

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

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♦ **Temperature sensor** - short circuit to B+
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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A9A2

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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Fault effects

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Diagnostic information - high-voltage battery

Temperature sensor/s

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Diagnostic information - high-voltage battery

Temperature sensor/s

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Diagnostic information - high-voltage battery

Temperature sensor/s

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Diagnostic information - high-voltage battery

Temperature sensor/s

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Diagnostic information - high-voltage battery

Temperature sensor/s

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♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A9A9

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

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● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A9AB

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A9AC

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A9AD

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A9AF

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00A9B0

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

- ♦ De-energize the vehicle in accordance with the guidelines.
- ♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

- ♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
- ♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
- ♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

- ♦ High-voltage line(s)
- ♦ **High-voltage battery heater**
- ♦ **High-voltage interior heater**
- ♦ **High-voltage evaporator**
- ♦ **High-voltage (A/C) compressor**
- ♦ **High-voltage charger control unit**
- ♦ **High-voltage battery**
- ♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage battery heater**
♦ **High-voltage interior heater**
♦ **High-voltage evaporator**
♦ **High-voltage (A/C) compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery**
♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Programming

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- No data record programmed
- Wrong data record programmed
- Programmed data record does not match a control unit of the high-voltage system
- Programmed data record does not match the immobilizer system.

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

High-voltage battery, current monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Measured current outside of measuring range
- Difference in the measured current between current sensors is too high
- Current sensor offset too high
- Measured value stuck
- No signal or implausible signal

Possible fault causes

♦ Short circuit in current sensor (shunt or Hall)
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery** faulty

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, current monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Measured current outside of measuring range
- Difference in the measured current between current sensors is too high
- Current sensor offset too high
- Measured value stuck
- No signal or implausible signal

Possible fault causes

♦ Short circuit in current sensor (shunt or Hall)
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery** faulty

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (Hall), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ For more information, see Guided Fault Finding

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ For more information, see Guided Fault Finding

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

00AA2B

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00AA2C

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00AA2D

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

Diagnostic information - high-voltage battery control unit

Low-temperature circuit

DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● P0C3200 Low-temperature circuit - cooling requirement too high (00AA2E or 00AB69)
● P0C3200 Low-temperature circuit - chiller active, but temperature characteristic implausible (00A91A or 00AB64)

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **High-voltage battery control unit**

Fault effects

♦ Fault code P0C3200 (00AA2E, 00AB64 or 00AB69) ⇒ No function restriction
♦ Fault code P0C3200 (00A91A) ⇒ Hybrid functionality restricted (power reduction), yellow hybrid warning lamp comes on in the instrument cluster

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnostic information - high-voltage battery control unit

High-voltage network, plus harness implausible

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Voltage in the high-voltage line (plus) rises too rapidly

Possible fault causes

♦ No load present

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage battery heater**
♦ **High-voltage interior heater**
♦ **High-voltage evaporator**
♦ **High-voltage (A/C) compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery**
♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage system, insulation fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage system; insulation fault from minus/plus wiring harness to vehicle ground
- Insulation sensor - electrical fault

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage battery heater**
♦ **High-voltage interior heater**
♦ **High-voltage evaporator**
♦ **High-voltage (A/C) compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery**
♦ **High-voltage battery control unit**

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, charging current

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Charging current too high

Possible fault causes

♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault finding notes

♦ Read out the fault memory of the high-voltage components (**high-voltage charger control unit** , **high-voltage power electronics control unit**) and work through the faults.

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, discharging current

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Discharging current too high

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, charging current

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Charging current too high

Possible fault causes

♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault finding notes

♦ Read out the fault memory of the high-voltage components (**high-voltage charger control unit** , **high-voltage power electronics control unit**) and work through the faults.

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, discharging current

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Discharging current too high

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage fuse - high-voltage charger

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● No connection between **high-voltage charger control unit** and **high-voltage battery** contactor

Possible fault causes

♦ High-voltage fuse faulty
⇒ Visually check the high-voltage lines for damage
⇒ High-voltage line - short circuit
⇒ High-voltage line - open circuit

♦ **High-voltage battery**
♦ **High-voltage charger control unit**
♦ **High-voltage battery control unit**

Fault effects

♦ Charging is not possible via **high-voltage charger control unit**

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
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00AA3F

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
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NOTE
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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
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Diagnostic information - valid for all control units

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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

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Possible fault causes

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- Note in the designated control unit

Fault effects

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- Note in the designated control unit

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Possible fault causes

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- Note in the designated control unit

Fault effects

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Possible fault causes

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Fault effects

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Diagnostic information - valid for all control units

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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
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Diagnostic information - valid for all control units

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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
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Diagnostic information - valid for all control units

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NOTE
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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

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Diagnostic information - valid for all control units

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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
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Diagnostic information - valid for all control units

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NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

00AA4D

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

00AA4F

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

00AA5D

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

00AA5E

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

00AA63

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with LIN bus

INFORMATION
Communication with the LIN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit to ground in the LIN line
♦ Short circuit to B+ in the LIN line
♦ Short circuit of the LIN line to an interference signal

♦ Faulty component in the system of the identified LIN bus

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available
♦ Cross-vehicle functions are not available

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (Hall), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

00AA79

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

00AA7F

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - high-voltage battery control unit

High-voltage E-box, reference voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **High-voltage battery** , reference voltage - above limit value
♦ **High-voltage battery** , reference voltage - below limit value
♦ **High-voltage battery** , reference voltage - signal implausible

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, reference voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **High-voltage battery** , reference voltage - above limit value
♦ **High-voltage battery** , reference voltage - below limit value
♦ **High-voltage battery** , reference voltage - signal implausible

Fault effects

♦ None (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - valid for all control units

Communication with LIN bus

INFORMATION
Communication with the LIN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit to ground in the LIN line
♦ Short circuit to B+ in the LIN line
♦ Short circuit of the LIN line to an interference signal

♦ Faulty component in the system of the identified LIN bus

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available
♦ Cross-vehicle functions are not available

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, current monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Measured current outside of measuring range
- Difference in the measured current between current sensors is too high
- Current sensor offset too high
- Measured value stuck
- No signal or implausible signal

Possible fault causes

♦ Short circuit in current sensor (shunt or Hall)
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery** faulty

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

00AA89

Diagnostic information - high-voltage battery control unit

High-voltage battery, current monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Measured current outside of measuring range
- Difference in the measured current between current sensors is too high
- Current sensor offset too high
- Measured value stuck
- No signal or implausible signal

Possible fault causes

♦ Short circuit in current sensor (shunt or Hall)
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery** faulty

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, current monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Measured current outside of measuring range
- Difference in the measured current between current sensors is too high
- Current sensor offset too high
- Measured value stuck
- No signal or implausible signal

Possible fault causes

♦ Short circuit in current sensor (shunt or Hall)
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery** faulty

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, worsening (performance)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **Cell module(s)** , voltage implausible
♦ Battery ageing (replace **high-voltage battery**)

Fault effects

♦ Function not available or available only to a limited extent

00AA8C

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AA8E

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery control unit

High-voltage battery, voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery positive voltage relative to total of all cell module voltages implausible
- High-voltage battery positive voltage - signal detection failure

Possible fault causes

♦ Voltage sensor ahead of the contactors faulty
♦ Voltage sensor behind the contactors faulty
♦ One or more **cell module controllers** faulty
♦ **Cell module** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery positive voltage relative to total of all cell module voltages implausible
- High-voltage battery positive voltage - signal detection failure

Possible fault causes

♦ Voltage sensor ahead of the contactors faulty
♦ Voltage sensor behind the contactors faulty
♦ One or more **cell module controllers** faulty
♦ **Cell module** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell module voltage relative to the total of its cell voltages implausible
- Cell modules - voltage fluctuations
- Cell modules - voltage test fault

Possible fault causes

♦ **Cell module controller** faulty
♦ **High-voltage battery control unit**
♦ **Cell module(s)** faulty

Fault effects

♦ Restricted hybrid functionality (yellow hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ For more information, see Guided Fault Finding

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage system emergency switch-off

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

• Deactivation due to malfunction

Possible fault causes

♦ Critical fault in one or more high-voltage components

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Measured current outside the measuring range
- Current-sensor offset too high
- Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

High-voltage battery, worsening (performance)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **Cell module(s)** , voltage implausible
♦ Battery ageing (replace **high-voltage battery**)

Fault effects

♦ Function not available or available only to a limited extent

Diagnostic information - high-voltage battery control unit

High-voltage battery, state of charge

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ **High-voltage battery** , high voltage - below limit value

Possible fault causes

♦ Charging manager faulty
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery**

Fault effects

Depending on the state of charge, the **high-voltage battery control unit** reacts in several stages:
♦ Stage 1: Indication of state of charge ⇒ No function restriction
♦ Stage 2: Red hybrid warning lamp in the instrument cluster ⇒ Switch-off of the high-voltage system with

advance warning

♦ Stage 3: Red hybrid warning lamp in the instrument cluster ⇒ Switch-off of the high-voltage system without advance warning; the vehicle is no longer ready to drive

Diagnostic information - high-voltage battery control unit

High-voltage battery, state of charge

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ **High-voltage battery** , high voltage - below limit value

Possible fault causes

♦ Charging manager faulty
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery**

Fault effects

Depending on the state of charge, the **high-voltage battery control unit** reacts in several stages:
♦ Stage 1: Indication of state of charge ⇒ No function restriction
♦ Stage 2: Red hybrid warning lamp in the instrument cluster ⇒ Switch-off of the high-voltage system with

advance warning

♦ Stage 3: Red hybrid warning lamp in the instrument cluster ⇒ Switch-off of the high-voltage system without advance warning; the vehicle is no longer ready to drive

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
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♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

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Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

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Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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High-voltage system, pilot line

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Service connector, **not** closed
♦ Pilot line - open circuit
♦ Pilot line - short circuit to ground
♦ Pilot line - short circuit to B+
♦ **High-voltage battery control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **Front-axle high-voltage power electronics control unit** faulty (only for the 918S)
♦ **High-voltage charger control unit**
♦ **High-voltage A/C compressor**
♦ **High-voltage evaporator (chiller)**
♦ **High-voltage interior heater** (not for the 918S)
♦ **High-voltage battery heater**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnostic information - high-voltage battery control unit

High-voltage system, pilot line

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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♦ Service connector, **not** closed
♦ Pilot line - open circuit
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♦ Pilot line - short circuit to B+
♦ **High-voltage battery control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **Front-axle high-voltage power electronics control unit** faulty (only for the 918S)
♦ **High-voltage charger control unit**
♦ **High-voltage A/C compressor**
♦ **High-voltage evaporator (chiller)**
♦ **High-voltage interior heater** (not for the 918S)
♦ **High-voltage battery heater**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnostic information - high-voltage battery control unit

High-voltage battery, temperature - below limit value

⚠DANGER

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Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

● **High-voltage battery** , temperature - below limit value

Possible fault causes

♦ **Temperature sensor(s)** faulty
♦ **High-voltage battery heater** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

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Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

Diagnostic information - high-voltage battery control unit

12-V vehicle electrical system supply voltage

⚠DANGER

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Fault setting condition(s)

♦ 12-V vehicle electrical system, supply voltage - above limit value
♦ 12-V vehicle electrical system, supply voltage - below limit value

Possible fault causes

♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ Function restriction

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Possible fault causes

♦ **Cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

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Possible fault causes

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♦ **High-voltage battery control unit**

Fault effects

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Fault effects

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♦ **High-voltage battery control unit**

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Possible fault causes

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Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

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Possible fault causes

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Fault effects

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Possible fault causes

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♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

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Possible fault causes

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- Cell voltage out of tolerance

Possible fault causes

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♦ **High-voltage battery control unit**

Fault effects

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Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Possible fault causes

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Fault effects

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Fault setting condition(s)

- Cell voltage out of tolerance

Possible fault causes

♦ **Cell module** faulty
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Fault effects

♦ High-voltage system switch-off (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery - cell voltage out of tolerance

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Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

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● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

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- Contactor does not close
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- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
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Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

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Diagnosis information - High-voltage battery

High-voltage battery heater

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● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

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Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

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Diagnostic conditions

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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

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► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (shunt), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

High-voltage battery, current monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Measured current outside of measuring range
- Difference in the measured current between current sensors is too high
- Current sensor offset too high
- Measured value stuck
- No signal or implausible signal

Possible fault causes

♦ Short circuit in current sensor (shunt or Hall)
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery** faulty

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage battery, current monitoring

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Measured current outside of measuring range
- Difference in the measured current between current sensors is too high
- Current sensor offset too high
- Measured value stuck
- No signal or implausible signal

Possible fault causes

♦ Short circuit in current sensor (shunt or Hall)
♦ **High-voltage charger control unit** faulty
♦ **High-voltage power electronics control unit** faulty
♦ **High-voltage battery control unit** faulty
♦ **High-voltage battery** faulty

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (Hall), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

00AB5D

Diagnosis information - High-voltage battery control unit

Current monitoring

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Measured current outside the measuring range
● Current-sensor offset too high
● Measured value stuck

Possible fault causes

♦ Current sensor (Hall), Short circuit
♦ **High-voltage battery control unit** Faulty
♦ **High-voltage battery** Faulty

Fault effects

♦ High-voltage system switch-off

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following documents in the PIWIS information system:**

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

00AB63

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

00AB69

Diagnostic information - high-voltage battery control unit

Low-temperature circuit

DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● P0C3200 Low-temperature circuit - cooling requirement too high (00AA2E or 00AB69)
● P0C3200 Low-temperature circuit - chiller active, but temperature characteristic implausible (00A91A or 00AB64)

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **High-voltage battery control unit**

Fault effects

♦ Fault code P0C3200 (00AA2E, 00AB64 or 00AB69) ⇒ No function restriction
♦ Fault code P0C3200 (00A91A) ⇒ Hybrid functionality restricted (power reduction), yellow hybrid warning lamp comes on in the instrument cluster

00AB6B

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00AB6C

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00AB6D

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

00AB6E

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

Diagnosis information - High-voltage battery

Temperature sensors

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, it must be checked whether the inlet and outlet ducts are clogged. The fans should run at 100% for 4 minutes in order to remove minor soiling.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- More than one temperature sensor detected as faulty

Possible fault causes

♦ **Temperature sensor** Faulty
♦ **High-voltage cell module** Faulty
♦ **High-voltage battery control unit** Faulty

Fault effects

♦ Function restriction

Diagnosis information - High-voltage battery

Temperature sensors

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, it must be checked whether the inlet and outlet ducts are clogged. The fans should run at 100% for 4 minutes in order to remove minor soiling.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- More than one temperature sensor detected as faulty

Possible fault causes

♦ **Temperature sensor** Faulty
♦ **High-voltage cell module** Faulty
♦ **High-voltage battery control unit** Faulty

Fault effects

♦ Function restriction

00AB71

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB74

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB75

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB77

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB78

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB79

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB7C

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB7D

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB7E

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnosis information - High-voltage battery

Temperature sensors

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, it must be checked whether the inlet and outlet ducts are clogged. The fans should run at 100% for 4 minutes in order to remove minor soiling.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- More than one temperature sensor detected as faulty

Possible fault causes

♦ **Temperature sensor** Faulty
♦ **High-voltage cell module** Faulty
♦ **High-voltage battery control unit** Faulty

Fault effects

♦ Function restriction

Diagnosis information - High-voltage battery

Temperature sensors

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

INFORMATION
If the temperature of the high-voltage battery is continuously too high, it must be checked whether the inlet and outlet ducts are clogged. The fans should run at 100% for 4 minutes in order to remove minor soiling.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- More than one temperature sensor detected as faulty

Possible fault causes

♦ **Temperature sensor** Faulty
♦ **High-voltage cell module** Faulty
♦ **High-voltage battery control unit** Faulty

Fault effects

♦ Function restriction

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB82

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB83

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB87

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB88

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB89

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB8B

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB8D

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB8E

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
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● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB93

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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ⓘ INFORMATION

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Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB96

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
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♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
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● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

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ⓘ INFORMATION

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB9B

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB9C

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB9D

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

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ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB9E

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00AB9F

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

ⓘ INFORMATION

If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● **Temperature sensor**, above limit value (125 °C/257 °F)
● **Temperature sensor**, below limit value (-40 °C/-40 °F)
● **Temperature sensor** stuck
● Difference between the temperature of a module and the temperature of the adjacent modules too high

Possible fault causes

♦ Fault in cooling circuit (low temperature)
♦ **Temperature sensor** - short circuit to B+
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♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage battery

Temperature sensor/s

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

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Temperature sensor/s

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Diagnostic information - high-voltage battery

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Diagnostic information - high-voltage battery

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Diagnostic information - high-voltage battery

Temperature sensor/s

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Diagnostic information - high-voltage battery

Temperature sensor/s

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♦ **High-voltage battery control unit**

Fault effects

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Diagnostic information - high-voltage battery

Temperature sensor/s

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● Difference between the temperature of a module and the temperature of the adjacent modules too high

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♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
♦ **High-voltage cell module** faulty
♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

00ABB3

Diagnostic information - high-voltage battery

Temperature sensor/s

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If the temperature of the high-voltage battery is continuously too high, perform the >Bleeding water cooling circuit< sequence as necessary.

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● Ignition on

Fault setting condition(s)

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● **Temperature sensor**, below limit value (-40 °C/-40 °F)
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♦ **Temperature sensor** - short circuit to B+
♦ **Temperature sensor** - short circuit to ground

♦ **Temperature sensor** - open circuit
♦ **Temperature sensor** faulty
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♦ **High-voltage battery control unit**

Fault effects

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Diagnostic information - high-voltage battery

Temperature sensor/s

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Diagnostic information - high-voltage battery

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Diagnostic information - high-voltage battery

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Diagnostic information - high-voltage battery

Temperature sensor/s

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♦ **High-voltage battery control unit**

Fault effects

♦ Hybrid functionality restricted

Diagnostic information - high-voltage charger control unit

High-voltage system voltage

⚠DANGER

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- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High voltage (DC) during the charging process, above limit value (U > 450 V)
- High voltage (DC) during the charging process, below limit value (U < 220 V)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ Infrastructure faulty
♦ Fault in charging station
♦ **High-voltage battery** voltage
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

Diagnostic information - high-voltage battery control unit

High-voltage E-box, plus/minus contactor and pre-charging contactor

ⓘ **For more information, see Guided Fault Finding**

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♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

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Fault setting condition(s)

- Contactor does not close
- Contactor does not open
- Contactor opens too slowly
- Open circuit in control line
- Above temperature limit value
- Working circuit - short circuit to ground
- Working circuit - short circuit to B+
- Control circuit - short circuit to ground
- Control circuit - short circuit to B+

Possible fault causes

♦ Line(s) faulty (short circuit or open circuit)

♦ **Plus contactor** faulty
♦ **Minus contactor** faulty
♦ **Pre-charging contactor** faulty
♦ **High-voltage battery control unit** faulty

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

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Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

♦ Voltage sensor in **high-voltage E-box** faulty
♦ **High-voltage battery control unit**
♦ **High-voltage battery**

Fault effects

♦ No function restriction
♦ If fault code 'P0B1500' is stored, DC charging is no longer possible

00ABBD

Diagnostic information - high-voltage battery control unit

High-voltage E-box, voltage sensors

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- High-voltage battery voltage sensor - above limit value
- High-voltage battery voltage sensor - below limit value
- High-voltage battery voltage sensor - short circuit to ground
- High-voltage battery voltage sensor - short circuit to B+
- Minus contactor voltage sensor - above limit value
- Minus contactor voltage sensor - below limit value
- Minus contactor voltage sensor - short circuit to ground
- Minus contactor voltage sensor - short circuit to B+
- Minus contactor voltage sensor - out of tolerance
- High-voltage system voltage sensor - voltage too high
- High-voltage system voltage sensor - voltage too low
- High-voltage system voltage sensor - electrical fault
- Plus contactor/pre-charging contactor voltage sensor - signal implausible
- Plus contactor/pre-charging contactor voltage sensor - above limit value
- Plus contactor/pre-charging contactor voltage sensor - below limit value
- Plus contactor/pre-charging contactor voltage sensor - short circuit to ground
- Plus contactor/pre-charging contactor voltage sensor - short circuit to B+

Possible fault causes

♦ Voltage sensor in **high-voltage E-box** faulty
♦ **High-voltage battery control unit**
♦ **High-voltage battery**

Fault effects

♦ No function restriction
♦ If fault code 'P0B1500' is stored, DC charging is no longer possible

Diagnostic information - high-voltage battery control unit

High-voltage fuse - high-voltage battery

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on

Fault setting conditions

• No high-voltage connection between **high-voltage battery control unit** and **high-voltage power electronics control unit**

Possible fault causes

♦ High-voltage fuse faulty
⇒ Visually check the high-voltage lines for damage
⇒ High-voltage line - short circuit
⇒ High-voltage line - open circuit

♦ **High-voltage battery**
♦ **High-voltage power electronics control unit**
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnostic information - high-voltage battery control unit

Function restriction

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following documents in the PIWIS information system:

♦ **2X00IN** Isolation of high-voltage system from power supply for servicing work on e-hybrid vehicles
♦ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
♦ **2X00IN** General warning notes for working on the high-voltage vehicle electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Internal fault in **high-voltage battery control unit**

Fault effects

♦ Function restriction or high-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the **instrument cluster**)

Diagnostic information - high-voltage battery control unit

High-voltage fuse - high-voltage battery

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on

Fault setting conditions

• No high-voltage connection between **high-voltage battery control unit** and **high-voltage power electronics control unit**

Possible fault causes

♦ High-voltage fuse faulty
⇒ Visually check the high-voltage lines for damage
⇒ High-voltage line - short circuit
⇒ High-voltage line - open circuit

♦ **High-voltage battery**
♦ **High-voltage power electronics control unit**
♦ **High-voltage battery control unit**

Fault effects

♦ High-voltage system switch-off with advance warning (red hybrid warning lamp comes on in the

instrument cluster)

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

Diagnosis information - High-voltage battery

High-voltage battery heater

DANGER

High voltage !
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in ac cordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **High-voltage battery heater**

Fault effects

♦ none

PORSCHE

Porsche Connect – Fault Finding Guide



Service: “Apple CarPlay”

Date: 11/2015

General information and initial questions

- Fault Finding Guides help you to locate the causes of faults step by step.
- Before you discuss the Fault Finding Guide with your customers, the following questions help you to carry out fault finding efficiently:

When did the service stop working?	Ambient conditions have a huge influence on the functionality of services. The use of services requires good reception (e.g. reception can be very limited in underground car parks).
How was the online connection established? Via the SIM card in the PCM or via the device (Bluetooth/Wi-Fi)?	Depending on how the online connection was established, you will find different test steps that you can use.
Are all services not working or are only individual services affected?	If individual services are not working, please concentrate initially on questions relating to “Check service-specific or general causes of faults”.

- For correcting faults, please also use the FAQs (Frequently Asked Questions) about Porsche Connect that are provided in the PPN.

Check service-specific or general causes of faults

Check service-specific or general causes of faults

- Check whether the correct vehicle equipment is installed (Connect package)
- Check whether the correct iPhone setup is being used
- Check whether a CarPlay-compatible iPhone is connected via a USB interface
- Check whether the iPhone cable is faulty
- Check whether the “Don’t ask again” checkbox in the iPhone use dialog was ticked
- Check whether the service is enabled on your device
- Check whether the iPhone is being used in iPod mode
- Check whether the correct USB interface is being used
- Check whether the CarPlay disclaimer was agreed to
- Check whether the mobile data allowance has been used up
- Check whether CarPlay-compatible versions of the App are being used
- Check whether the Push-to-talk button is being used correctly
- Check whether the data transmission rate is sufficient
- Check whether the OPT button was pressed
- Check whether the quality of the data from the content provider is good enough
- Check whether the network coverage is poor (tunnel, weather, etc.)
- Check whether the mobile phone network is down

Check service-specific or general causes of faults

Check whether the correct vehicle equipment is installed (Connect package)

Test step

"Please specify the 17-character chassis number (VIN) of your Porsche. You will find this combination of digits and letters under the marking "E" (Germany) in your vehicle identification document or at the bottom edge of the windscreen."

Note

The VIN provided by the customer must be used to check whether the correct equipment is installed in the customer's vehicle.
PR no.: 9WT

Result check

Does the customer vehicle have the Connect package installed?

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Unfortunately, Apple CarPlay is not available for your Porsche. The service can only be used in vehicles with the Porsche Connect package."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the correct iPhone setup is being used

...

Check service-specific or general causes of faults

› Check whether the correct vehicle equipment is installed (Connect package)

⌄ Check whether the correct iPhone setup is being used

Test step

"Please check whether your iPhone model is an iPhone 5 or higher and whether you have Version 7.1 or higher of iOS."

Note

Apple CarPlay is only available for iPhone 5 or higher AND iOS 7.1 or higher.

Porsche recommends iOS 8.4 or higher. Everything in the FFG assumes this is installed.

Result check

"Are you trying to use Apple CarPlay with a compatible setup?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Apple CarPlay is only available on an iPhone 5 running iOS 7.1 or higher. However, even with iOS 7.1 there are some restrictions in the range of available functions, which is why Porsche recommends iOS 8.4 or higher."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

› Check whether a CarPlay-compatible iPhone is connected via a USB interface

...

Check service-specific or general causes of faults

...

Check whether the correct iPhone setup is being used

Check whether a CarPlay-compatible iPhone is connected via a USB interface

Test step

"Please check whether a CarPlay-compatible iPhone has been connected to the correct USB interface."

Note

Correct USB interface:
in vehicles with a USB interface in the centre console –> connect the iPhone to that interface
otherwise: Use the USB interface in the glove box

Result check

"Has a CarPlay-compatible iPhone been connected to the CarPlay-compatible USB interface of your Porsche?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"To use Apple CarPlay, connect a CarPlay-compatible iPhone to the CarPlay-compatible USB interface of your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the iPhone cable is faulty

...

Check service-specific or general causes of faults

...

Check whether a CarPlay-compatible iPhone is connected via a USB interface

Check whether the iPhone cable is faulty

Test step

"Please check whether your iPhone cable is faulty. You can do this by using the cable to connect your iPhone to a PC or laptop, for example. If your iPhone is recognised, charging should start."

Note

The iPhone also outputs an error message if a faulty or incompatible cable is connected.

Result check

"Is your iPhone cable OK?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Please replace the faulty cable with a new one."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the "Don't ask again" checkbox in the iPhone use dialog was ticked

...

Check service-specific or general causes of faults

...

› Check whether the iPhone cable is faulty

⌄ Check whether the “Don’t ask again” checkbox in the iPhone use dialog was ticked

Test step

“Please check whether you ticked the checkbox in the final selection of the use dialog.”

Note

It is not possible for the customer to check this. The suggested solution can be tried without having to carry out the check.

Result check

“Was the checkbox in the use dialog left unticked?”

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	“Open the connection manager of your PCM. Go to “Apple CarPlay” and select the relevant iPhone. You can now change the mode that will be automatically selected when your iPhone is connected (“Use as iPod” or “Use with Apple CarPlay”) or delete the device from PCM memory (“Delete Device”). The next time the iPhone is connected it will be recognised for the first time and the selection dialog will be displayed again.”

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

› Check whether the service is enabled on your device

...

Check service-specific or general causes of faults

Illustrations: iPhone use dialog

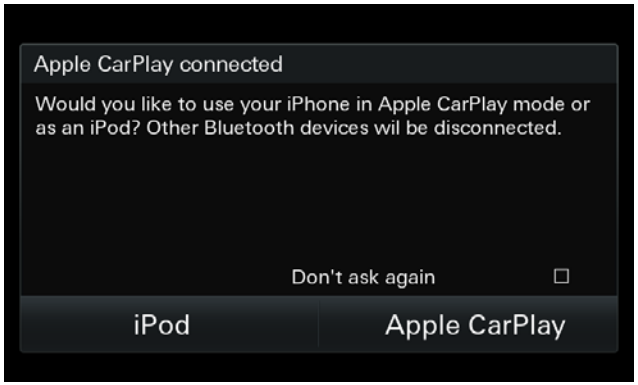


Fig. 1: iPhone use dialog



Fig. 2: iPhone use dialog, “Don’t ask again” box ticked

Check service-specific or general causes of faults

...

Check whether the “Don’t ask again” checkbox in the iPhone use dialog was ticked

Check whether the service is enabled on your device

Test step

“Please check whether you have activated the Restrictions in the settings for your device and thus disabled use of the service. To do this, proceed as follows:
Settings -> General -> Restrictions.
Now check whether the Restrictions are activated and whether the “CarPlay” slider is also activated.”

Note

If the service is deactivated on the iPhone, the PCM of the customer may go into an endless loop when asking about the use of the connected iPhone (use as iPod or with CarPlay).
When editing the Restriction settings, either the existing security code must be entered or a new one created.

Result check

“Do the Restrictions settings of your iPhone allow you to use the service?”

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	“Deactivate the Restrictions in your iPhone settings or enable the use of CarPlay as an exception to the active restrictions.”

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the iPhone is being used in iPod mode

...

Check service-specific or general causes of faults

Illustrations: Restrictions settings

Illustrations show menus on the iPhone 6 as an example

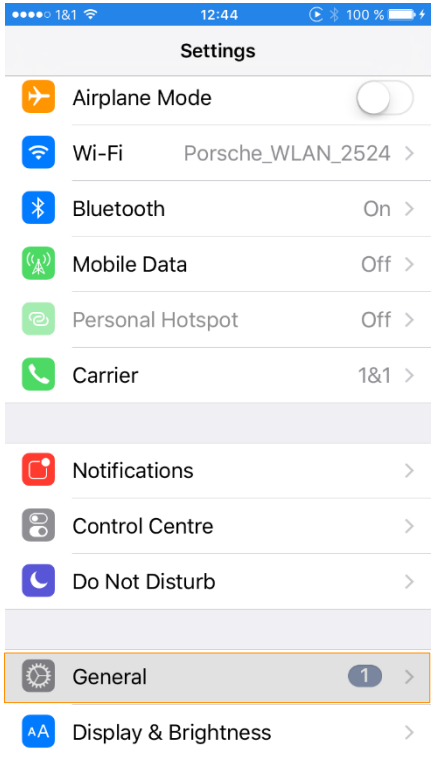


Fig. 3: “Settings” menu

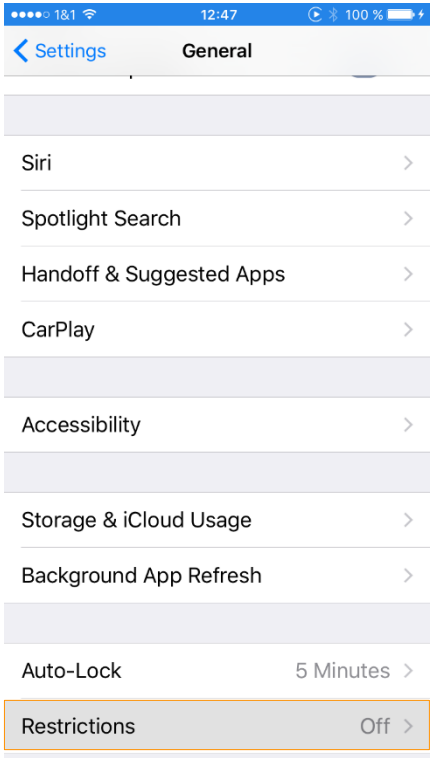


Fig. 4: “General” menu

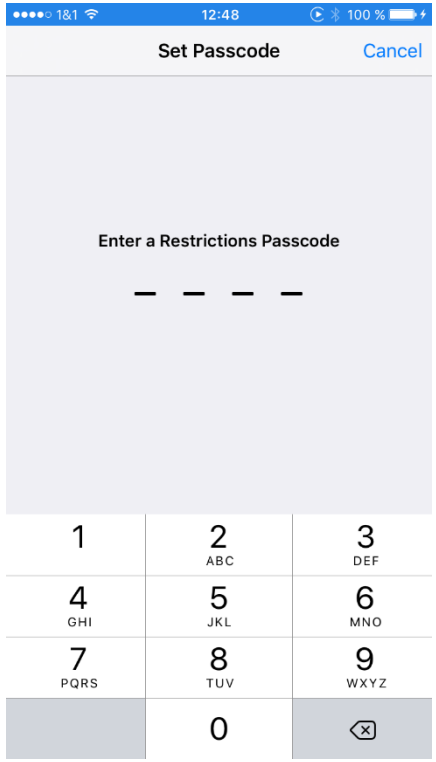


Fig. 5: Prompt to enter a Restrictions Passcode

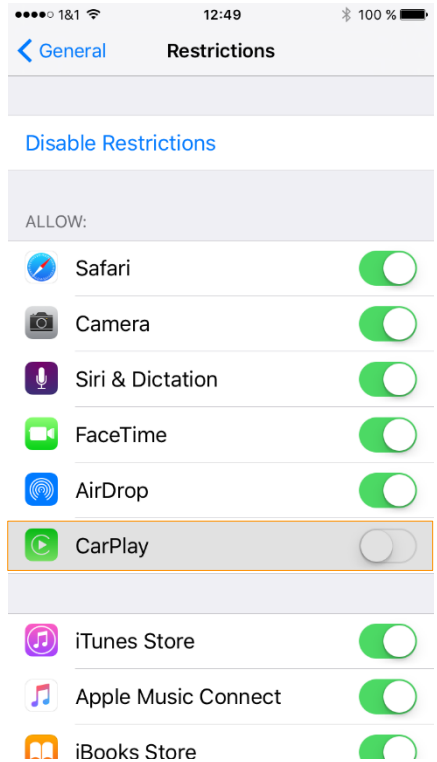


Fig. 6: “Restrictions” menu

Check service-specific or general causes of faults

...

› Check whether the service is enabled on your device

⌄ Check whether the iPhone is being used in iPod mode

Test step

"Please check whether your PCM is using or operating the connected iPhone in iPod mode. You can do this by pressing the SOURCE button to open the SOURCE menu. If "iPod" is displayed, your connected iPhone is being used as an iPod."

Result check

"Can you confirm that the connected iPhone is not being used as an iPod?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Change the use mode of the iPhone in Connection Manager. On your Home screen, tap one of the connection icons at the bottom left of the status bar. Select the "Apple CarPlay" option from the connection menu that is now displayed. The iPhone that is currently connected to the USB interface will now be displayed. Tap on it and enter the appropriate setting in the list box that pops up. In this case, choose "Use with Apple CarPlay"."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

› Check whether the correct USB interface is being used

...

Check service-specific or general causes of faults

Illustrations: iPod mode



Fig. 7: PCM “SOURCE” display, without iPod

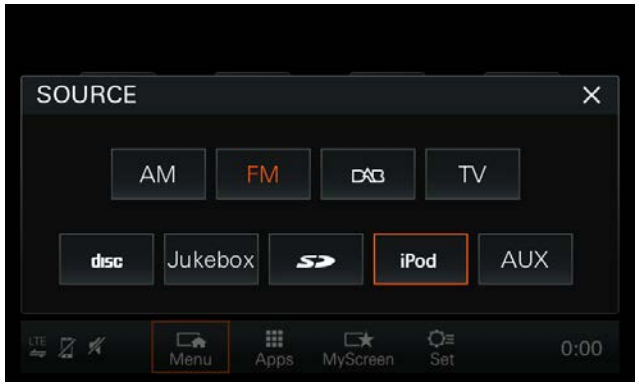


Fig. 8: PCM “SOURCE” display, with iPod

Check service-specific or general causes of faults

...

› Check whether the iPhone is being used in iPod mode

⌄ Check whether the correct USB interface is being used

Test step

"Please check whether your iPhone has been connected to the correct USB interface. If your Porsche has USB ports in the centre console, you must connect your iPhone to one of them before you can use Apple CarPlay. Otherwise please use the USB interface in the glove box."

Result check

"Was the iPhone connected to the correct USB interface?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Connect your iPhone to the designated Apple CarPlay-compatible USB interface. If your Porsche has USB ports in the centre console, you must use one of them. Otherwise the USB interface in the glove box must be used."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

› Check whether the CarPlay disclaimer was agreed to

...

Check service-specific or general causes of faults

...

Check whether the correct USB interface is being used

Check whether the CarPlay disclaimer was agreed to

Test step

"Please check whether you accepted the CarPlay disclaimer. Plug your iPhone cable into the CarPlay-compatible USB interface in your Porsche. A dialog prompting you to specify how you want to use your iPhone then appears. Select the "CarPlay" option. The Apple CarPlay disclaimer is now displayed."

Note

The Disclaimer is displayed after selecting CarPlay in the iPhone use dialog and must be accepted before Apple CarPlay can be used.

Result check

"Has the Disclaimer been accepted?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"The use of Apple CarPlay requires the prior acceptance of the conditions contained in the Disclaimer."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile data allowance has been used up

...

Check service-specific or general causes of faults

Illustrations: CarPlay Disclaimer

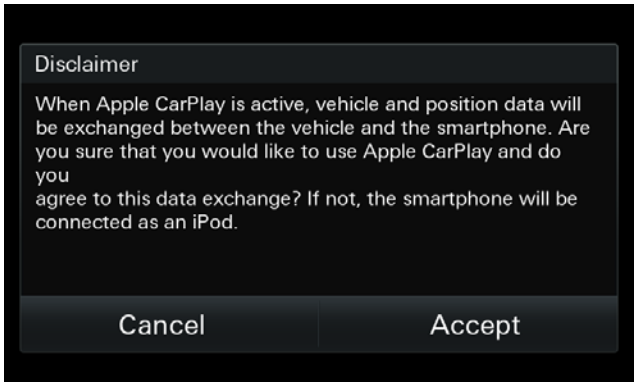


Fig. 9: PCM display, Apple CarPlay Disclaimer

Check service-specific or general causes of faults

...

Check whether the CarPlay disclaimer was agreed to

Check whether the mobile data allowance has been used up

Test step

"Please check the status of your monthly data allowance."

Note

If data services and the telephone are used with the same SIM card, any text message sent by the mobile phone provider concerning the critical status of the monthly data allowance will be displayed in the customer's PCM system.
Menu item in PCM for recording usage (PHONE -> OPT -> SET PHONE -> Data connections -> Online data counter).

Result check

"Is some of your monthly data allowance still remaining?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Please contact your mobile phone provider in order to increase your data allowance."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether CarPlay-compatible versions of the App are being used

...

Check service-specific or general causes of faults

Illustrations: Mobile data allowance



Fig. 10: “Set Phone” menu on PCM head unit

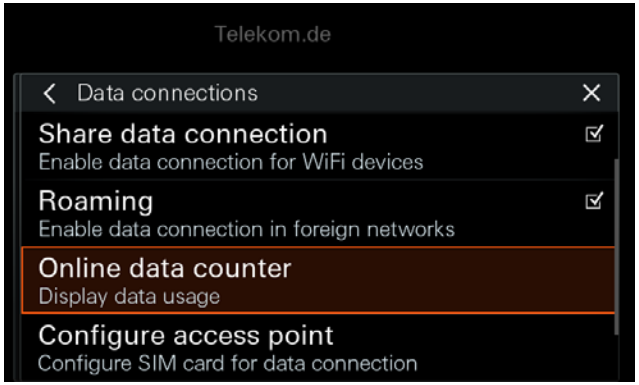


Fig. 11: “Data connections” menu on PCM head unit

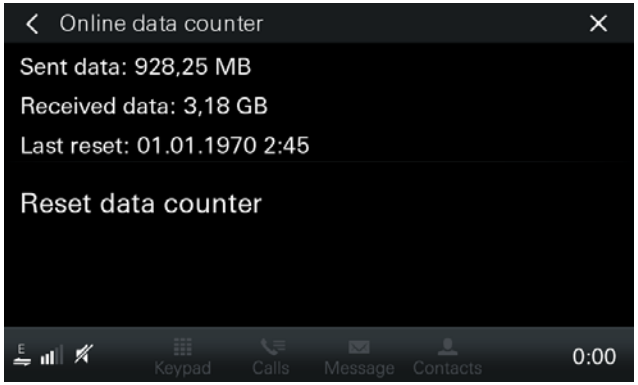


Fig. 12: “Online data counter” menu on PCM head unit

Check service-specific or general causes of faults

...

Check whether the mobile data allowance has been used up

Check whether CarPlay-compatible versions of the App are being used

Test step

"Please check whether the versions of the Apps installed on your iPhone are CarPlay-compatible. Refer to the App information in the App Store for further advice."

Note

The only Apps available through Apple CarPlay are those installed on the customer's iPhone in a version that is compatible with CarPlay.

Result check

"Are all the required Apps compatible with CarPlay?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Unfortunately, Apps that are not fully CarPlay-compatible cannot be used on your PCM through Apple CarPlay. Certain versions of some Apps are CarPlay-compatible. Update the App to its latest/correct version."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the Push-to-talk button is being used correctly

...

Check service-specific or general causes of faults

...

› Check whether CarPlay-compatible versions of the App are being used

⌄ Check whether the Push-to-talk button is being used correctly

Test step

"Please check whether you pressed and held the Push-to-talk button on your multifunction steering wheel in order to activate the Siri voice control system of Apple CarPlay."

Note

on vehicles WITH voice control for the PCM:
Short press the push-to-talk button on the MFSW for PCM voice control, long press the push-to-talk button on the MFSW for Siri

on vehicles WITHOUT voice control for the PCM:
LONG press the push-to-talk button on the MFSW for Siri

Result check

"Did you long press the push-to-talk button?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Even if your Porsche is not equipped with voice control for the PCM, you must still do a long press on the push-to-talk button on your multifunction steering wheel in order to activate voice control for Apple CarPlay."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

› Check whether the data transmission rate is sufficient

...

Check service-specific or general causes of faults

...

Check whether the Push-to-talk button is being used correctly

Check whether the data transmission rate is sufficient

Test step

"Please check the network symbol on your PCM or mobile device."

Note

A definitive statement on the network standard required cannot be made due to the wide range of factors involved.

Result check

"Is the quality of the data network good enough?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"The usability of the service can be limited when the data network quality is poor. Find a place where the data network quality is better."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the OPT button was pressed

...

Check service-specific or general causes of faults

...

Check whether the data transmission rate is sufficient

Check whether the OPT button was pressed

Test step

"Please check whether the you have tried using the OPT button. The OPT button is located on the right underneath the PCM display, to the left of the Back button."

Note

A definitive statement on the network standard required cannot be made due to the wide range of factors involved.

Result check

"Can you confirm that you did not press the OPT button?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"The OPT button is not assigned any functions while Apple CarPlay is being used."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the quality of the data from the content provider is good enough

...

Check service-specific or general causes of faults

...

Check whether the OPT button was pressed

Check whether the quality of the data from the content provider is good enough

Test step

"Please check whether the function restriction is affecting just one service/App or several/all of them."

Note

The information must exist or be determined in the Callcenter.

Porsche is not responsible for the content of the services/Apps used!

Result check

"Are several services/Apps affected?" -> it is likely that the data quality of the provider is OK.

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	Wait for data update/inform provider

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the network coverage is poor (tunnel, weather, etc.)

...

Check service-specific or general causes of faults

...

Check whether the quality of the data from the content provider is good enough

Check whether the network coverage is poor (tunnel, weather, etc.)

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."
"At least 2 bars should be displayed here."

Result check

"Is the reception strong enough (at least 2 bars or at least mobile phone standard 3G or E)?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Please move to an area with better reception."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile phone network is down

Check service-specific or general causes of faults

Illustrations: iPod mode

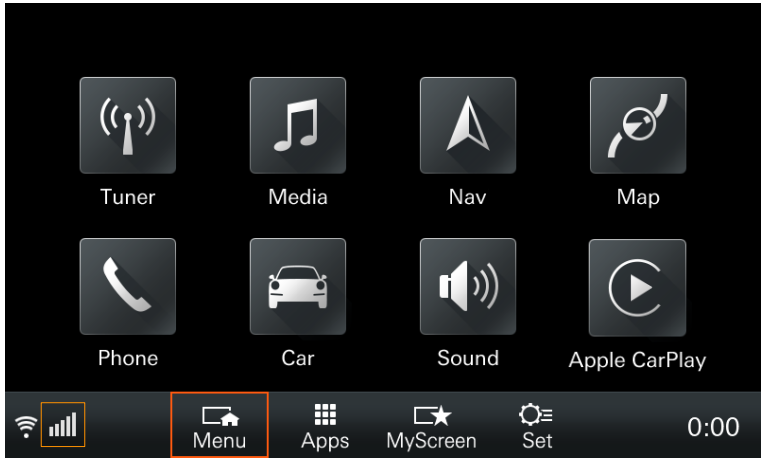


Fig. 13: Home screen on PCM head unit

Illustration shows iPhone 6 menu as an example

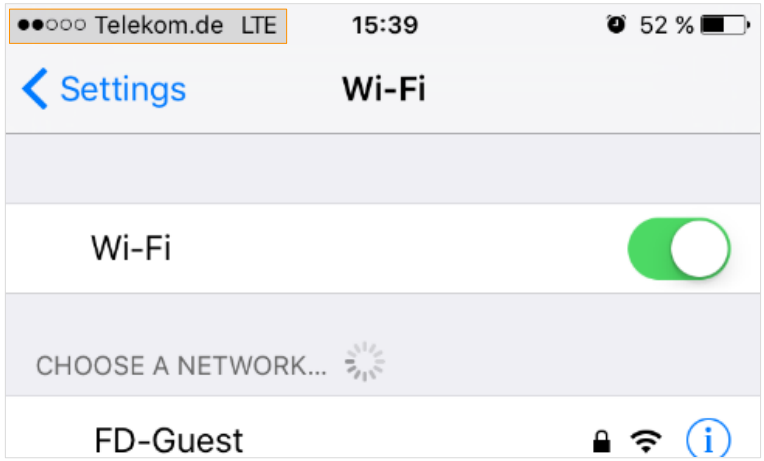


Fig. 14: iOS status bar

Check service-specific or general causes of faults

...

Check whether the network coverage is poor (tunnel, weather, etc.)

Check whether the mobile phone network is down

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."

Result check

"Do you have a network signal?"

Yes	The cause was not identified. Refer the customer to the Service department.
No	"Please move to an area with better reception or wait until the problem is fixed. The relevant department has already been informed and is working on resolving the problem."

Does the problem persist?

Yes (Contact the workshop) **No** (End fault finding)

PORSCHE

Porsche Connect – Fault Finding Guide



Service: “Google Earth”

Date: October 2015

General information and initial questions

- Fault Finding Guides help you to locate the causes of faults step by step.
- Before you discuss the Fault Finding Guide with your customers, the following questions help you to carry out fault finding efficiently:

When did the service stop working?	Ambient conditions have a huge influence on the functionality of services. The use of services requires good reception (e.g. reception can be very limited in underground car parks).
How was the online connection established? Via the SIM card in the PCM or via the device (Bluetooth/WiFi)?	Depending on how the online connection was established, you will find different test steps that you can use.
Are all services not working or are only individual services affected?	If individual services are not working, please concentrate initially on questions relating to “Check service-specific or general causes of faults”.

- For correcting faults, please also use the FAQs (Frequently Asked Questions) about Porsche Connect that are provided in the PPN.

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or WiFi**
- **Check service-specific or general causes of faults**

Check the online connection when using a SIM card in the vehicle slot

- Check whether there is a SIM card in the vehicle slot
- Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Test step

"Check whether there is a SIM card in the vehicle slot. To do this, lift up the cover flap with the Porsche logo at the centre under your PCM display. Underneath, you will find the SD card slots and the SIM card slot for your Porsche."

Note

This can also be checked on the PCM head unit:
a) Status bar, left margin, connection icon, data connection.
b) Connections menu: possible displays: "SIM inserted", "PIN required", "Connect", hotspot name, device name.

Result check

"Is there a SIM card in the vehicle slot in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Insert a suitable SIM card in the vehicle slot of your Porsche and check whether a connection can be established."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Illustrations: SIM card in vehicle slot

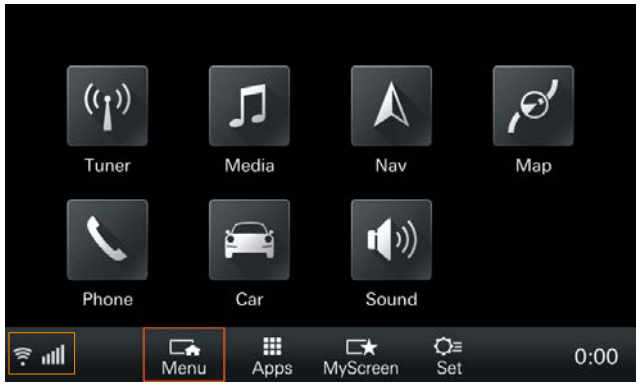


Fig. 1: Home screen on PCM head unit

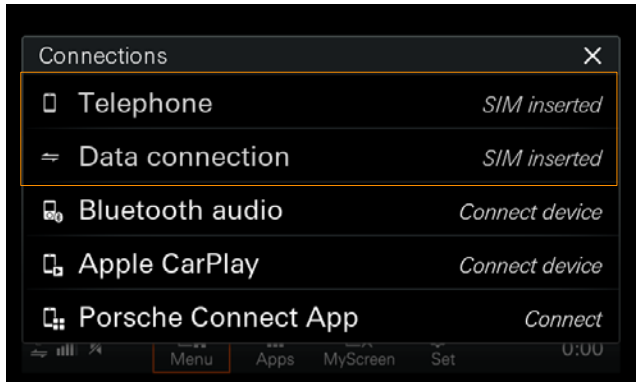


Fig. 2: “Connections” menu, version 1

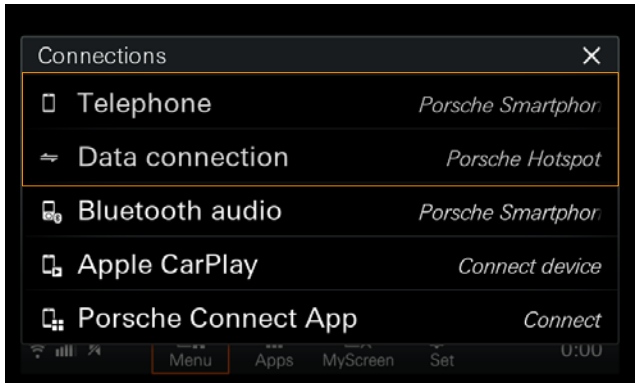


Fig. 3: “Connections” menu, version 2

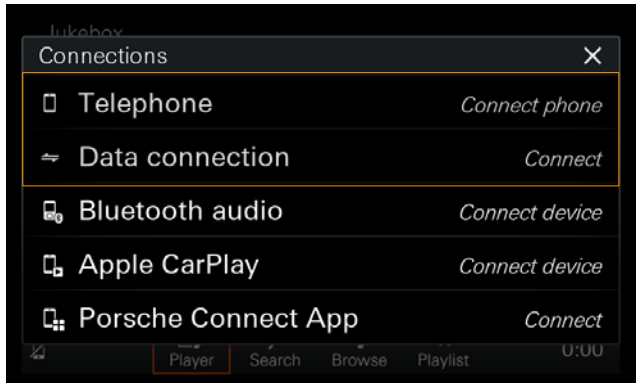


Fig. 4: “Connections” menu, version 3

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Check whether the SIM card is defective

Test step

"Insert a different SIM card that you know is working perfectly in the vehicle slot of your Porsche."

Result check

"Is your original SIM card working?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone service provider and request a new SIM card."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or WiFi**
  - Check whether Bluetooth is activated on your device
  - Check whether Bluetooth is activated on the PCM
  - Check whether WiFi Hotspot/Mobile Internet is activated on your device
  - Check whether WiFi is activated on the PCM
  - Check whether the device is supported
- **Check service-specific or general causes of faults**

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check whether Bluetooth is activated on your device

Test step

"Check whether Bluetooth is activated in your device settings."

Note

If you are connecting for the first time, make sure that the device is visible for other Bluetooth equipment. Please check this in your device settings as well.

Result check

"Is Bluetooth activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate Bluetooth on your device. If you are trying to connect your device to your Porsche for the first time, switch on Bluetooth and activate your device's visibility option before starting the connection process."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Bluetooth is activated on the PCM

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Illustrations: Bluetooth on device

Illustrations show menus on the iPhone 6 as an example

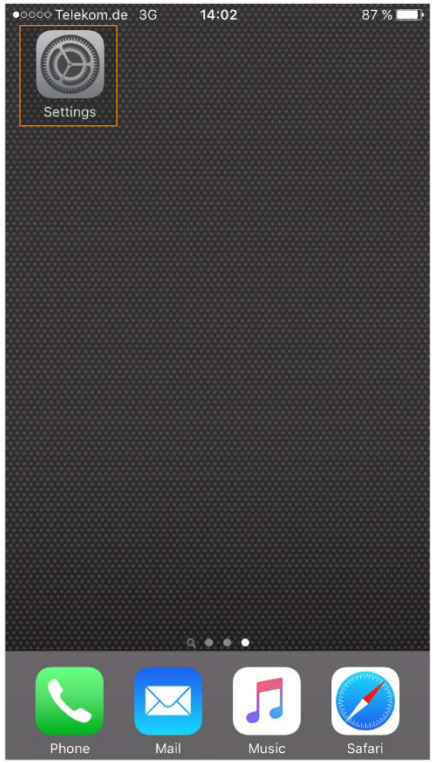


Fig. 5: iOS Home screen

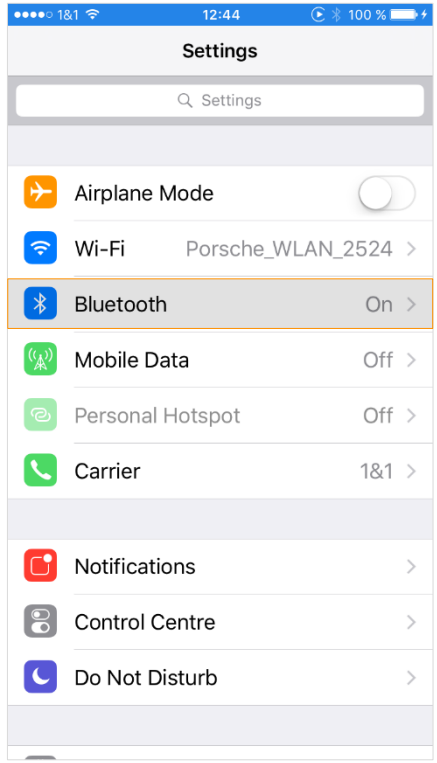


Fig. 6: iOS “Settings” menu

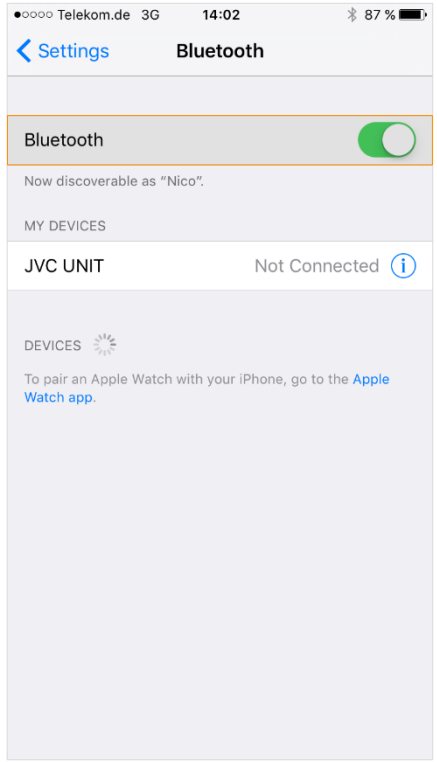


Fig. 7: iOS “Bluetooth” menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check whether Bluetooth is activated on your device

Check whether Bluetooth is activated on the PCM

Test step

"Check whether Bluetooth is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> Bluetooth -> Deactivate/activate Bluetooth."

Result check

"Is Bluetooth activated on PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "Bluetooth" option on the PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether WiFi Hotspot/Mobile Internet is activated on your device

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Illustrations: Bluetooth on PCM



Fig. 8: “Set Phone” menu on PCM head unit



Fig. 9: “Bluetooth” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

...

Check whether Bluetooth is activated on the PCM

Check whether WiFi Hotspot/Mobile Internet is activated on your device

Test step

"Please check whether the options "WiFi Hotspot" (or "Hotspot") and "Mobile Internet" (or "Mobile Data") are activated in your device settings."

Result check

"Is WiFi Hotspot/Mobile Internet activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the options "WiFi Hotspot"/"Hotspot" and "Mobile Internet"/"Mobile Data" on your device."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether WiFi is activated on the PCM

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Illustrations: WiFi hotspot/mobile internet deactivated on device

Illustrations show menus on the iPhone 6 as an example

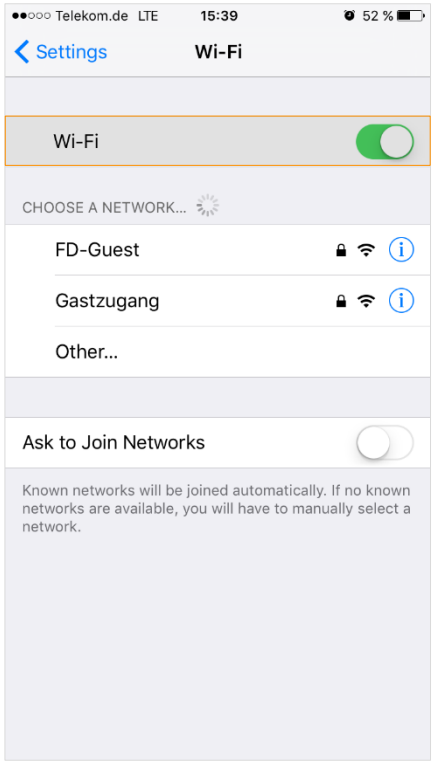


Fig. 10: iOS “WiFi” menu



Fig. 11: iOS “Personal Hotspot” menu

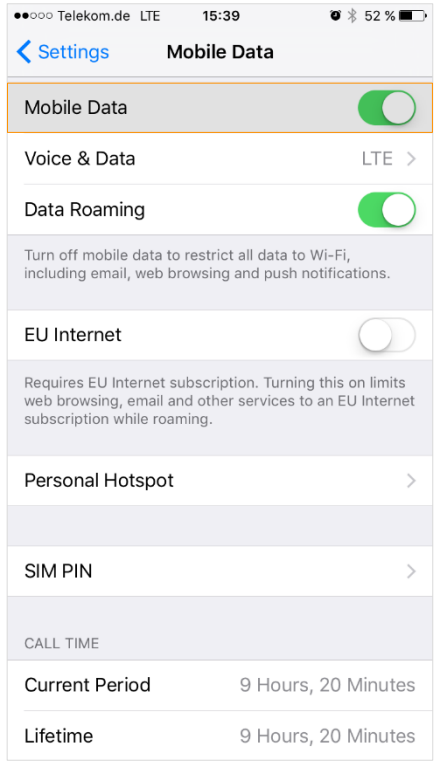


Fig. 12: iOS “Mobile Data” menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

...

Check whether WiFi Hotspot/Mobile Internet is activated on your device

Check whether WiFi is activated on the PCM

Test step

"Please check whether the WiFi option is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> WiFi settings -> Deactivate/Activate WiFi."

Result check

"Is WiFi activated on the PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "WiFi" option on the PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Illustrations: WiFi on PCM



Fig. 13: “Set Phone” menu on PCM head unit



Fig. 14: “WiFi settings” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

...

Check whether WiFi is activated on the PCM

Check whether the device is supported

Test step

"Please specify the model designation of the device you want to use with your Porsche."

Note

The available documents must be used to check whether and to what extent the customer's device is supported.

Result check

Is the customer's device compatible?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Your device is not compatible/not fully compatible with all the functions of your Porsche. For the full range of functions, please use a compatible device in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or WiFi**
- **Check service-specific or general causes of faults**
  - Check whether the licence is still valid
  - Check whether the correct vehicle equipment is installed (Connect package)
  - Check whether Google Earth is activated in the vehicle
  - Check for simultaneous use of service and phone
  - Check whether the mobile data allowance has been used up
  - Check whether the network coverage is poor (tunnel, weather, etc.)
  - Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check whether the licence is still valid

Test step

"Please press "HOME" and select "Apps" in the status bar. Now press "OPT" and select "Services information" in the Options menu. Check whether the licence date for your desired service has already been exceeded."

Note

Alternatively, the licence period can be determined by entering the VIN in the PIWIS vehicle information. Please note that this option will not be available until mid-2016. Further information will be provided in good time.

Result check

"Is the licence still valid?"

No	"Please extend the licence for the service via the Porsche Connect Webshop." Please note that this option will not be available until mid-2016. Further information will be provided in good time. Please contact your local importer if you have any licence problems in the meantime.
Yes	The cause was not identified. Continue fault finding with the next test step.

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the correct vehicle equipment is installed (Connect package)

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Illustrations: Licence period check

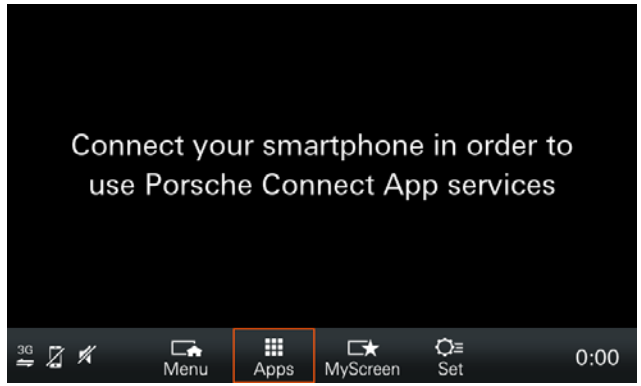


Fig. 15: Apps screen on PCM head unit

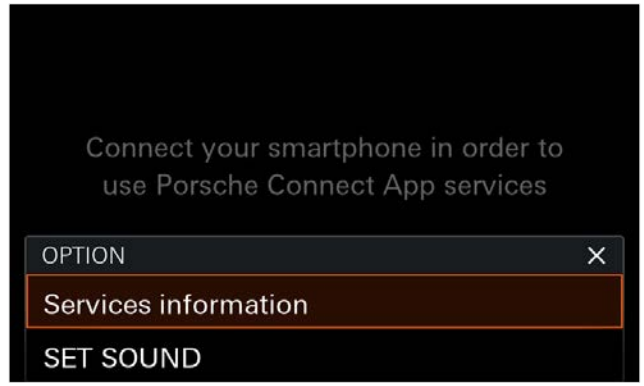


Fig. 16: Options menu on Apps screen



Fig. 17: Services information menu

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check whether the licence is still valid

Check whether the correct vehicle equipment is installed (Connect package)

Test step

"Please specify the 17-character chassis number (VIN) of your Porsche. You will find this combination of digits and letters under the marking "E" (Germany) in your vehicle identification document or at the bottom edge of the windscreen."

Note

The VIN provided by the customer must be used to check whether the correct equipment is installed in the customer's vehicle.

Result check

Does the customer vehicle have the Connect package installed?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Unfortunately, the RTTI service is not available for your Porsche. The service can only be used in vehicles with the Porsche Connect package."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Google Earth is activated in the vehicle

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether Google Earth is activated in the vehicle

Test step

"Please check whether you have activated the map view for Google Earth. To do this, proceed as follows:
Tap "MAP" on your PCM start screen to go to the map display." Then EITHER:
a) "Touch the white icon (3 layers) at the top right of the screen. A menu bar containing several icons appears. You will see the "Google Earth" icon and name here." OR:
b) "Press "OPT". Select "SET MAP" in the Options menu. Select "Map view". Select "Layers". Select "Google Earth". You will see the "Google Earth satellite view" entry here."

Note

If the icon or menu item cannot be found in the specified location, the customer has not purchased the service.

Result check

"Is the "Google Earth" icon orange? or Is there a checkmark next to the "Google Earth satellite view" menu item?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate Google Earth by tapping the relevant icon or adding a checkmark next to the "Google Earth satellite view" menu item. Google Earth is activated if the icon is orange."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check for simultaneous use of service and phone

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Illustrations: Activating Google Earth

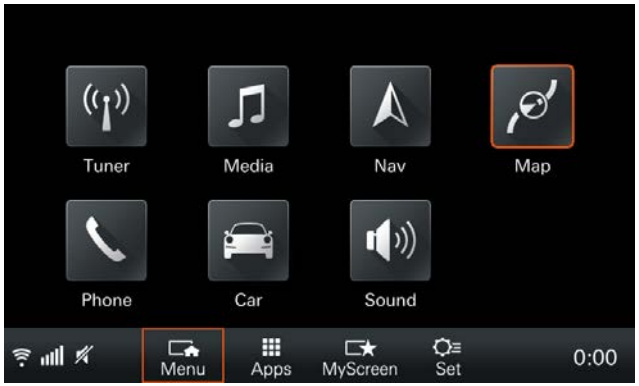


Fig. 18: Home screen on PCM head unit

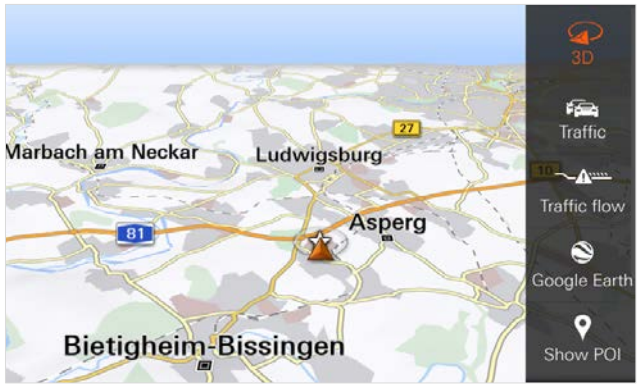


Fig. 19: Map view and menu on PCM head unit

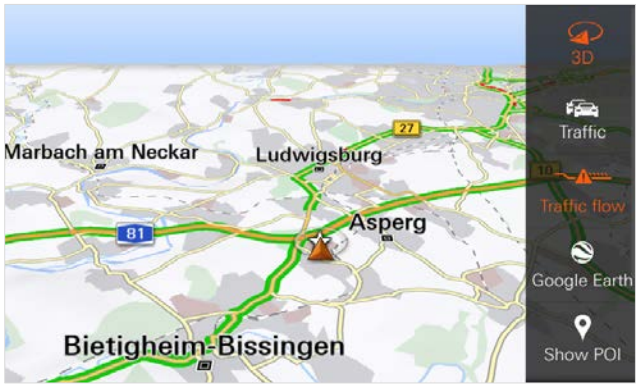


Fig. 20: Map view and menu on PCM head unit

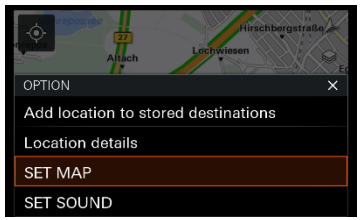


Fig. 21: OPT menu under “MAP”

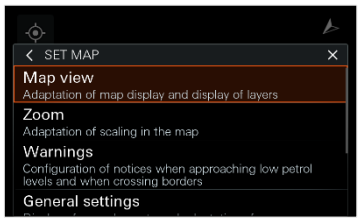


Fig. 22: “SET MAP” menu

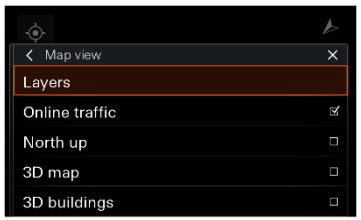


Fig. 23: “Map view” menu

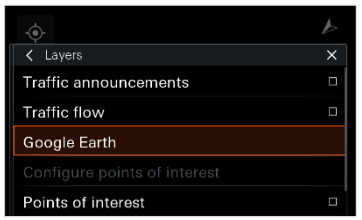


Fig. 24: “Layers” menu

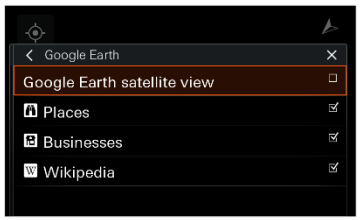


Fig. 25: “Google Earth” menu

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether Google Earth is activated in the vehicle

Check for simultaneous use of service and phone

Test step

"Did you make a phone call while using the service or are you using your data services and the phone with the same SIM card?"

Result check

Were both applications used separately or are both applications used with different SIM cards?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Availability of the service can sometimes be limited while you are using the phone. Especially when using the data services and telephone function with one SIM card and if network coverage is bad, the service can be limited temporarily in rare cases."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile data allowance has been used up

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check for simultaneous use of service and phone

Check whether the mobile data allowance has been used up

Test step

"Please check the status of your monthly data allowance."

Note

If data services and the telephone are used with the same SIM card, any text message sent by the mobile phone provider concerning the critical status of the monthly data allowance will be displayed in the customer's PCM system.
Menu item in PCM for recording usage (PHONE -> OPT -> SET PHONE -> Data connections -> Online data counter).

Result check

"Is there any data remaining from the monthly data allowance?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone provider in order to increase your data allowance."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the network coverage is poor (tunnel, weather, etc.)

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Illustrations: Mobile data allowance



Fig. 27: “Set Phone” menu on PCM head unit

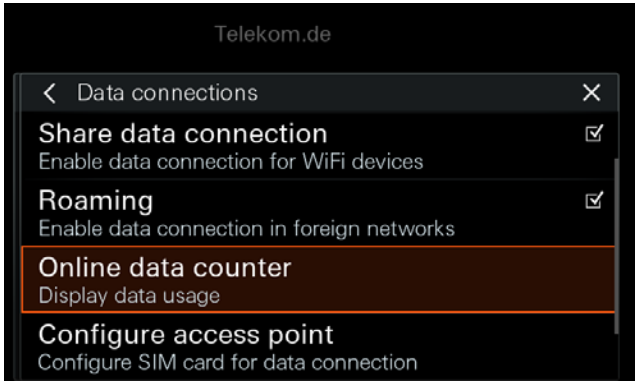


Fig. 28: “Data connections” menu on PCM head unit

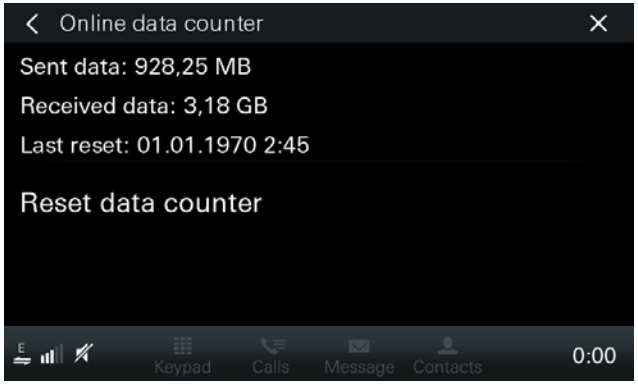


Fig. 29: “Online data counter” menu on PCM head unit

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether the mobile data allowance has been used up

Check whether the network coverage is poor (tunnel, weather, etc.)

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."
"At least 2 bars should be displayed here."

Result check

"Is there sufficient reception (at least 2 bars or at least mobile phone standard 3G or E)?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please move to an area with better reception."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Illustrations: Poor network quality (tunnel, weather, etc.)

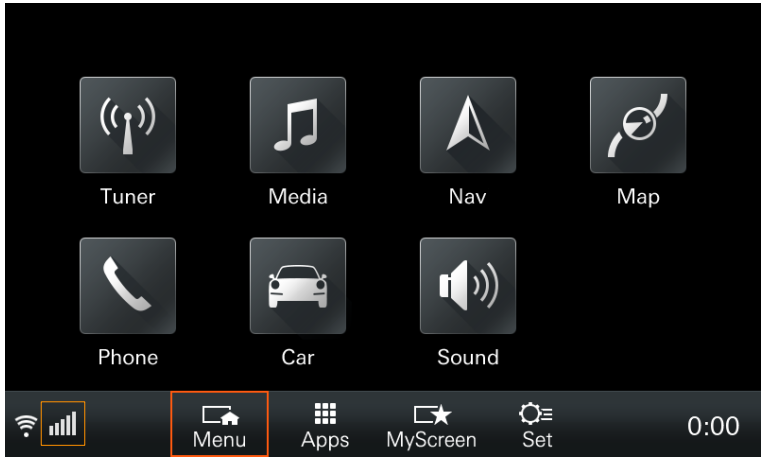


Fig. 30: Home screen on PCM head unit

Illustration shows iPhone 6 menu as an example

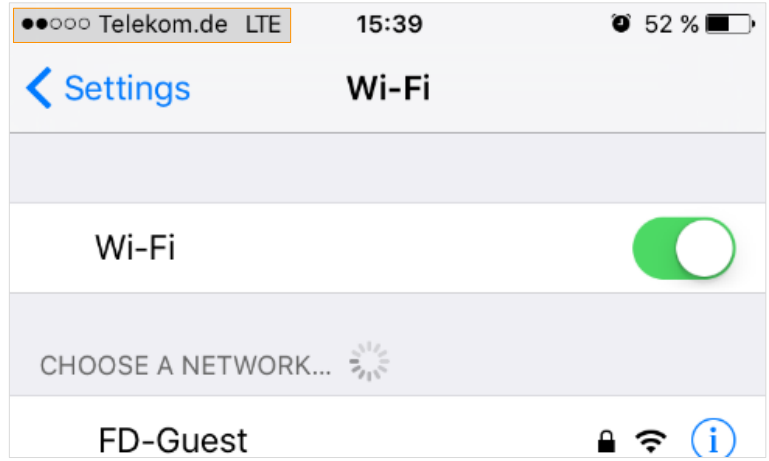


Fig. 31: iOS status bar

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether the network coverage is poor (tunnel, weather, etc.)

Check whether the mobile phone network is down

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."

Result check

"Do you have a network signal?"

Yes	The cause was not identified. Refer the customer to the Service department.
No	"Please move to an area with better reception or wait until the problem is fixed. The relevant department has already been informed and is working on resolving the problem."

Does the problem persist?

Yes (Contact the workshop) **No** (End fault finding)

Porsche Connect - Fault Finding Guide



Service: “Google Street View”

Date: August 2015

General information and initial questions

- Fault Finding Guides help you to locate the causes of faults step by step.
- Before discussing the Fault Finding Guide with your customers, the following questions will help you to carry out fault finding efficiently:

When did the service stop working?	Ambient conditions have a huge influence on the functionality of services. The use of services requires good reception (e.g. reception can be very limited in underground car parks).
How was the online connection established? Via the SIM card in the PCM or via the device (Bluetooth/Wi-Fi)?	Depending on how the online connection was established, you will find different test steps that you can use.
Are all services not working or are only individual services affected?	If individual services are not working, please concentrate initially on questions relating to “Check service-specific or general causes of faults”.

- For correcting faults, please also use the FAQs (Frequently Asked Questions) about Porsche Connect that are provided in the PPN.

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or Wi-Fi**
- **Check service-specific or general causes of faults**

Check the online connection when using a SIM card in the vehicle slot

- Check whether there is a SIM card in the vehicle slot
- Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Test step

"Check whether there is a SIM card in the vehicle slot. To do this, lift up the cover flap with the Porsche logo at the centre under your PCM display. Underneath, you will find the SD card slots and the SIM card slot for your Porsche."

Note

This can also be checked on the PCM head unit:
a) status bar, left margin, connection icon, data connection.
b) Connections menu: possible displays: "SIM inserted", "PIN required", "Connect", hotspot name, device name

Result check

"Is there a SIM card in the vehicle slot in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Insert a suitable SIM card in the vehicle slot of your Porsche and check whether a connection can be established."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Illustrations: SIM card in vehicle slot

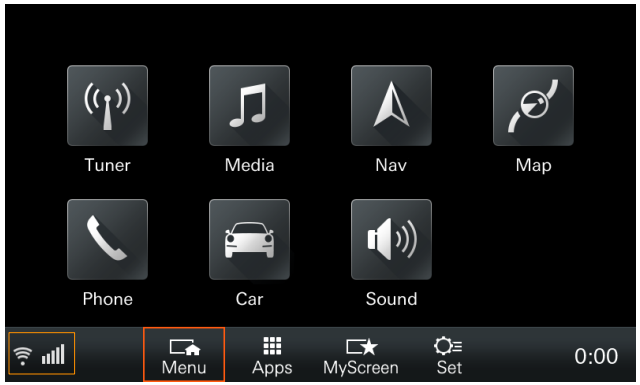


Fig. 1: Home screen on PCM head unit

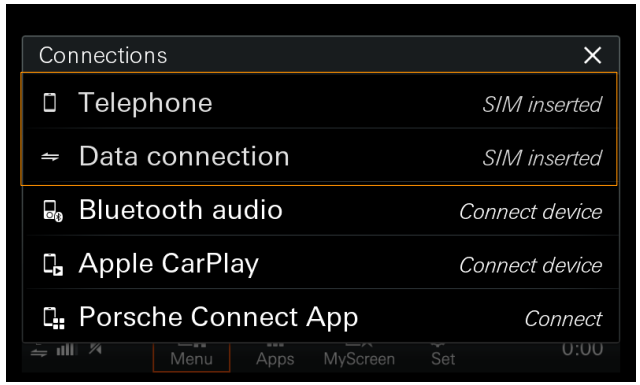


Fig. 2: “Connections” menu, version 1

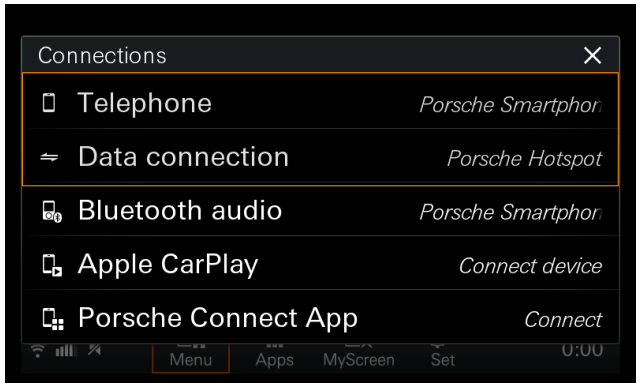


Fig. 3: “Connections” menu, version 2

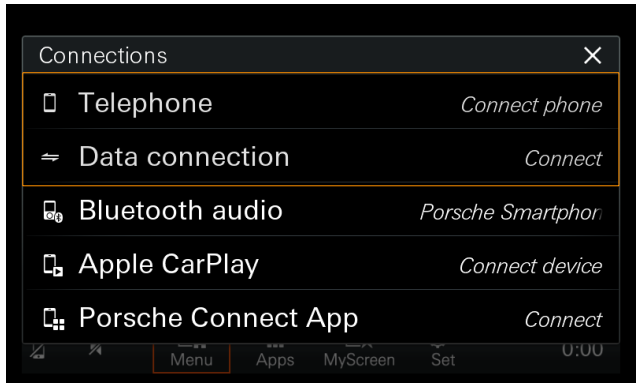


Fig. 4: “Connections” menu, version 3

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Check whether the SIM card is defective

Test step

"Insert a different SIM card that you know is working perfectly in the vehicle slot of your Porsche."

Result check

"Is your original SIM card working?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone service provider and request a new SIM card."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or Wi-Fi**
  - Check whether Bluetooth is activated on your device
  - Check whether Bluetooth is activated on the PCM
  - Check whether Wi-Fi hotspot/mobile internet is activated on your device
  - Check whether Wi-Fi is activated on the PCM
  - Check whether the device is supported
- **Check service-specific or general causes of faults**

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check whether Bluetooth is activated on your device

Test step

"Check whether Bluetooth is activated in your device settings."

Note

If you are connecting for the first time, make sure that the device is visible for other Bluetooth equipment. Please check this in your device settings as well.

Result check

"Is Bluetooth activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate Bluetooth on your device. If you are trying to connect your device to your Porsche for the first time, switch on Bluetooth and activate your device's visibility option before starting the connection process."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Bluetooth is activated on the PCM

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: Bluetooth on device

Illustrations show menus on the iPhone 6 as an example

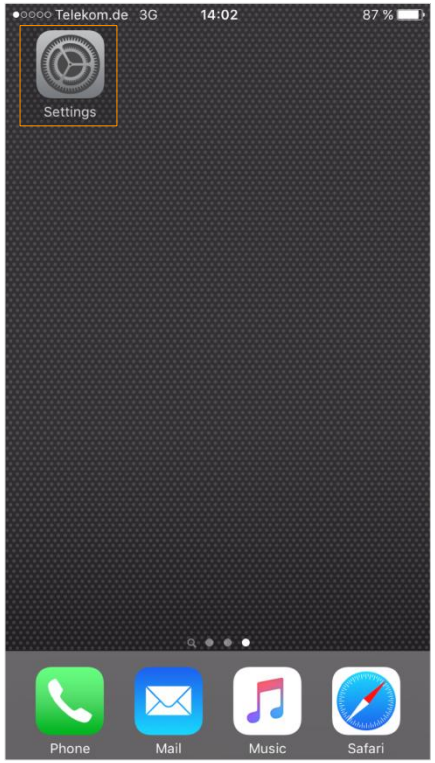


Fig. 5: iOS Home screen



Fig. 6: iOS “Settings” menu

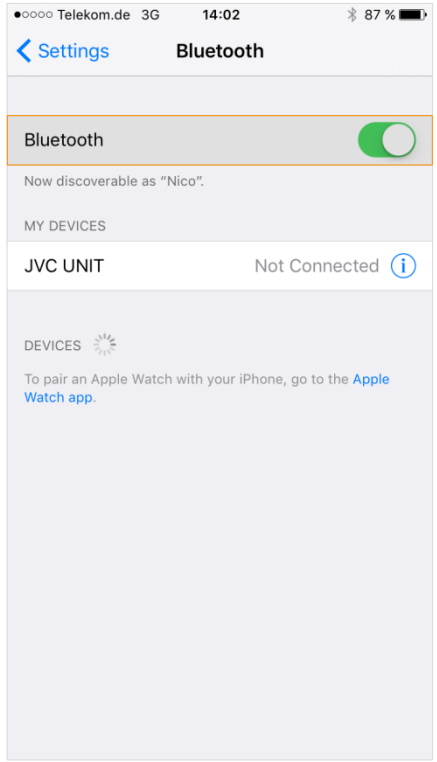


Fig. 7: iOS “Bluetooth” menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check whether Bluetooth is activated on your device

Check whether Bluetooth is activated on the PCM

Test step

"Check whether Bluetooth is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> Bluetooth -> Disable/enable Bluetooth."

Result check

"Is Bluetooth activated on PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "Bluetooth" option on the PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Wi-Fi hotspot/mobile internet is activated on your device

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: Bluetooth on PCM



Fig. 8: “SET PHONE” menu on PCM head unit



Fig. 9: “Bluetooth” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

...

Check whether Bluetooth is activated on the PCM

Check whether Wi-Fi hotspot/mobile internet is activated on your device

Test step

"Please check whether the options "WiFi hotspot" (or "Hotspot") and "mobile Internet" (or "mobile data") are activated in your device settings."

Result check

"Is Wi-Fi hotspot/mobile internet activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the options "WiFi hotspot"/"Hotspot" and "mobile Internet"/"mobile data" on your device."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Wi-Fi is activated on the PCM

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: WLAN hotspot/mobile internet deactivated on device

Illustrations show menus on the iPhone 6 as an example

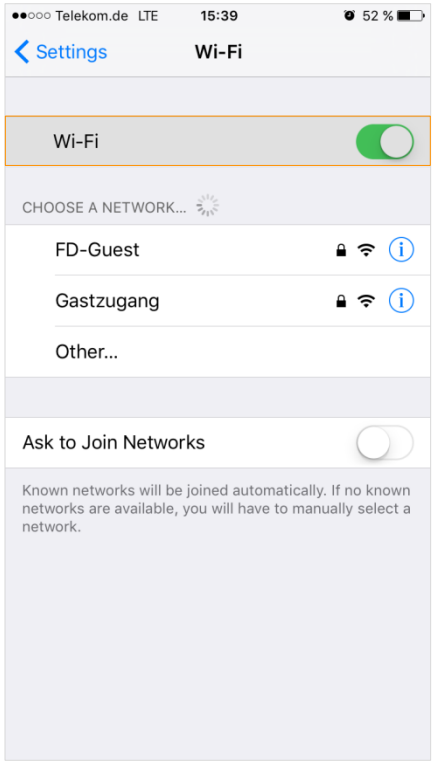


Fig. 10: iOS "Wi-Fi" menu

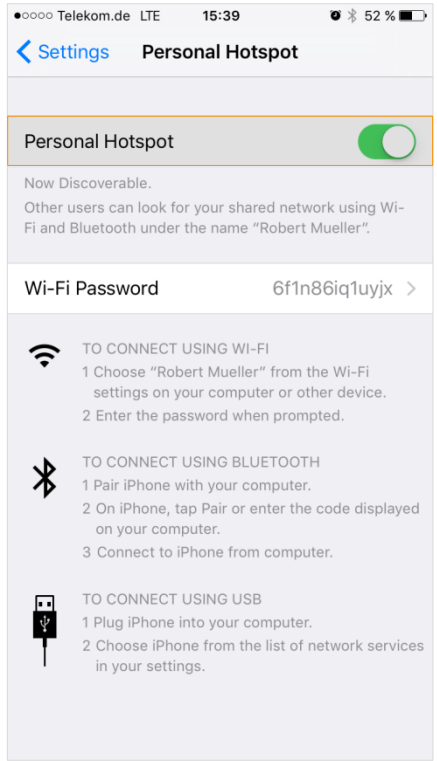


Fig. 11: iOS "Personal hotspot" menu

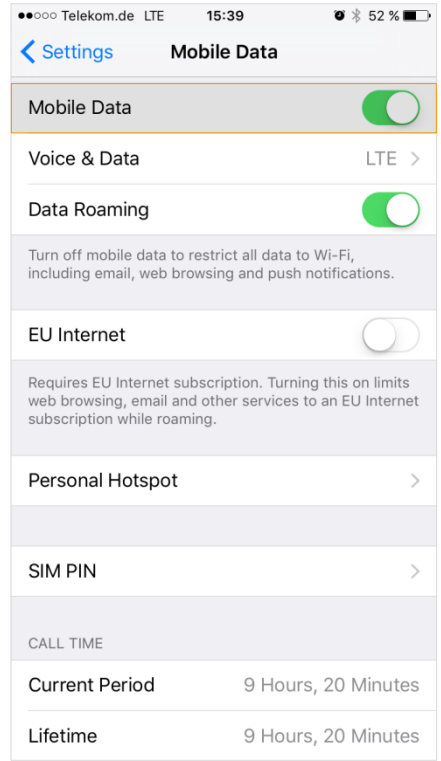


Fig. 12: iOS "Mobile network" menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

...

Check whether Wi-Fi hotspot/mobile internet is activated on your device

Check whether Wi-Fi is activated on the PCM

Test step

"Please check whether the WiFi option is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> WiFi settings -> Activate/deactivate WiFi."

Result check

"Is WLAN activated on PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "WiFi" option on the PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: WiFi on PCM



Fig. 13: “SET PHONE” menu on PCM head unit



Fig. 14: “WiFi settings” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

...

Check whether Wi-Fi is activated on the PCM

Check whether the device is supported

Test step

"Please specify the model designation of the device you want to use with your Porsche."

Note

The available documents must be used to check whether and to what extent the customer's device is supported.

Result check

Is the customer's device compatible?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Your device is not compatible/not fully compatible with all functions in your Porsche. For the full range of functions, please use a compatible device in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or Wi-Fi**
- **Check service-specific or general causes of faults**
  - Check whether licence is still valid
  - Check whether the correct vehicle equipment is installed (Connect package)
  - Check whether Google Earth is activated in the vehicle
  - Check whether the vehicle was moving
  - Check for simultaneous use of service and phone
  - Check whether Drag&Drop use was attempted
  - Check whether the mobile data volume has been used up
  - Check whether the network quality is poor (tunnel, weather, etc.)
  - Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check whether licence is still valid

Test step

"Please press "HOME" and select "Apps" from the status bar. Now press "OPT" and select "Services information" in the options menu. Check whether the licence date for your desired service has already been exceeded."

Note

Alternatively, the licence period can be determined with the help of the VIN using the PIWIS vehicle information. Please note that this option will not be available until mid-2016. Further information will be provided in good time.

Result check

"Is the licence still valid?"

No	"Please extend the licence for the service via the Porsche Connect Webshop." Please note that this option will not be available until mid-2016. Further information will be provided in good time. Please contact your local importer if you have any licence problems in the meantime.
Yes	The cause was not identified. Continue fault finding with the next test step.

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the correct vehicle equipment is installed (Connect package)

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Licence period check

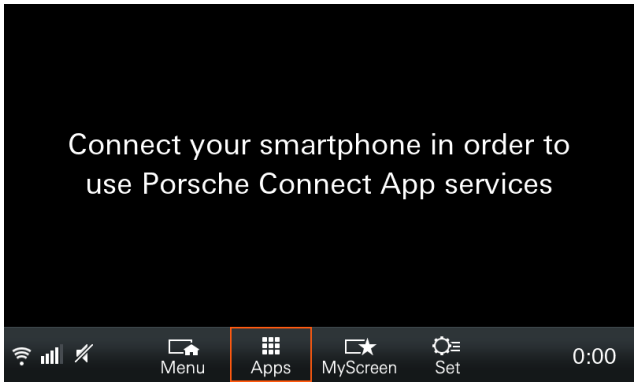


Fig. 15: Apps screen on PCM head unit

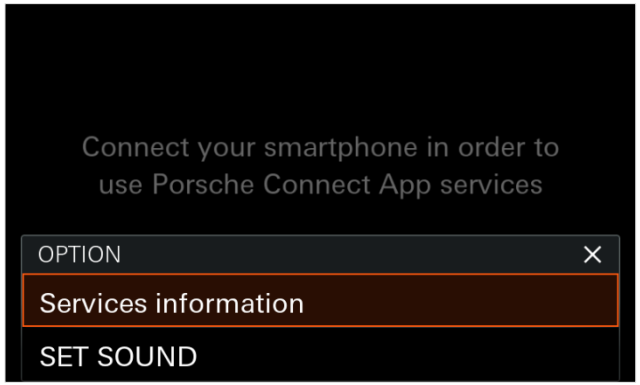


Fig. 16: Options menu on Apps screen

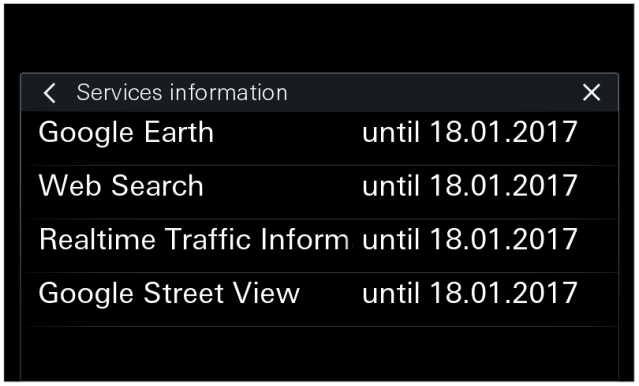


Fig. 17: Services information menu

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check whether licence is still valid

Check whether the correct vehicle equipment is installed (Connect package)

Test step

"Please specify the 17-character chassis number (VIN) of your Porsche. You will find this combination of digits and letters under the marking "E" (Germany) in your vehicle identification document or at the bottom edge of the windscreen."

Note

The VIN provided by the customer must be used to check whether the correct equipment is installed in the customer's vehicle.

Result check

Does the customer vehicle have the Connect package installed?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Unfortunately, the RTTI service is not available for your Porsche. The service can only be used in vehicles with the Porsche Connect package."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Google Earth is activated in the vehicle

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether Google Earth is activated in the vehicle

Test step

"Please check whether you have activated map view for Google Earth. To do this, proceed as follows:
Tap "MAP" on your PCM start screen to go to the map display." Then EITHER:
a) "Touch the white icon (3 layers) at the top right of the screen. A menu bar containing several icons appears. You will see the "Google Earth" icon and name here." OR:
b) "Press "OPT". Select "SET MAP" in the options menu. Select "Map view". Select "Layers". Select "Google Earth". You will see the "Google Earth satellite view" entry here."

Note

If the icon or menu entry cannot be found in the specified location, the customer has not purchased the service.

Result check

"Is the "Google Earth" icon orange? or Is there a checkmark next to the "Google Earth satellite view" menu entry?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate Google Earth by tapping the relevant icon or adding a checkmark next to the "Google Earth satellite view" menu entry. Google Earth is activated if the icon is orange."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the vehicle was moving

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Activating Google Earth

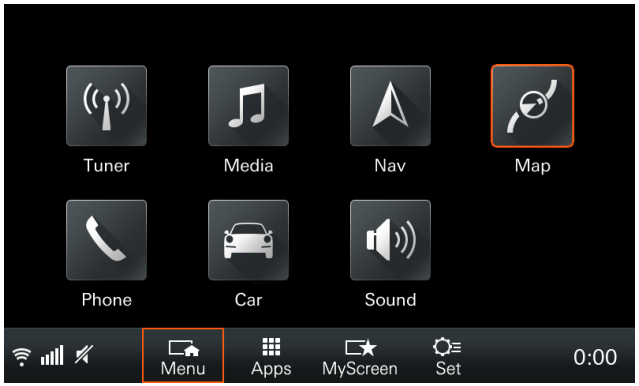


Fig. 18: Home screen on PCM head unit

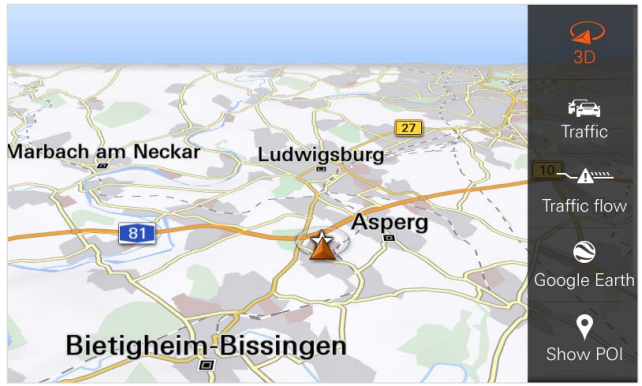


Fig. 19: Map view and menu on PCM head unit

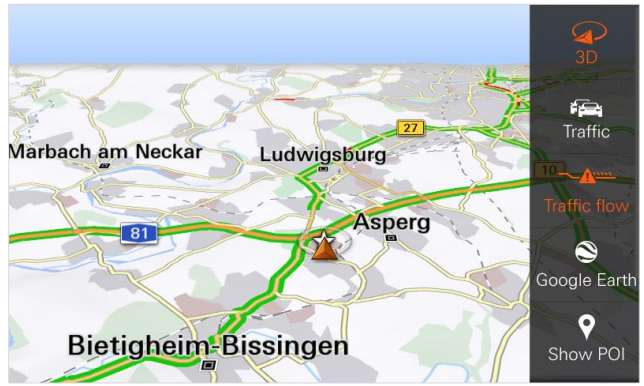


Fig. 20: Map view and menu on PCM head unit

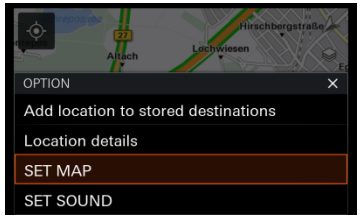


Fig. 21: OPT menu under “MAP”

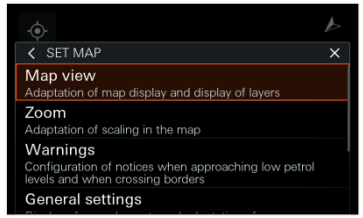


Fig. 22: “SET MAP” menu



Fig. 23: “Map view” menu

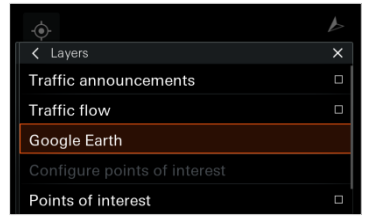


Fig. 24: “Layers” menu

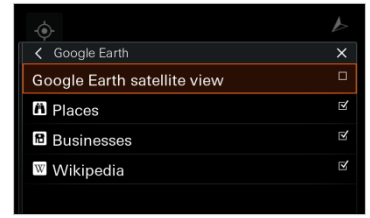


Fig. 25: “Google Earth” menu

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether Google Earth is activated in the vehicle

Check whether the vehicle was moving

Test step

"Have you tried to use Google Street View while driving?"

Result check

"Was your vehicle stationary when you tried to use the feature?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"For your safety, the "Google Street View" service is only available when the vehicle is stationary. Please use Google Street View when your vehicle is parked."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check for simultaneous use of service and phone

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the vehicle was moving

Check for simultaneous use of service and phone

Test step

"Did you make a phone call while using the service or are you using your data services and the phone with the same SIM card?"

Result check

Were both applications used separately or are both applications used with different SIM cards?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Availability of the service can sometimes be limited while you are using the phone. Especially when using the data services and telephone function with one SIM card and if network coverage is bad, the service can be limited temporarily in rare cases."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Drag&Drop use was attempted

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check for simultaneous use of service and phone

Check whether Drag&Drop use was attempted

Test step

"Did you use Drag&Drop to place the yellow Pegman icon on the map?"

Note

The familiar Drag&Drop function for the Pegman icon from the Google Street View desktop application is not available. You simply need to tap the Pegman icon.

Result check

Was the yellow Pegman icon tapped correctly?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please only tap the GSV Pegman and do not try to position it on the map using Drag&Drop."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile data volume has been used up

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Using the GSV icon

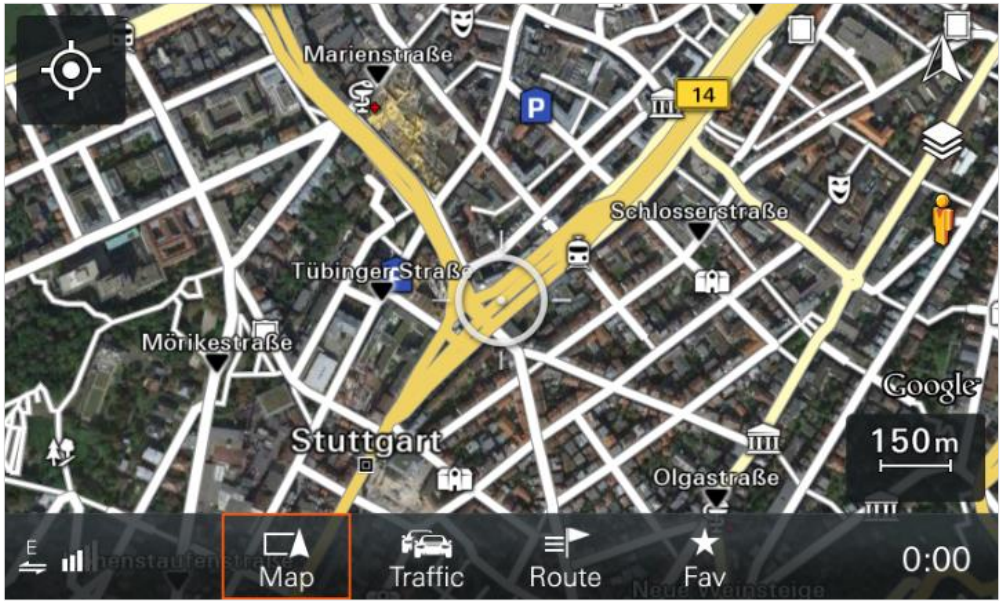


Fig. 26: Google Earth satellite view with GSV availability

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether Drag&Drop use was attempted

Check whether the mobile data volume has been used up

Test step

"Please check the status of your monthly data volume."

Note

If data services and the telephone are used with the same SIM card, any SMS sent by the mobile phone provider concerning the critical status of the monthly data allowance will be displayed in the customer's PCM system.
Menu item in PCM for recording usage (PHONE -> OPT -> SET PHONE -> Data connections -> Online data counter).

Result check

"Is there any data remaining from the monthly data allowance?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone provider in order to increase your data volume."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the network quality is poor (tunnel, weather, etc.)

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: mobile data volume



Fig. 27: “SET PHONE” menu on PCM head unit

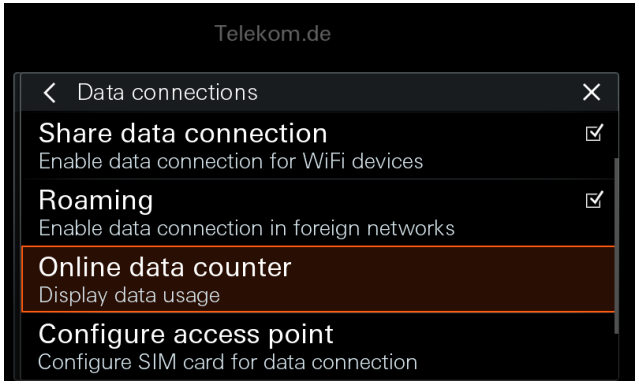


Fig. 28: “Data connections” menu on PCM head unit

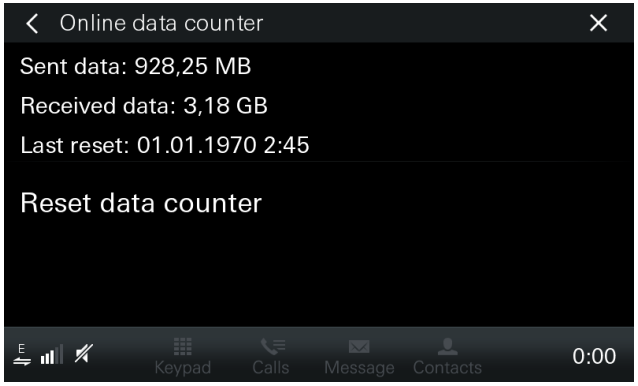


Fig. 29: “Online data counter” menu on PCM head unit

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the mobile data volume has been used up

Check whether the network quality is poor (tunnel, weather, etc.)

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon at the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."
"At least 2 bars should be displayed here."

Result check

"Is there enough reception (at least 2 bars or at least mobile phone standard 3G or E)?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please move to an area with better reception."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Poor network quality (tunnel, weather, etc.)

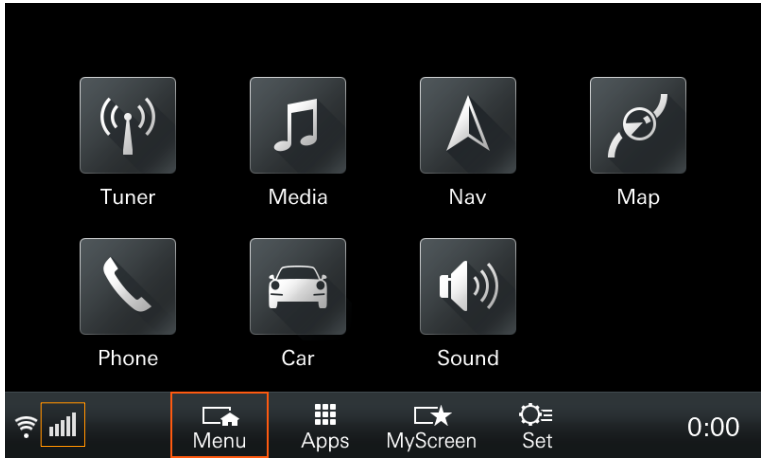


Fig. 30: Home screen on PCM head unit

Illustration shows iPhone 6 menu as an example

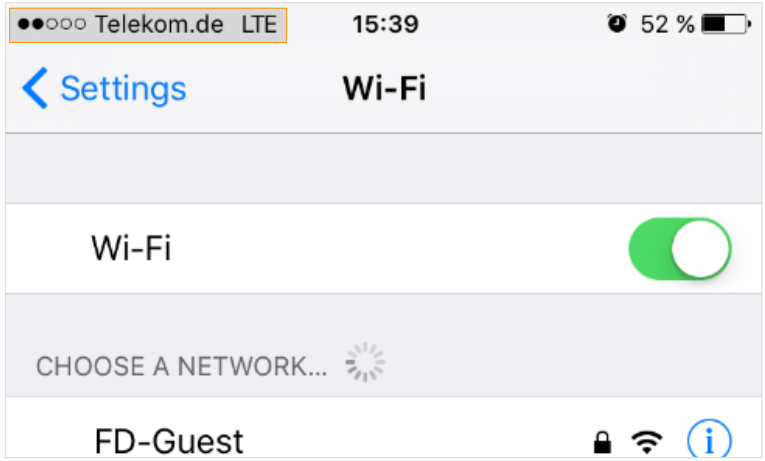


Fig. 31: iOS status bar

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the network quality is poor (tunnel, weather, etc.)

Check whether the mobile phone network is down

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon at the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."

Result check

"Do you have a network signal?"

Yes	The cause was not identified. Refer the customer to the Service department.
No	"Please move to an area with better reception or wait until the problem is fixed. The relevant department has already been informed and is working on resolving the problem."

Does the problem persist?

Yes (Contact the workshop) **No** (End fault finding)

Porsche Connect – Fault Finding Guide



Service: “Napster / Rhapsody”

Date: 11/2015

General information and initial questions

- Fault Finding Guides help you to locate the causes of faults step by step.
- Before you discuss the Fault Finding Guide with your customers, the following questions help you to carry out fault finding efficiently:

When did the service stop working?	Ambient conditions have a huge influence on the functionality of services. The use of services requires good reception (e.g. reception can be very limited in underground car parks).
How was the online connection established? Via the SIM card in the PCM or via the device (Bluetooth/Wi-Fi)?	Depending on how the online connection was establshed, you will find different test steps that you can use.
Are all services not working or are only individual services affected?	If individual services are not working, please concentrate initially on questions relating to “Check service-specific or general causes of faults”.

- For correcting faults, please also use the FAQs (Frequently Asked Questions) about Porsche Connect that are provided in the PPN.

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or Wi-Fi**
- **Check service-specific or general causes of faults**

Check the online connection when using a SIM card in the vehicle slot

- Check whether there is a SIM card in the vehicle slot
- Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Test step

"Check whether there is a SIM card in the vehicle slot. To do this, lift up the cover flap with the Porsche logo at the centre under your PCM display. Underneath, you will find the SD card slots and the SIM card slot for your Porsche."

Note

This can also be checked on the PCM head unit:
a) status bar, left margin, connection icon, data connection.
b) Connections menu: possible displays: "SIM inserted", "PIN required", "Connect", hotspot name, device name

Result check

"Is there a SIM card in the vehicle slot in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Insert a suitable SIM card in the vehicle slot of your Porsche and check whether a connection can be established."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Illustrations: SIM card in vehicle slot

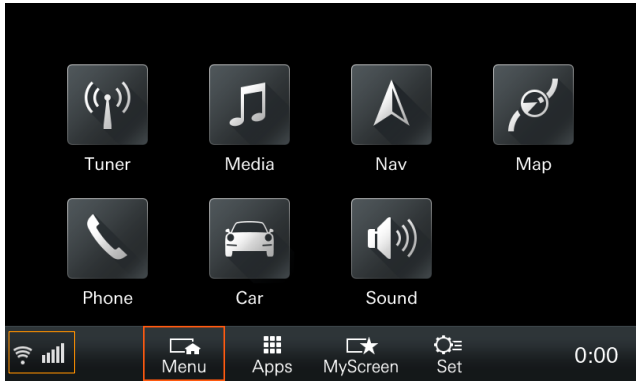


Fig. 1: Home screen of the PCM head unit

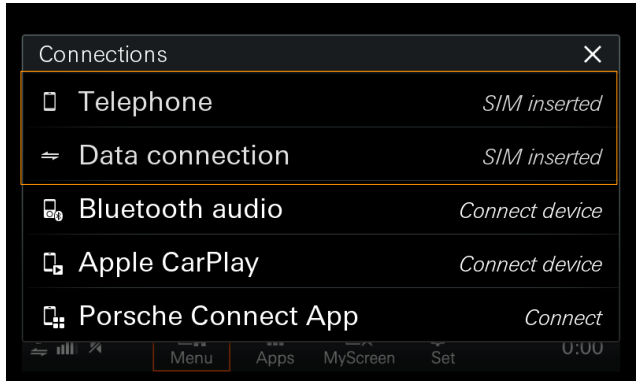


Fig. 2: “Connections” menu, version 1

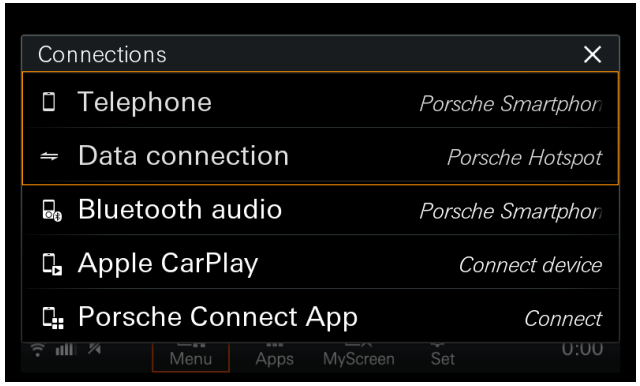


Fig. 3: “Connections” menu, version 2

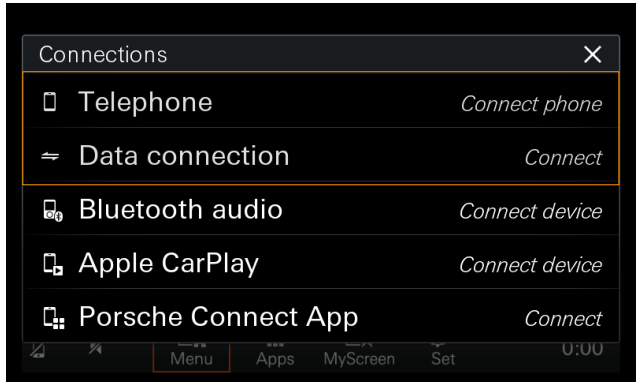


Fig. 4: “Connections” menu, version 3

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Check whether the SIM card is defective

Test step

"Insert a different SIM card that you know is working perfectly in the vehicle slot of your Porsche."

Result check

"Is your original SIM card working?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone service provider and request a new SIM card."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

- Check whether Wi-Fi Hotspot/Mobile Internet is activated on your device
- Check whether WLAN is activated on the PCM
- Check whether the device is entered in the vehicle WLAN
- Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check whether Wi-Fi Hotspot/Mobile Internet is activated on your device

Test step

"Please check whether the options "Wi-Fi Hotspot" (or "Hotspot") and "Mobile Internet" (or "Mobile Data") are activated in your device settings."

Result check

"Is Wi-Fi Hotspot/Mobile Internet activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the options "Wi-Fi Hotspot"/"Hotspot" and "Mobile Internet"/"Mobile Data" on your device."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether WLAN is activated on the PCM

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: Wi-Fi Hotspot/Mobile Internet on device

Illustrations show menus on the iPhone 6 as an example

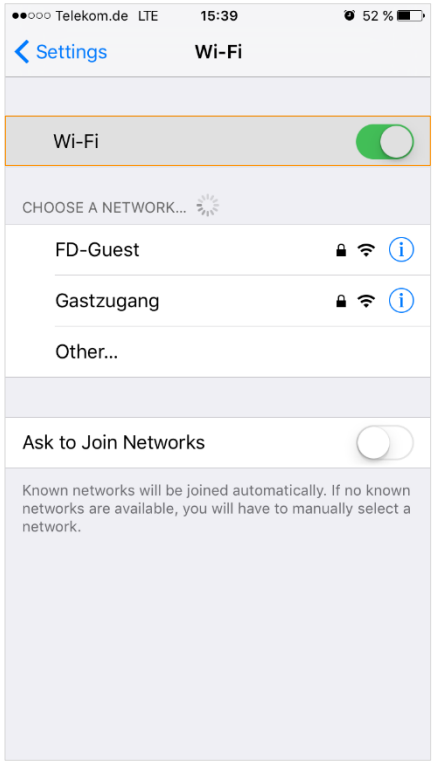


Fig. 5: iOS "Wi-Fi" menu

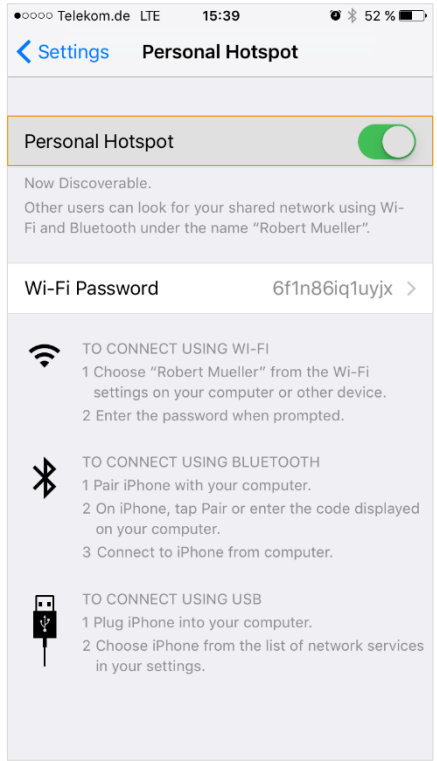


Fig. 6: iOS "Personal Hotspot" menu

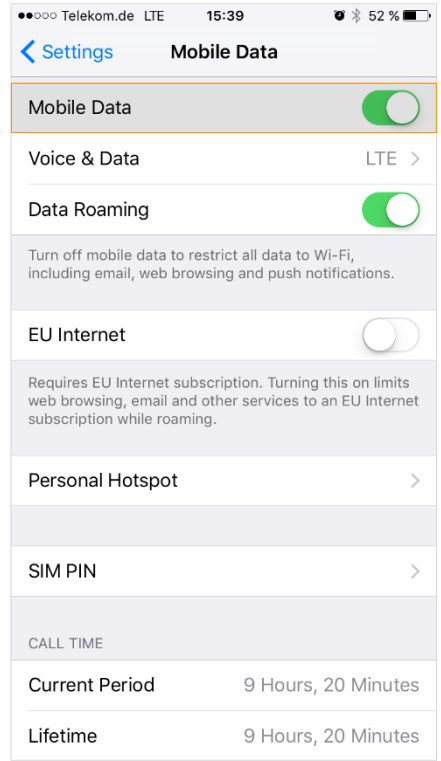


Fig. 7: iOS "Mobile Data" menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check whether Wi-Fi Hotspot/Mobile Internet is activated on your device

Check whether WLAN is activated on the PCM

Test step

"Please check whether the WLAN option is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> WLAN settings -> Disable/enable WLAN."

Result check

"Is WLAN activated on the PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "WLAN" option on the PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the device is entered in the vehicle WLAN

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: WLAN on PCM



Fig. 8: “Set Phone” menu on PCM head unit



Fig. 9: “WLAN settings” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

...

Check whether WLAN is activated on the PCM

Check whether the device is entered in the vehicle WLAN

Test step

"Please check whether your device is connected to the hotspot of your Porsche."

Note

A corresponding symbol to check the correct connection between the PCM and device will be integrated in the Porsche Connect app for the G2.

Result check

"Is your device entered in the vehicle hotspot?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"On your device, disconnect the connection to the other Wi-Fi network and connect to the hotspot of your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: Device in vehicle WLAN

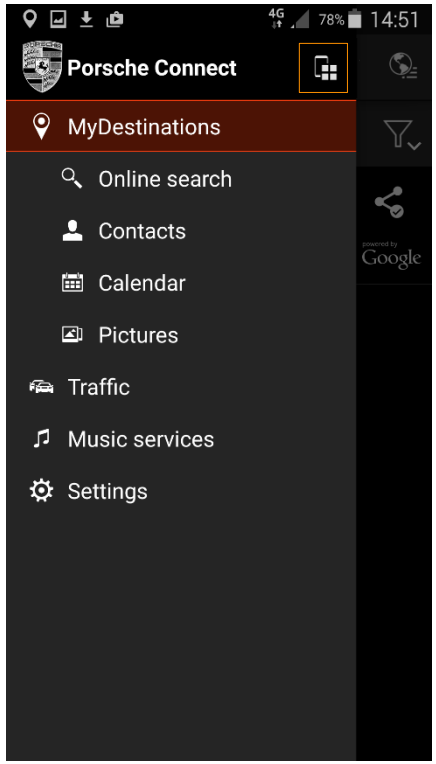


Fig. 10: Correct connection between device and PCM

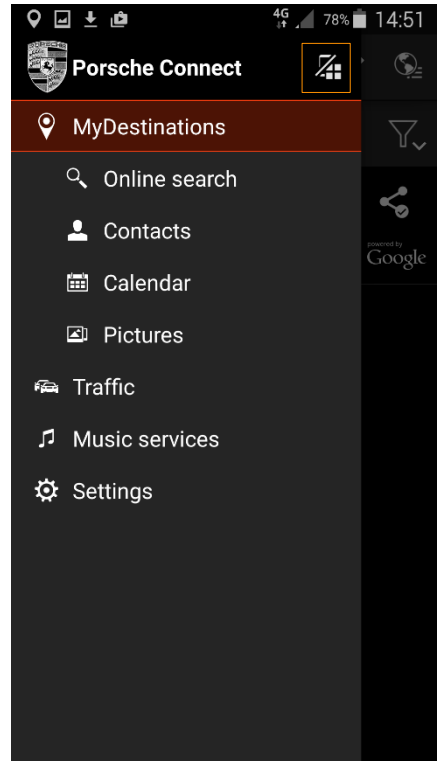


Fig. 11: No connection between device and PCM

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

...

Check whether the device is entered in the vehicle WLAN

Check whether the device is supported

Test step

"Please specify the model designation of the device you want to use with your Porsche."

Note

The available documents must be used to check whether and to what extent the customer's device is supported.

Result check

Is the customer's device compatible?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Your device is not compatible/not fully compatible with all the functions of your Porsche. For the full range of functions, please use a compatible device in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or Wi-Fi**
- **Check service-specific or general causes of faults**
  - Check whether the correct vehicle equipment is installed (Connect package)
  - Check whether the required apps are (correctly) installed
  - Check whether the Porsche Connect app is active
  - Check whether the mobile data allowance has been used up
  - Check whether the data transmission rate is sufficient
  - Check whether the app and device are compatible
  - Check whether the network quality is poor (tunnel, weather, etc.)
  - Check whether the mobile phone network is down
  - Check whether the data quality from the content provider is sufficient
  - Check whether the vehicle is moving or is parked at a place where the GPS is weak

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check whether the correct vehicle equipment is installed (Connect package)

Test step

"Please specify the 17-character chassis number (VIN) of your Porsche. You will find this combination of digits and letters under the marking "E" (Germany) in your vehicle identification document or at the bottom edge of the windscreen."

Note

The VIN provided by the customer must be used to check whether the correct equipment is installed in the customer's vehicle.

Result check

Does the customer vehicle have the Connect package installed?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Unfortunately, Porsche Connect services are not available for your Porsche. The services can only be used in vehicles with the Porsche Connect package. "

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the required apps are (correctly) installed

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check whether the correct vehicle equipment is installed (Connect package)

Check whether the required apps are (correctly) installed

Test step

"Please check whether you have installed both the Porsche Connect app and the corresponding service app on your device."

Result check

"Are all required apps correctly installed?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please install the necessary apps in order to be able to use the services in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the Porsche Connect app is active

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Apps installed

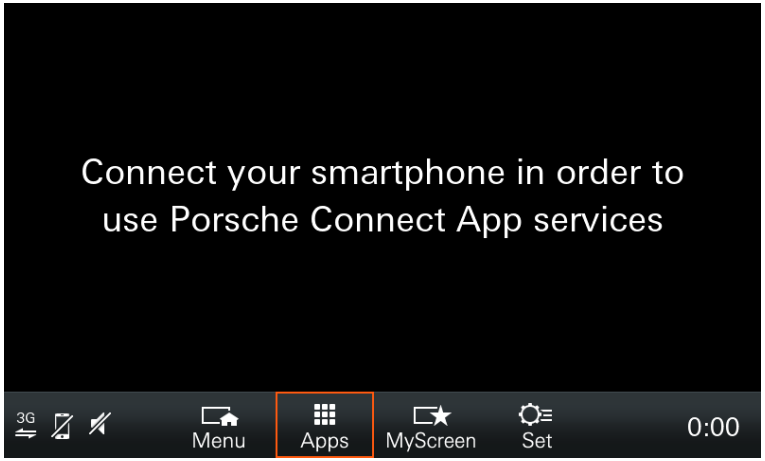


Fig. 12: PCM display when Porsche Connect app is not installed

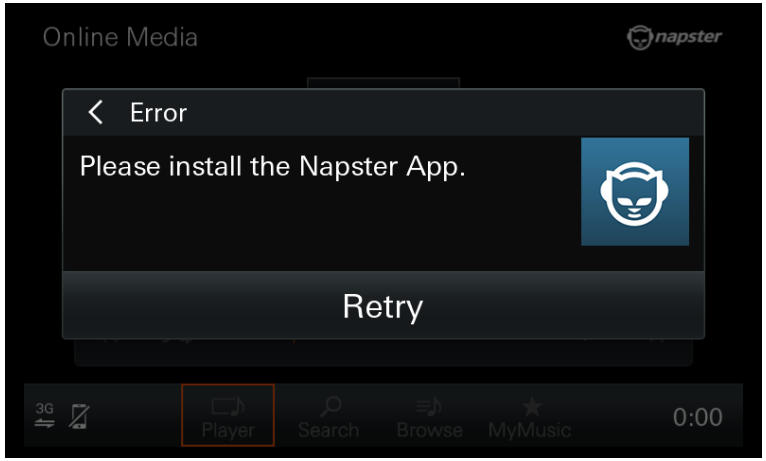


Fig. 13: PCM message when Napster/Rhapsody app is not installed

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the required apps are (correctly) installed

Check whether the Porsche Connect app is active

Test step

"Please check whether the Porsche Connect app is active on your device and/or is running in the background?"

Result check

"Is the Porsche Connect app active?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please start the Porsche Connect app on your device."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile data allowance has been used up

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Porsche Connect app active

Illustration shows the Android interface as an example

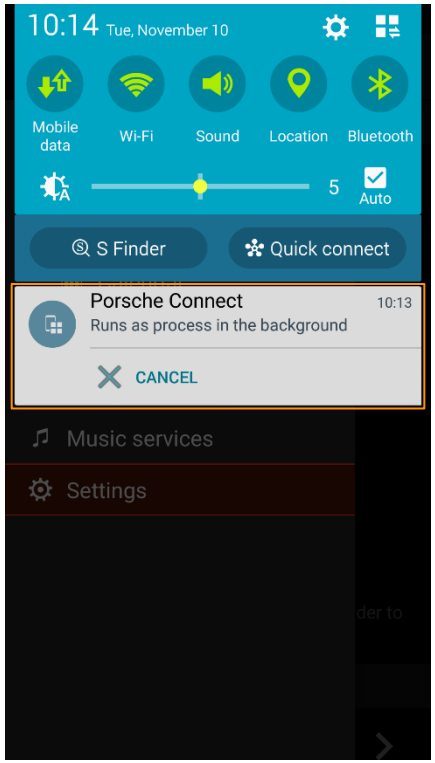


Fig. 14: Display for active Porsche Connect app

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the Porsche Connect app is active

Check whether the mobile data allowance has been used up

Test step

"Please check the status of your monthly data allowance."

Note

If data services and the telephone are used with the same SIM card, any SMS sent by the mobile phone provider concerning the critical status of the monthly data allowance will be displayed in the customer's PCM system.
Menu item in PCM for recording usage (PHONE -> OPT -> SET PHONE -> Data connections -> Online data counter).

Result check

"Is there any data remaining from the monthly data allowance?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone provider in order to increase your data allowance."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the data transmission rate is sufficient

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Mobile data allowance

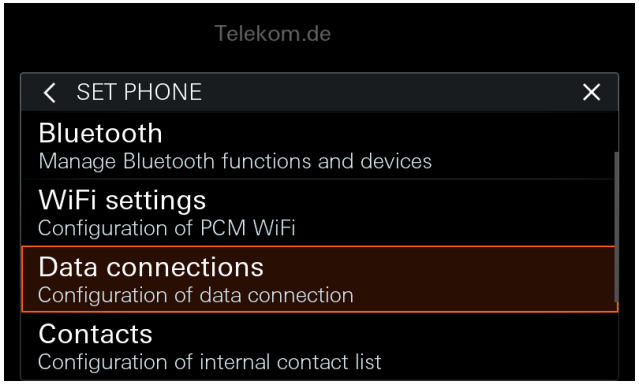


Fig. 15: “Set Phone” menu on PCM head unit

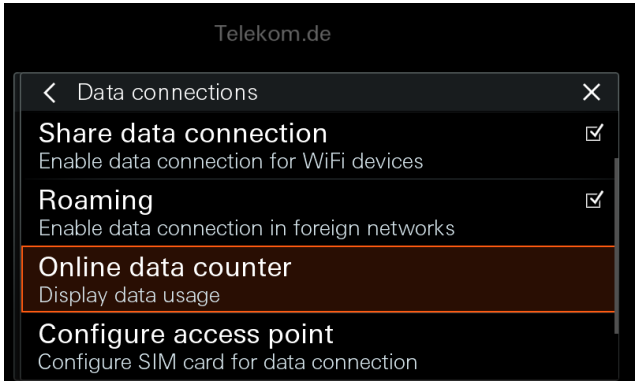


Fig. 16: “Data connections” menu on PCM head unit

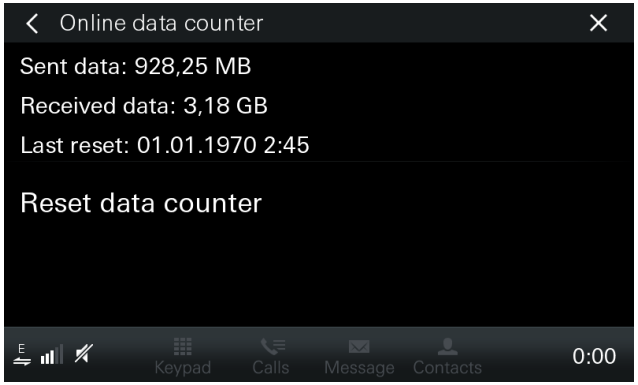


Fig. 17: “Online data counter” menu on PCM head unit

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the mobile data allowance has been used up

Check whether the data transmission rate is sufficient

Test step

"Please check the network symbol on your PCM or device."

Result check

Is the data network quality satisfactory?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"The usability of the service can be limited when the data network quality is poor. Find a place where the data network quality is better."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the app and device are compatible

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the data transmission rate is sufficient

Check whether the app and device are compatible

Test step

"Please specify the model designation of the device you want to use with your Porsche."

Note

The available documents must be used to check whether and to what extent the customer's device is supported.

Result check

Is the customer's device compatible?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Your device is not supported by the current version of the app. Therefore, you cannot download and/or install the app. To use the service, please use a compatible device."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the network quality is poor (tunnel, weather, etc.)

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the app and device are compatible

Check whether the network quality is poor (tunnel, weather, etc.)

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."
"At least 2 bars should be displayed here."

Result check

"Is there sufficient reception (at least 2 bars or at least mobile phone standard 3G or E)?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please move to an area with better reception."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile phone network is down

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Poor network quality

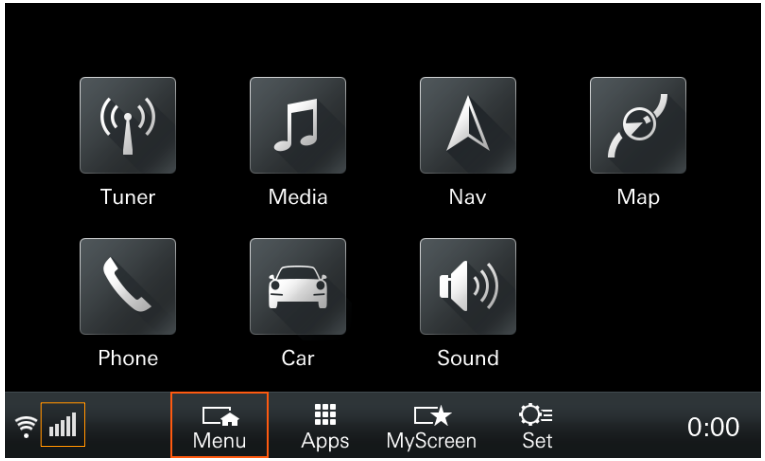


Fig. 18: Home screen of the PCM head unit

Illustration shows iPhone 6 menu as an example

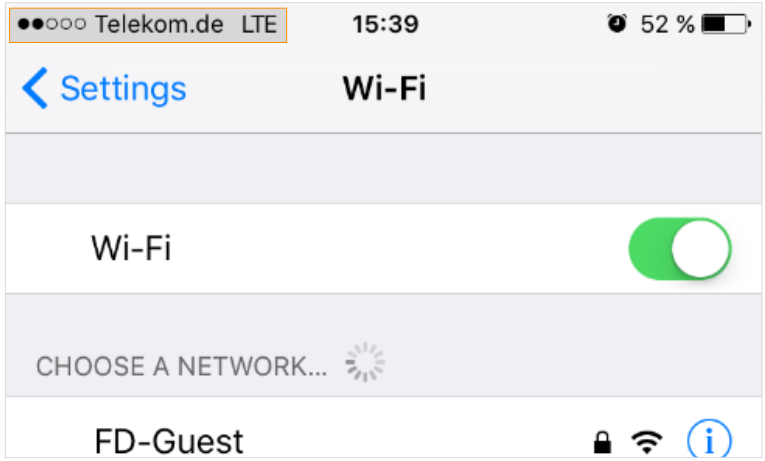


Fig. 19: iOS status bar

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the network quality is poor (tunnel, weather, etc.)

Check whether the mobile phone network is down

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."

Result check

"Do you have a network signal?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please move to an area with better reception or wait until the problem is fixed. The relevant department has already been informed and is working on resolving the problem."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the data quality from the content provider is sufficient

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the mobile phone network is down

Check whether the data quality from the content provider is sufficient

Test step

Cannot be checked.

Note

The information must exist or be determined in the CC.

Result check

Is the data quality flawless?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	Wait for data update/inform provider

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the vehicle is moving or is parked at a place where the GPS is weak

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

...

Check whether the data quality from the content provider is sufficient

Check whether the vehicle is moving or is parked at a place where the GPS is weak

Test step

"Has your Porsche been moved in the interim by another driver, been towed away or, for example, parked in an underground car park?"

Result check

"Do none of the scenarios apply?"

Yes	The cause was not identified. Refer the customer to the Service department.
No	"The automatic reconnection when re-accessing your Porsche may not work if the latter's GPS position was changed after quitting (e.g. another driver moved the car or it was towed away) or if the GPS signal is lost when parking."

Does the problem persist?

Yes (Contact the workshop) **No** (End fault finding)

PORSCHE

Porsche Connect – Fault Finding Guide



Service: “Online Search”

Date: 12/2015

General information and initial questions

- Fault Finding Guides help you to locate the causes of faults step by step.
- Before you discuss the Fault Finding Guide with your customers, the following questions help you to carry out fault finding efficiently:

When did the service stop working?	Ambient conditions have a huge influence on the functionality of services. The use of services requires good reception (e.g. reception can be very limited in underground car parks).
How was the online connection established? Via the SIM card in the PCM or via the device (Bluetooth/WiFi)?	Depending on how the online connection was established, you will find different test steps that you can use.
Are all services not working or are only individual services affected?	If individual services are not working, please concentrate initially on questions relating to “Check service-specific or general causes of faults”.

- For correcting faults, please also use the FAQs (Frequently Asked Questions) about Porsche Connect that are provided in the PPN.

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or WiFi**
- **Check service-specific or general causes of faults**

Check the online connection when using a SIM card in the vehicle slot

- Check whether there is a SIM card in the vehicle slot
- Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Test step

"Check whether there is a SIM card in the vehicle slot. To do this, lift up the cover flap with the Porsche logo at the centre under your PCM display. Underneath, you will find the SD card slots and the SIM card slot for your Porsche."

Note

This can also be checked on the PCM head unit:
a) Status bar, left margin, connection icon, data connection.
b) Connections menu: possible displays: "SIM inserted", "PIN required", "Connect", hotspot name, device name.

Result check

"Is there a SIM card in the vehicle slot in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Insert a suitable SIM card in the vehicle slot of your Porsche and check whether a connection can be established."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Illustrations: SIM card in vehicle slot

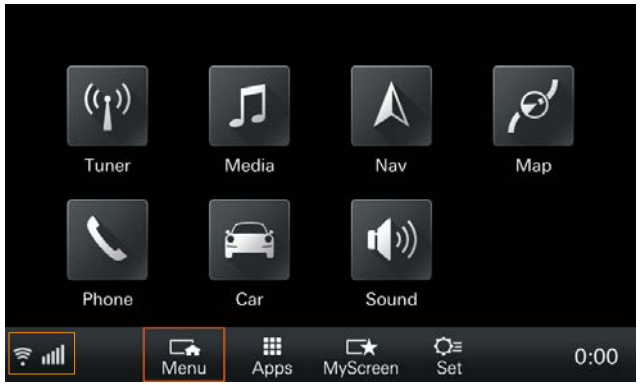


Fig. 1: Home screen on PCM head unit

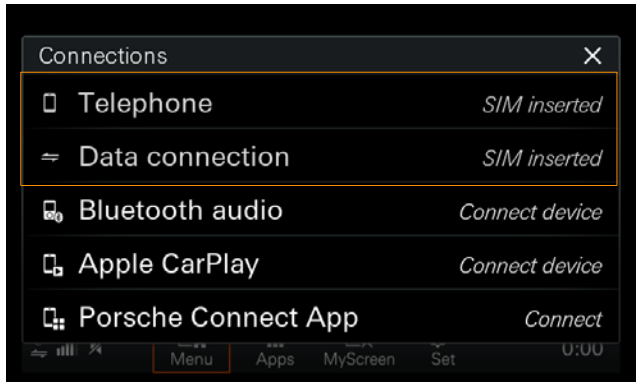


Fig. 2: “Connections” menu, version 1

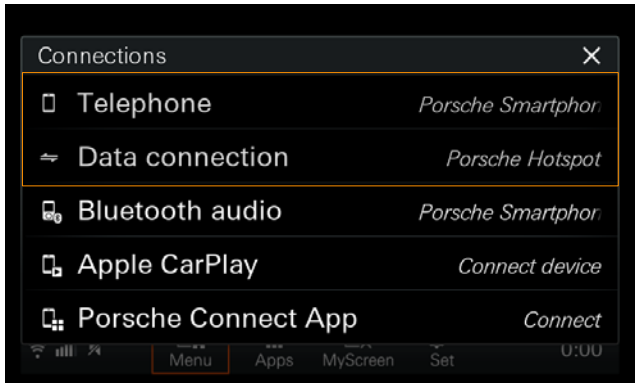


Fig. 3: “Connections” menu, version 2

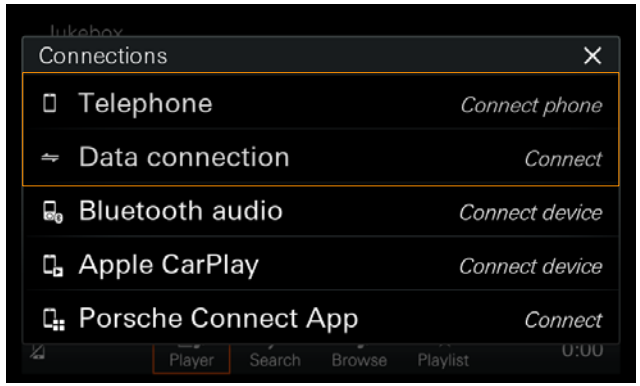


Fig. 4: “Connections” menu, version 3

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Check whether the SIM card is defective

Test step

"Insert a different SIM card that you know is working perfectly in the vehicle slot of your Porsche."

Result check

"Is your original SIM card working?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone service provider and request a new SIM card."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or WiFi**
  - Check whether WiFi Hotspot/Mobile Internet is activated on your device
  - Check whether WiFi is activated on the PCM
  - Check whether Bluetooth is activated on your device
  - Check whether Bluetooth is activated on the PCM
  - Check whether the device is supported
- **Check service-specific or general causes of faults**

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check whether WiFi Hotspot/Mobile Internet is activated on your device

Test step

"Please check whether the options "WiFi Hotspot" (or "Hotspot") and "Mobile Internet" (or "Mobile Data") are activated in your device settings."

Result check

"Is WiFi Hotspot/Mobile Internet activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the options "WiFi Hotspot"/"Hotspot" and "Mobile Internet"/"Mobile Data" on your device."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether WiFi is activated on the PCM

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Illustrations: WiFi Hotspot/Mobile Internet on device

Illustrations show menus on the iPhone 6 as an example

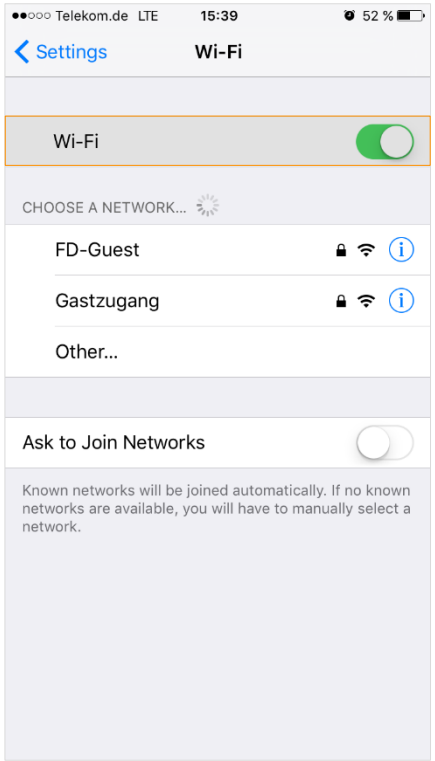


Fig. 5: iOS “Wi-Fi” menu



Fig. 6: iOS “Personal Hotspot” menu

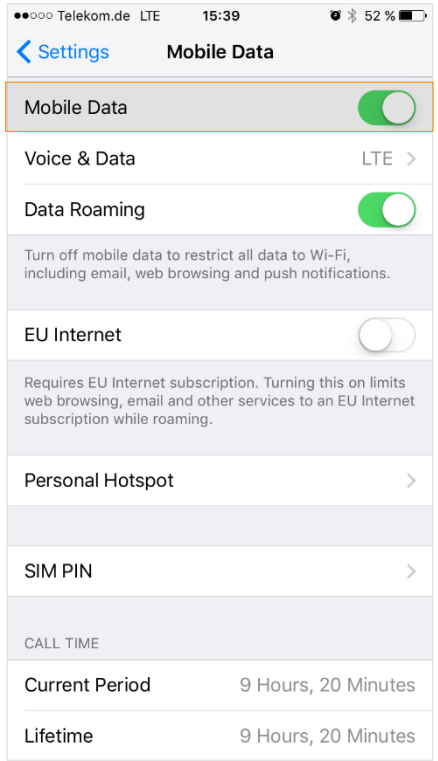


Fig. 7: iOS “Mobile Data” menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check whether WiFi Hotspot/Mobile Internet is activated on your device

Check whether WiFi is activated on the PCM

Test step

"Please check whether the WiFi option is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> WiFi settings -> Deactivate/Activate WiFi."

Result check

"Is WiFi activated on the PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "WiFi" option on the PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Bluetooth is activated on your device

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Illustrations: WiFi on PCM



Fig. 8: “Set Phone” menu on PCM head unit



Fig. 9: “WiFi settings” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

...

Check whether WiFi is activated on the PCM

Check whether Bluetooth is activated on your device

Test step

"Please check whether Bluetooth is activated in your device settings."

Note

"If you are connecting for the first time, make sure that the device is visible for other Bluetooth equipment. Please check this in your device settings as well."

Result check

"Is Bluetooth activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate Bluetooth on your device. If you are trying to connect your device to your Porsche for the first time, switch on Bluetooth and activate your device's visibility option before starting the connection process."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Bluetooth is activated on the PCM

...

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Illustrations: Bluetooth on device

Illustrations show menus on the iPhone 6 as an example

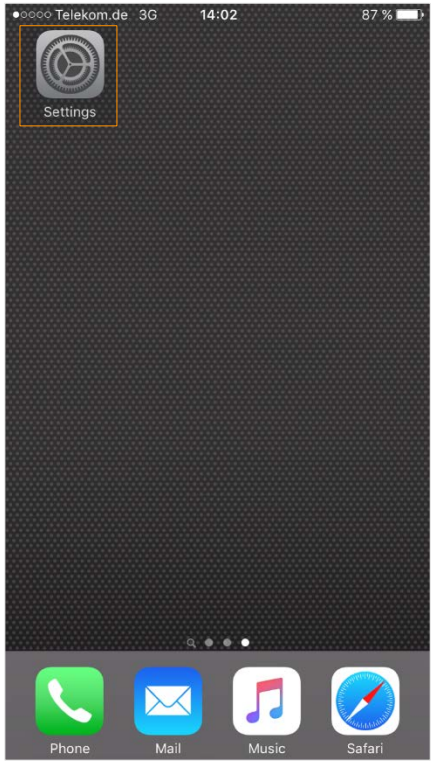


Fig. 10: iOS Home screen

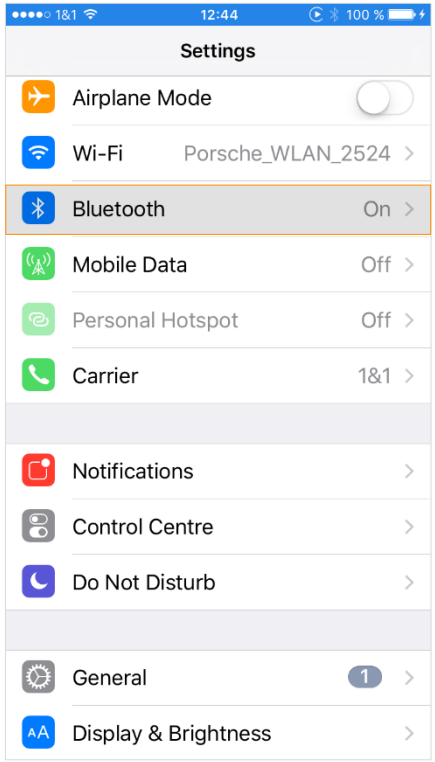


Fig. 11: iOS “Settings” menu

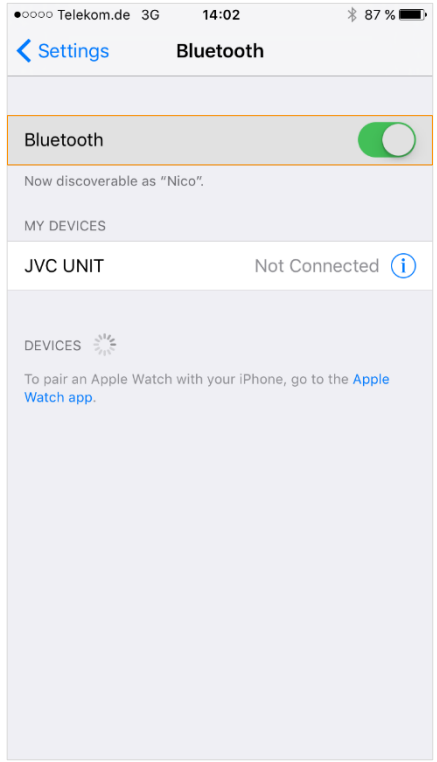


Fig. 12: iOS “Bluetooth” menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

...

Check whether Bluetooth is activated on your device

Check whether Bluetooth is activated on the PCM

Test step

"Please check whether Bluetooth is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> Bluetooth -> Deactivate/activate Bluetooth."

Result check

"Is Bluetooth activated on PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "Bluetooth" option on the PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Illustrations: Bluetooth on PCM



Fig. 13: “Set Phone” menu on PCM head unit



Fig. 14: “Bluetooth” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

...

Check whether Bluetooth is activated on the PCM

Check whether the device is supported

Test step

"Please specify the model designation of the device you want to use with your Porsche."

Note

The available documents must be used to check whether and to what extent the customer's device is supported.

Result check

Is the customer's device compatible?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Your device is not compatible/not fully compatible with all the functions of your Porsche. For the full range of functions, please use a compatible device in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or WiFi**
- **Check service-specific or general causes of faults**
  - Check whether the correct vehicle equipment is installed (Connect Plus package)
  - Check whether the mobile data allowance has been used up
  - Check whether the vehicle is/was moving
  - Check whether the correct operator control element is used
  - Check whether the data transmission rate is sufficient
  - Check whether the quality of the data from the content provider is good enough
  - Check whether the network coverage is poor (tunnel, weather, etc.)
  - Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check whether the correct vehicle equipment is installed (Connect Plus package)

Test step

"Please specify the 17-character chassis number (VIN) of your Porsche. You will find this combination of digits and letters under the marking "E" (Germany) in your vehicle identification document or at the bottom edge of the windscreen."

Note

The VIN provided by the customer must be used to check whether the correct equipment is installed in the customer's vehicle.

Result check

Does the customer vehicle have the Connect Plus package installed?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Unfortunately, Porsche Connect services are not available for your Porsche. The services can only be used in vehicles with the Porsche Connect Plus package."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile data allowance has been used up

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Check whether the correct vehicle equipment is installed (Connect Plus package)

Check whether the mobile data allowance has been used up

Test step

"Please check the status of your monthly data allowance."

Note

If data services and the telephone are used with the same SIM card, any text message sent by the mobile phone provider concerning the critical status of the monthly data allowance will be displayed in the customer's PCM system.
Menu item in PCM for recording usage (PHONE -> OPT -> SET PHONE -> Data connections -> Online data counter).

Result check

"Is some of your monthly data allowance still remaining?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone provider in order to increase your data allowance."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the vehicle is/was moving

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Illustrations: Mobile data allowance



Fig. 15: “Set Phone” menu on PCM head unit

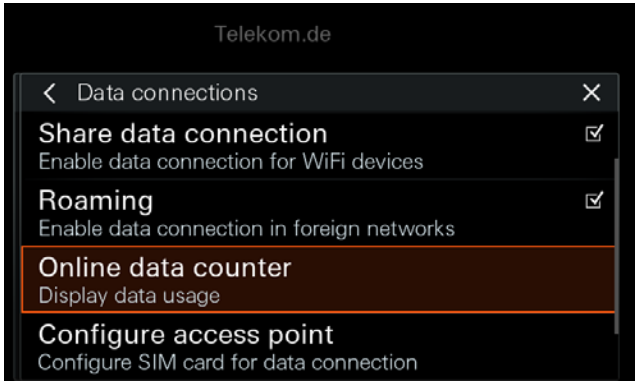


Fig. 16: “Data connections” menu on PCM head unit

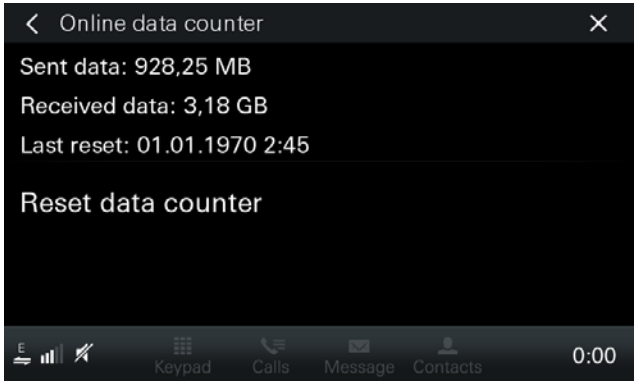


Fig. 17: “Online data counter” menu on PCM head unit

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether the mobile data allowance has been used up

Check whether the vehicle is/was moving

Test step

"Have you tried to use the service while driving?"

Result check

"Was your vehicle stationary when you tried to use the service?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"For your safety, certain services or individual service functions are only fully available when the vehicle is stationary. Please use these services when your vehicle is parked."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the correct operator control element is used

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether the vehicle is/was moving

Check whether the correct operator control element is used

Test step

"Which operating steps are you using?"

Note

Conceivable ambiguities when using the Online Search service:

- The two input lines for destination input on the PCM can be confused.

Result check

"Were the correct operator control elements used?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Proceed as described when using/operating the service."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the data transmission rate is sufficient

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Illustrations: Wrong operator control element

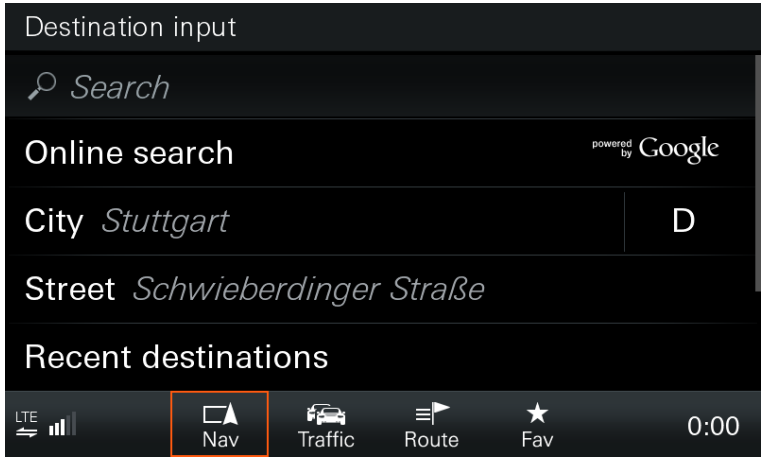


Fig. 18: Destination input screen on PCM head unit

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether the correct operator control element is used

Check whether the data transmission rate is sufficient

Test step

"Please check the network symbol on your PCM or mobile device."

Result check

Is the data network quality satisfactory?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"The usability of the service can be limited when the data network quality is poor. Find a place where the data network quality is better."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the quality of the data from the content provider is good enough

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether the data transmission rate is sufficient

Check whether the quality of the data from the content provider is good enough

Test step

"Please check whether the function restriction is affecting just one service/App or several/all of them."

Note

The information must exist or be determined in the Call Centre.

Porsche is not responsible for the content of the services/Apps used!

Result check

"Are several services/Apps affected?" -> it is safe to assume that the quality of data from the provider is OK.

Yes	The cause was not identified. Continue fault finding with the next test step.
No	Wait for data update/inform provider

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the network coverage is poor (tunnel, weather, etc.)

...

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether the quality of the data from the content provider is good enough

Check whether the network coverage is poor (tunnel, weather, etc.)

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."
"At least 2 bars should be displayed here."

Result check

"Is the reception strong enough (at least 2 bars or at least mobile phone standard 3G or E)?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please move to an area with better reception."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

Illustrations: Poor network quality

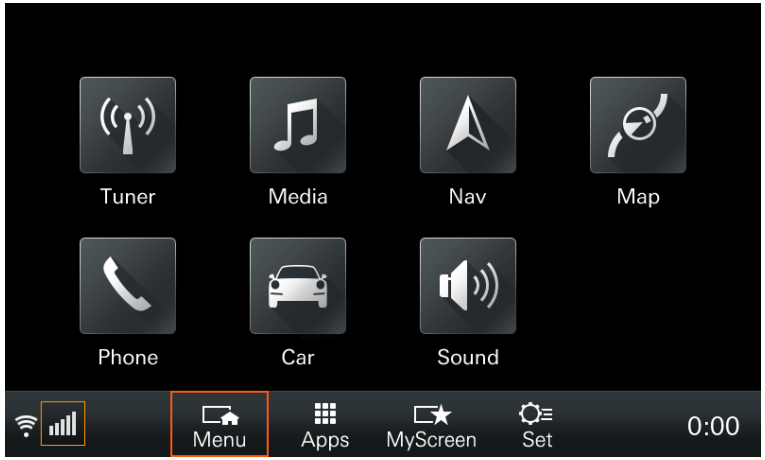


Fig. 19: Home screen on PCM head unit

Illustration shows iPhone 6 menu as an example

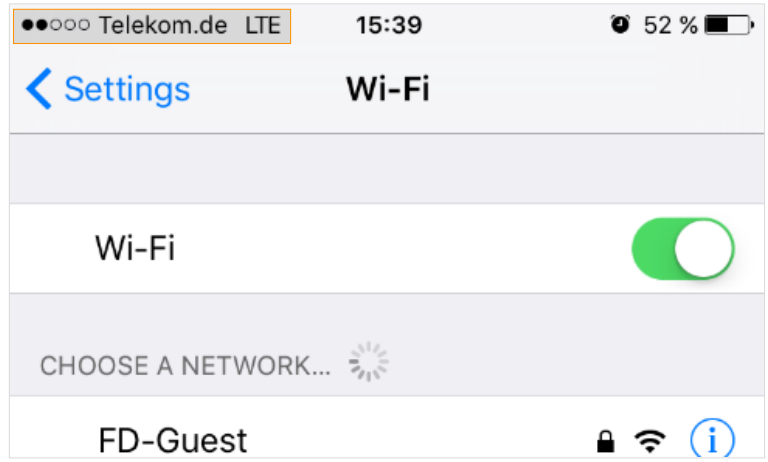


Fig. 20: iOS status bar

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or WiFi

Check service-specific or general causes of faults

...

Check whether the network coverage is poor (tunnel, weather, etc.)

Check whether the mobile phone network is down

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."

Result check

"Do you have a network signal?"

Yes	The cause was not identified. Refer the customer to the Service department.
No	"Please move to an area with better reception or wait until the problem is fixed. The relevant department has already been informed and is working on resolving the problem."

Does the problem persist?

Yes (Contact the workshop) **No** (End fault finding)

Porsche Connect – Support Guideline



Status: November 2015

General information

Objectives

- *The Support Guideline supports you in narrowing down symptoms and correct any faults that are found in a targeted manner, or whether they need to be forwarded to Porsche.*
- *Fault finding for the Porsche Connect services is now more structured and straightforward.*
- *All services are divided into service categories based on their underlying technology. Faults that do not affect a complete service category, but only one individual service, can also be resolved using a service-based Fault Finding Guide.*
- *The use of exclusion criteria and basic questions makes it easier to determine the causes of faults.*
- *Faults that do not completely fit into a service category, but only one individual service in this category can also be resolved using a service-based Fault Finding Guide.*

Procedure for use

- *Select the relevant Support Guideline based on the affected service.*
- *Carry out the test steps in sequence until the fault is corrected or the problem has been addressed correctly.*
- *To get an overview of how to use this procedure, it is important to familiarise yourself with how services are provided and the division of the services into service categories. For more information, also refer to the overview in the appendix.*

- **Preliminary tests when using online navigation services (e.g. real-time traffic information)**
- **Preliminary tests if Porsche Connect app-based services are used (e.g. music streaming)**
- **Preliminary tests if Apple CarPlay is used**

Preliminary tests when using online navigation services (e.g. real-time traffic information)

- Restart procedure
- Test of comparable services
- Checking online connection and settings
- PCM diagnostics using the PIWIS Tester
- Extended troubleshooting in the workshop

Preliminary tests if Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests if Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Restart procedure

Test step

"Please restart the PCM and the service."

Result check

"Is the service function still limited?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	Provide feedback to the customer. Exit Support Guideline.

Yes (Next test step) **No** (Exit Support Guideline)

Test of comparable services

...

Preliminary tests if Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests if Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Restart procedure

Test of comparable services

Test step

"Check the functionality of another online navigation service (e.g. "Google Earth", RTTI, "Google Street View", "POI search")."

Result check

"Is the function of another online navigation system also limited?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Perform a detailed check using the service specific Fault Finding Guide. Start with the check category "Check service-specific or general causes of faults". Exit Support Guideline.

Yes (Next test step) **No** (Exit Support Guideline)

Checking online connection and settings

...

Preliminary tests if Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests if Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

...

Test of comparable services

Checking online connection and settings

Test step

"Check the online connection."

a) "Establish the online connection with a SIM card in your PCM, please refer to the steps from the "Check the online connection when using a SIM card in the vehicle slot" category of the Fault Finding Guide of the specific service."

b) "Establish the online connection via your terminal device, please refer to the steps from category "Check the online connection when using a terminal device via Bluetooth or WiFi" of the Fault Finding Guide of the specific service."

Result check

"Is there a problem with the online connection?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Create a PRMS ticket and attach the completed "Porsche Connect Checklist". Exit Support Guideline."

Yes (Next test step) **No** (Exit Support Guideline)

PCM diagnostics using the PIWIS Tester

Extended troubleshooting in the workshop

Preliminary tests if Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests if Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

...

Checking online connection and settings

PCM diagnostics using the PIWIS Tester

Test step

"Check the PCM with the help of the PIWIS Tester."

Result check

"Has an error been detected in the PCM?"

Yes	The cause was not identified. Continue troubleshooting with the next test step.
No	"Create a PRMS ticket and attach the completed "Porsche Connect Checklist". Exit Support Guideline."

Yes (Next test step) **No** (Exit Support Guideline)

Extended troubleshooting in the workshop

Preliminary tests if Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests if Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

...

PCM diagnostics using the PIWIS Tester

Extended troubleshooting in the workshop

Test step

"Perform a comprehensive troubleshooting in the workshop with the help of the relevant workshop literature and checking methods."

Result check

"Could the error not be identified and eliminated?"

Yes	Provide feedback to the customer. Exit Support Guideline.
No	"Create a PRMS ticket and attach the completed "Porsche Connect Checklist". Exit Support Guideline."

Yes (Exit Support Guideline)

No (Exit Support Guideline)

Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests when Apple CarPlay is used

- **Preliminary tests when using online navigation services (e.g. real-time traffic information)**
- **Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)**
  - Restart procedure
  - Test on comparable services
  - Checking online connection and settings
  - PCM diagnostics using the PIWIS Tester
  - Extended troubleshooting in the workshop
- **Preliminary tests if Apple CarPlay is used**

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)

Restart procedure

Test step

"Please restart the PCM, your final device and Porsche Connect app/service."

Result check

"Is the service function still limited?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	The cause was identified. Exit Support Guideline.

Yes (Next test step) **No** (Exit Support Guideline)

Test on comparable services

...

Preliminary tests when Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)

Restart procedure

Test of comparable services

Test step

"Check the functionality of another Porsche Connect app service (e.g. "My desinations", contacts, calendar, Napster/Papsody(U.S. version), radio.net)."

Result check

"Is the service function also limited?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Perform a detailed check using the service specific Fault Finding Guide. Start with the check category "Check service-specific or general causes of faults". Exit Support Guideline.

Yes (Next test step) **No** (Exit Support Guideline)

Checking online connection and settings

...

Preliminary tests when Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)

...

Checking online connection and settings

Test step

"Check the online connection."

a) "Establish the online connection with a SIM card in your PCM, please refer to the test steps in the "Check the online connection when using a SIM card in the vehicle slot" category of the Fault Finding Guide of the specific service."
b) "Establish the online connection via your terminal device, please refer to the steps from category "Check the online connection when using a terminal device via Bluetooth or WiFi" of the Fault Finding Guide of the specific service."
c) "To check the WLAN connection between the Porsche Connect app and the PCM, please refer to the relevant FAQs and the operating instructions of the vehicle."

Result check

"Is there a problem with the online connection?"

Yes	The cause was not identified. Continue Fault Finding with the next test step.
No	"Create a PRMS ticket and attach the completed "Porsche Connect Checklist". Exit Support Guideline."

Yes (Next test step) **No** (Exit Support Guideline)

PCM diagnostics using the PIWIS Tester

Extended troubleshooting in the workshop

Preliminary tests if Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)

...

PCM diagnostics using the PIWIS Tester

Test step

"Check the PCM with the help of the PIWIS Tester."

Result check

"Has an error been detected in the PCM?"

Yes	Continue Fault Finding with the next test step.
No	"Create a PRMS ticket and attach the completed "Porsche Connect Checklist". Exit Support Guideline."

Yes (Next test step) **No** (Exit Support Guideline)

Extended troubleshooting in the workshop

Preliminary tests if Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Preliminary tests if Porsche Connect app-based services are used (e.g. music streaming)

...

Extended troubleshooting in the workshop

Test step

"Perform a comprehensive fault finding procedure in the workshop with the help of the relevant workshop literature and checking methods."

Result check

"Could the error not be identified and eliminated?"

Yes	Provide feedback to the customer. Exit Support Guideline.
No	"Create a PRMS ticket and attach the completed "Porsche Connect Checklist". Exit Support Guideline."

Yes (Exit Support Guideline)

No (Exit Support Guideline)

Preliminary tests when Apple CarPlay is used

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests when Apple CarPlay is used

Restart procedure

Test step

"Please restart the PCM, your iPhone and Apple CarPlay."

Result check

"Is the functioning of Apple CarPlay still limited?"

Yes	"Perform a detailed check using the service specific Fault Finding Guide for Apple CarPlay." Note: If Apple CarPlay Fault Finding does not find a solution for the problem, please continue with steps and 2 and 3 of the Support Guideline ("Apple CarPlay" service category), if required.
No	Provide feedback to the customer. Exit Support Guideline.

Ja (FSL Apple CarPlay) **No** (Exit Support Guideline)

Replacement of USB cable

...

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests when Apple CarPlay is used

...

PCM diagnostics using the PIWIS Tester

Test step

"Check the PCM with the help of the PIWIS Tester."

Result check

"Have any errors been found by the PCM?"

Yes	The cause was not identified. Continue Fault Finding with the next test step.
No	"Refer the customer to Apple Support for Apple CarPlay." Close Support Guideline.

Yes (Next test step) **No** (Exit Support Guideline)

Extended troubleshooting in the workshop

Preliminary tests when using online navigation services (e.g. real-time traffic information)

Preliminary tests when Porsche Connect app-based services are used (e.g. music streaming)

Preliminary tests when Apple CarPlay is used

...

PCM diagnostics using the PIWIS Tester

Extended troubleshooting in the workshop

Test step

"Perform a comprehensive troubleshooting procedure in the workshop with the help of the relevant workshop literature and checking methods."

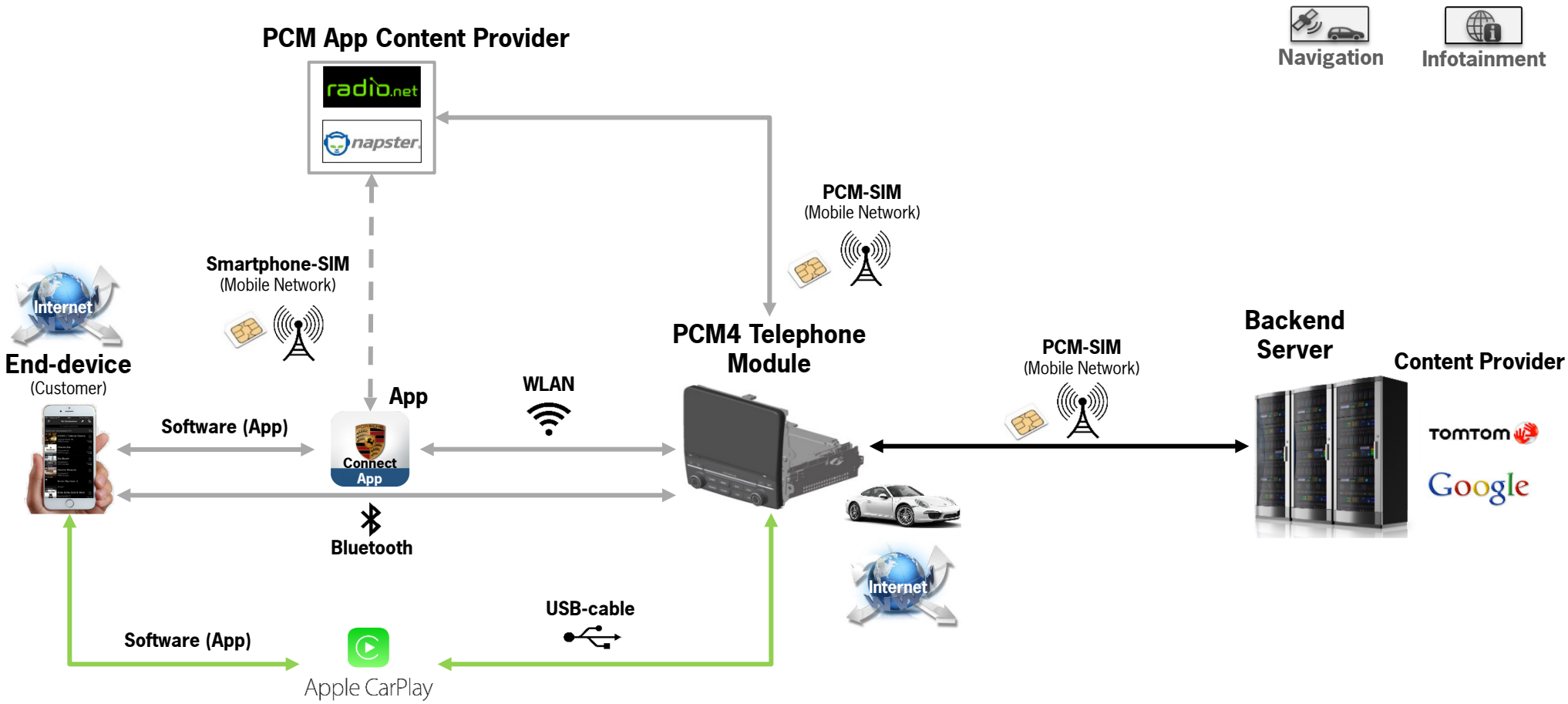
Result check

"Could the error not be identified and eliminated?"

Yes	Provide feedback to the customer. Exit Support Guideline.
No	"Create a PRMS ticket and attach the completed "Porsche Connect Checklist". Exit Support Guideline."

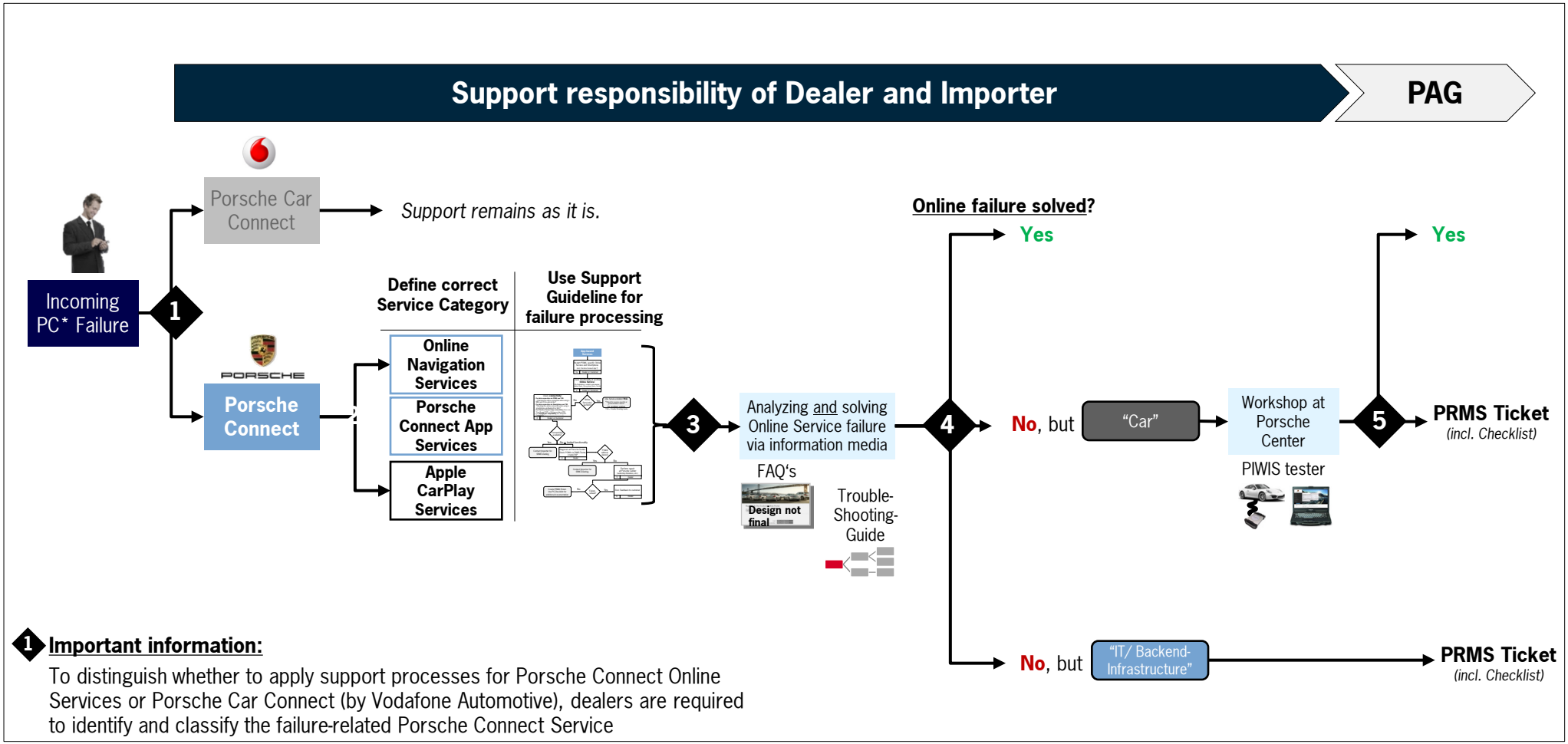
Yes (Exit Support Guideline) **No** (Exit Support Guideline)

Porsche Connect – Online Services, PCM 4: Connectivity overview and potential failure sources



Source: VAM

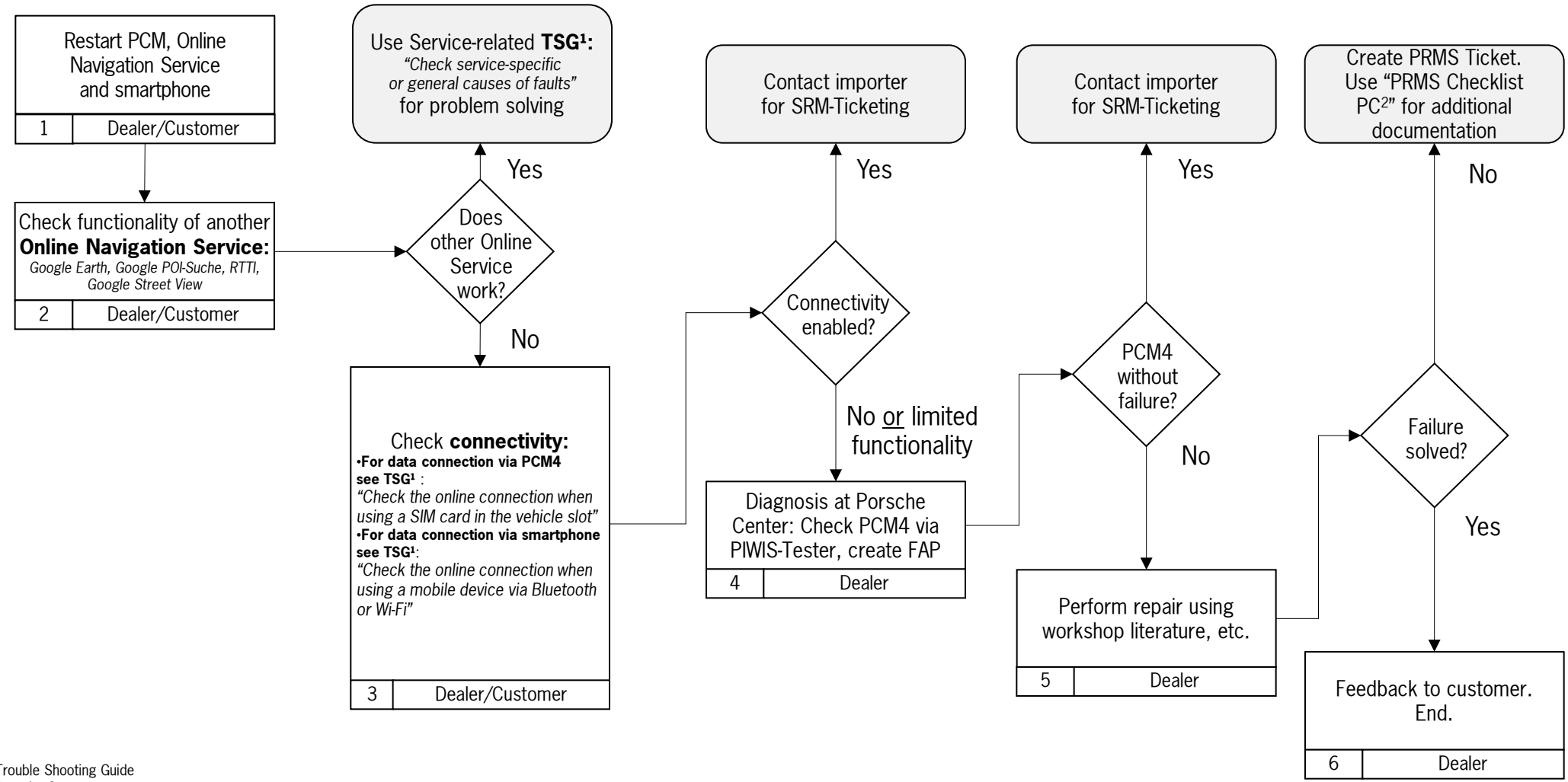
Porsche Connect – Online Services Support Guideline**



Source: VAM

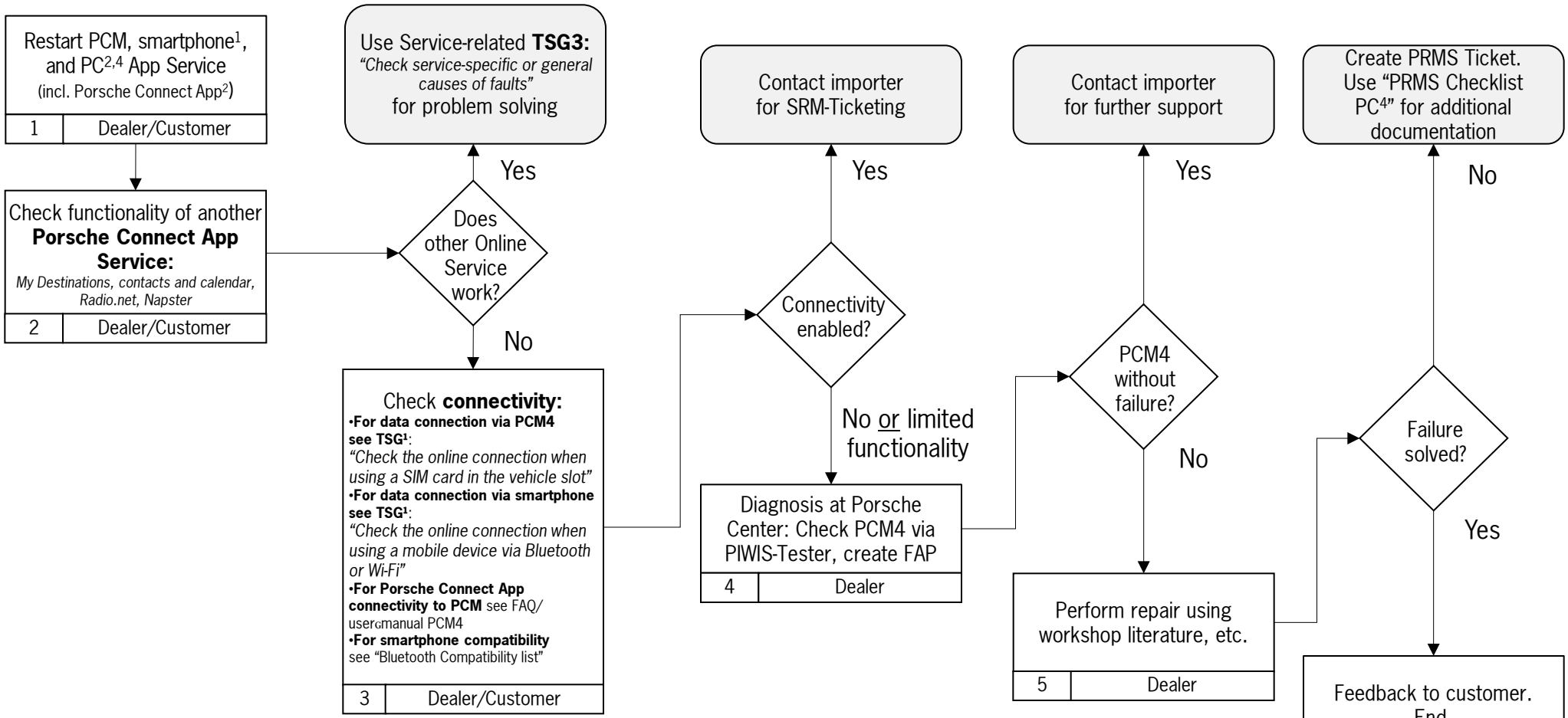
*Porsche Connect

Preliminary tests when using online navigation services (e.g. real-time traffic information)



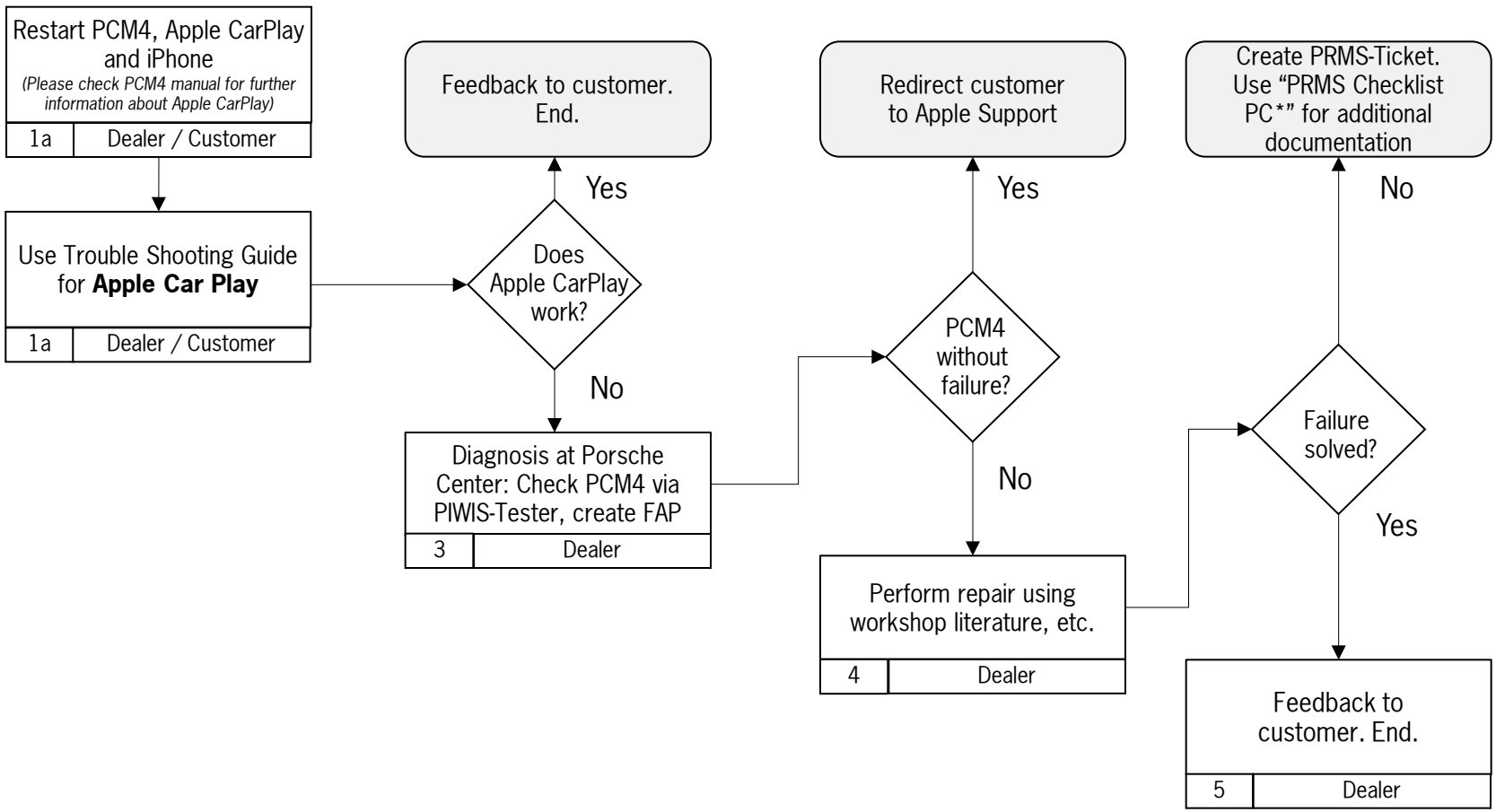
[1] Trouble Shooting Guide
[2] Porsche Connect

Preliminary tests if **Porsche Connect app-based services** are used (e.g. music streaming)



[1] Check smartphone compatibility. Check internet connection and connectivity of smartphone with PCM4.
[2] If Porsche Connect App needs to be updated, please update new software version or reinstall PCM Connect App on customer smartphone
[3] Trouble Shooting Guide.
[4] Porsche Connect

Preliminary tests if **Apple CarPlay** is used



*Porsche Connect

Cayenne , MY 2015 =>

Diagnosis information - Charging electronics

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10000B..... 6
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D12114 52
D12325 53
D12326 54
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D12328 56
D12329 57
D1232A 58
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D1232C 60
D1232D 61
D1232E 62
D1232F 63
D12330 64
D12332 65
D12333 66
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D1233C 75
D1233D 76
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D12356 82
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D12363..... 92
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D12367..... 96
D12368..... 97
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D1236B..... 100
D1236C..... 101
D20000..... 102
D20001..... 103
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E10100..... 106
E10102..... 108
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E10109..... 117
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E10111..... 131
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E10121 142
E10200 144
E10202 146
E10203 148
E1020A 149
E1020D 151
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FF0006 204
FF0007 205
FF0009 206
FF000A 207
FF000B 208
FF000C 209
FF000E 210
FF000F 211
FF0011 212
FF0012 213
FF0015 214
FF0016 215
FF001A 216
FF001B 217
FF001D 218
FF001E 219
FF0020 220
FF0021 221

100002

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

100004

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

100005

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

100007

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

100008

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

10000B

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

10000D

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

10000E

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, internal fault

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal control unit fault

Possible fault causes

♦ **High-voltage charger control unit** ⇒ If the infrastructure has been tested as OK but charging is not possible and a fault code is active, replace the control unit

Fault effects

♦ Cancellation/restart of charging process or charging not possible

100120

Diagnostic information - high-voltage charger control unit

Programming operation in progress

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

♦ Invalid data record

Possible fault causes

♦ Ongoing programming operation or programming run-on time (15 minutes) not elapsed

Fault effects

♦ Function restriction of high-voltage system

100130

Diagnostic information - high-voltage charger control unit

Programming

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- No data record programmed
- Wrong data record programmed
- Programmed data record does not match a control unit of the high-voltage system
- Programmed data record does not match the immobilizer system.

Fault effects

♦ Function restriction of high-voltage system

100200

Diagnostic information - high-voltage charger control unit

Charge, efficiency too low

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Efficiency too low < 80%

Possible fault causes

♦ Poor mains quality
♦ Check infrastructure
♦ Check charging cable
♦ Check lines
♦ Check charging socket
♦ Check **high-voltage battery control unit** fault memory
♦ **High-voltage charger control unit**

Fault effects

♦ Charging power very low ⇒ Charging time correspondingly much too long

200000

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

200010

Diagnostic information - high-voltage charger control unit

Fault in charging process due to vehicle

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Check **high-voltage battery control unit**
♦ Check **DME control unit**
♦ Check AC and DC charging (DC charging is possible only in the 918 Spyder)
♦ Check status of high-voltage mains
♦ Check current and voltage measured values

Fault effects

♦ Cancellation of charging process or charging not possible

200020

Diagnostic information - high-voltage charger control unit

Fault in charging process due to infrastructure

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Fault in charging process due to infrastructure detected

Possible fault causes

♦ Charging station faulty or incompatible ⇒ Check a different charging station
♦ Power Line Communication (PLC) faulty

Fault effects

♦ Cancellation of charging process or charging not possible

200110

Diagnostic information - high-voltage charger control unit

Interior air conditioning

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Too many loads active ⇒ Switch loads off
♦ **High-voltage battery** ⇒ Charge battery
♦ Air conditioning switch-off stage active
♦ Battery conditioning active

Fault effects

♦ Air-conditioning power reduced by 25% - 75%
♦ Interior air conditioning not possible without mains power
♦ Interior air conditioning not possible

200200

Diagnostic information - high-voltage charger control unit

Control-Pilot (communication line)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ No or implausible signal via Control-Pilot (communication line)
♦ Short circuit to B+
♦ Short circuit to B- or open circuit

Possible fault causes

♦ Operating error (charging station not activated within 4 minutes of inserting the plug)
♦ Charging cable not properly plugged in at the vehicle or at the charging station
♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ Charging cable faulty
♦ Charging socket faulty
♦ Vehicle wiring harness faulty (open circuit in Control-Pilot (communication line) due to possible previous repair work)
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

200220

Diagnostic information - high-voltage charger control unit

High voltage of infrastructure

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Voltage L1 - above limit value (U > 264 V)
♦ Voltage L1 - below limit value (U < 90 V)
♦ Voltage L1 - open circuit

Possible fault causes

♦ Operating error (charging station not activated within 4 minutes of inserting the plug)
♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ Contact resistance between charging plug and charging socket too high (soiling or foreign objects present)
♦ Charging socket damp/wet (water drain of the charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Charging station (infrastructure) faulty (voltage is not connected or is too high)
♦ Vehicle wiring harness faulty (open circuit in high-voltage line L1 or Control-Pilot

(communication line) due to possible previous repair work)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

Diagnostic information - high-voltage charger control unit

Proximity line (plug detection)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Control-Pilot (communication line) active, but no or implausible signal via proximity line (plug detection)
♦ Proximity line (plug detection) - short circuit or open circuit detected

Possible fault causes

♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ PRX resistor (2.7 kohm) between CP/PE pin in charging socket faulty
♦ Contact resistance between charging plug and charging socket too high (dirty or foreign objects present)
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Vehicle wiring harness faulty (open circuit or short circuit in the proximity line (plug detection) due to possible previous repair work)
♦ Short circuit between lines
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

200301

Diagnostic information - high-voltage charger control unit

Proximity line (plug detection)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Control-Pilot (communication line) active, but no or implausible signal via proximity line (plug detection)
♦ Proximity line (plug detection) - short circuit or open circuit detected

Possible fault causes

♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ PRX resistor (2.7 kohm) between CP/PE pin in charging socket faulty
♦ Contact resistance between charging plug and charging socket too high (dirty or foreign objects present)
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Vehicle wiring harness faulty (open circuit or short circuit in the proximity line (plug detection) due to possible previous repair work)
♦ Short circuit between lines
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

200302

Diagnostic information - high-voltage charger control unit

Charging-socket plug lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Charging plug not inserted properly
♦ Check charging plug/charging socket for soiling or foreign objects
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging plug faulty
♦ Plug lock blocked, mechanical fault
♦ Vehicle wiring harness faulty (open circuit/short circuit in the line(s) to the **plug lock servo motor** due to possible previous repair work)
♦ **Plug lock servo motor** faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

200303

Diagnostic information - high-voltage charger control unit

Charging-socket plug lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Charging plug not inserted properly
♦ Check charging plug/charging socket for soiling or foreign objects
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging plug faulty
♦ Plug lock blocked, mechanical fault
♦ Vehicle wiring harness faulty (open circuit/short circuit in the line(s) to the **plug lock servo motor** due to possible previous repair work)
♦ **Plug lock servo motor** faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

200600

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

200610

Diagnostic information - high-voltage charger control unit

Interior air conditioning

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Too many loads active ⇒ Switch loads off
♦ **High-voltage battery** ⇒ Charge battery
♦ Air conditioning switch-off stage active
♦ Battery conditioning active

Fault effects

♦ Air-conditioning power reduced by 25% - 75%
♦ Interior air conditioning not possible without mains power
♦ Interior air conditioning not possible

200620

Diagnostic information - high-voltage charger control unit

Interior air conditioning

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ Too many loads active ⇒ Switch loads off
♦ **High-voltage battery** ⇒ Charge battery
♦ Air conditioning switch-off stage active
♦ Battery conditioning active

Fault effects

♦ Air-conditioning power reduced by 25% - 75%
♦ Interior air conditioning not possible without mains power
♦ Interior air conditioning not possible

200700

Diagnostic information - high-voltage charger control unit

High-voltage activation/switch-off

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Infrastructure connected to the vehicle

Fault setting conditions

♦ Fault in high-voltage activation/switch-off; the control units involved **(DME control unit** and **high-voltage battery control unit)** must send the correct mode.

Possible fault causes

♦ Check high-voltage mode in the **DME control unit** and **high-voltage battery control unit**
⇒ **Fault not in high-voltage charger control unit!**

Fault effects

Activation:
♦ Charging is not possible or charging is cancelled immediately

Deactivation:

♦ It might not be possible to establish driving readiness

200710

Diagnostic information - high-voltage charger control unit

High-voltage activation/switch-off

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Infrastructure connected to the vehicle

Fault setting conditions

♦ Fault in high-voltage activation/switch-off; the control units involved **(DME control unit** and **high-voltage battery control unit)** must send the correct mode.

Possible fault causes

♦ Check high-voltage mode in the **DME control unit** and **high-voltage battery control unit**
⇒ **Fault not in high-voltage charger control unit!**

Fault effects

Activation:
♦ Charging is not possible or charging is cancelled immediately

Deactivation:

♦ It might not be possible to establish driving readiness

200800

Diagnostic information - high-voltage charger control unit

Crash signal

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition

♦ Crash signal from **POSIP triggering unit** detected via CAN bus.

Possible fault causes

♦ Crash event
♦ **POSIP triggering unit** faulty

Fault effects

♦ Switch-off of high-voltage system

200901

Diagnostic information - high-voltage charger control unit

Charge-now button

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Operating error (button pressed for a long time)
♦ Charge-now button stuck/jammed
♦ Wiring harness faulty (open circuit/short circuit in the signal line to the Charge-now button due to due to possible previous repair work)
♦ Charge-now button faulty

Fault effects

♦ Change between time-shifted charging and immediate charging not possible
♦ Time-shifted charging can be cancelled only via the menu in the instrument cluster to permit immediate charging

C00200

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C00201

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C00500

Diagnostic information - high-voltage charger control unit

Power Line Communication (PLC)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

NOTE

♦ 918 Spyder only
♦ DC charging only

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ No Power Line Communication (PLC)

Possible fault causes

♦ Charging station faulty or incompatible ⇒ Check a different charging station
♦ Power Line Communication (PLC) - open circuit in line
♦ Check charging socket
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

D01100

Diagnostic information - high-voltage charger control unit

Power supply

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

♦ **Power supply**, above limit value (U > 16 V)
♦ **Power supply**, below limit value (U < 9 V)

Possible fault causes

♦ Check vehicle electrical system voltage
♦ Check lines for short circuit or open circuit
♦ **High-voltage charger control unit**

Fault effects

♦ Function restriction

D01200

Diagnostic information - high-voltage charger control unit

Power supply

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

♦ **Power supply**, above limit value (U > 16 V)
♦ **Power supply**, below limit value (U < 9 V)

Possible fault causes

♦ Check vehicle electrical system voltage
♦ Check lines for short circuit or open circuit
♦ **High-voltage charger control unit**

Fault effects

♦ Function restriction

D12106

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D1210B

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D1210F

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D12110

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D12111

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D12112

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D12113

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D12114

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D12325

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12326

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12327

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12328

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12329

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1232A

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D1232B

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1232D

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1232E

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D1232F

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12330

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12332

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12333

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12334

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12335

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12336

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12337

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12338

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12339

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1233A

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1233B

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1233C

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1233D

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1233E

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1233F

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12343

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12344

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12349

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12356

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12357

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12358

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12359

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D1235A

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1235C

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D1235D

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D1235E

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D1235F

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12360

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D12363

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12364

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12365

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12366

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12367

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12368

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D12369

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1236A

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1236B

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

D1236C

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

♦ Fault in the designated control unit
♦ Note in the designated control unit

Fault effects

♦ Functions in the control unit are available only with restrictions
♦ Functions in the control unit are not available

D20000

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D20001

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

D40000

Diagnostic information - high-voltage charger control unit

Power supply

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

♦ **Power supply**, above limit value (U > 16 V)
♦ **Power supply**, below limit value (U < 9 V)

Possible fault causes

♦ Check vehicle electrical system voltage
♦ Check lines for short circuit or open circuit
♦ **High-voltage charger control unit**

Fault effects

♦ Function restriction

D40100

Diagnostic information - high-voltage charger control unit

Power supply

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

♦ **Power supply**, above limit value (U > 16 V)
♦ **Power supply**, below limit value (U < 9 V)

Possible fault causes

♦ Check vehicle electrical system voltage
♦ Check lines for short circuit or open circuit
♦ **High-voltage charger control unit**

Fault effects

♦ Function restriction

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

- ♦ De-energize the vehicle in accordance with the guidelines.
- ♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

- ♦ High-voltage DC voltage sensor 1 - above limit value
- ♦ High-voltage DC voltage sensor 1 - below limit value
- ♦ High-voltage DC voltage sensor 1 - short circuit to B+
- ♦ High-voltage DC voltage sensor 1 - short circuit to ground
- ♦ High-voltage DC voltage sensor 2 - above limit value
- ♦ High-voltage DC voltage sensor 2 - below limit value
- ♦ High-voltage DC voltage sensor 2 - short circuit to B+
- ♦ High-voltage DC voltage sensor 2 - short circuit to ground
- ♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

- ♦ Infrastructure faulty
- ♦ High-voltage DC voltage sensor 1 or 2 faulty
- ♦ **High-voltage charger control unit**

Fault effects

- Reduced charging power
- Active charging process is cancelled or charging is not possible

E10102

Diagnostic information - high-voltage charger control unit

High-voltage system voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High voltage (DC) during the charging process, above limit value (U > 450 V)
- High voltage (DC) during the charging process, below limit value (U < 220 V)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ Infrastructure faulty
♦ Fault in charging station
♦ **High-voltage battery** voltage
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10103

Diagnostic information - high-voltage charger control unit

High-voltage DC current sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ High-voltage DC current sensor, above limit value
♦ High-voltage DC current sensor, below limit value
♦ High-voltage DC current sensor - short circuit to B+
♦ High-voltage DC current sensor - short circuit to ground

Possible fault causes

♦ Infrastructure
♦ High-voltage DC current sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10106

Diagnostic information - high-voltage charger control unit

High-voltage system voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High voltage (DC) during the charging process, above limit value (U > 450 V)
- High voltage (DC) during the charging process, below limit value (U < 220 V)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ Infrastructure faulty
♦ Fault in charging station
♦ **High-voltage battery** voltage
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10107

Diagnostic information - high-voltage charger control unit

High-voltage system voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High voltage (DC) during the charging process, above limit value (U > 450 V)
- High voltage (DC) during the charging process, below limit value (U < 220 V)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ Infrastructure faulty
♦ Fault in charging station
♦ **High-voltage battery** voltage
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10108

Diagnostic information - high-voltage charger control unit

High-voltage system output current

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High-voltage current (DC) during the charging process, above limit value (I > 12 A)
- High-voltage current (DC) during the charging process, below limit value (I < 1 A)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10109

Diagnostic information - high-voltage charger control unit

High-voltage system voltage

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Infrastructure connected to the vehicle
- Vehicle in charging mode

Fault setting condition(s)

- High voltage (DC) during the charging process, above limit value (U > 450 V)
- High voltage (DC) during the charging process, below limit value (U < 220 V)

Possible fault causes

♦ High-voltage lines to **high-voltage battery control unit**
♦ High-voltage lines to **high-voltage power electronics control unit**
♦ Infrastructure faulty
♦ Fault in charging station
♦ **High-voltage battery** voltage
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Active charging process is cancelled or charging is not possible

E1010A

Diagnostic information - high-voltage charger control unit

Setpoint/actual current demand

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Infrastructure connected to the vehicle

Fault setting condition(s)

● High-voltage current (DC) during the charging process, above limit value (I > 12 A)
● High-voltage current (DC) during the charging process, below limit value (I < 1 A)
● High-voltage current SETPOINT/ACTUAL comparison higher than 10% (I > 0.5 A)

Possible fault causes

♦ Voltage fluctuations in infrastructure
♦ Software version ⇒ Flash the last SW update
♦ **High-voltage charger control unit** faulty

Fault effects

♦ None

E1010B

Diagnostic information - high-voltage charger control unit

Setpoint/actual current demand

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Infrastructure connected to the vehicle

Fault setting condition(s)

● High-voltage current (DC) during the charging process, above limit value (I > 12 A)
● High-voltage current (DC) during the charging process, below limit value (I < 1 A)
● High-voltage current SETPOINT/ACTUAL comparison higher than 10% (I > 0.5 A)

Possible fault causes

♦ Voltage fluctuations in infrastructure
♦ Software version ⇒ Flash the last SW update
♦ **High-voltage charger control unit** faulty

Fault effects

♦ None

E1010C

Diagnostic information - high-voltage charger control unit

Setpoint/actual current demand

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Infrastructure connected to the vehicle

Fault setting condition(s)

● High-voltage current (DC) during the charging process, above limit value (I > 12 A)
● High-voltage current (DC) during the charging process, below limit value (I < 1 A)
● High-voltage current SETPOINT/ACTUAL comparison higher than 10% (I > 0.5 A)

Possible fault causes

♦ Voltage fluctuations in infrastructure
♦ Software version ⇒ Flash the last SW update
♦ **High-voltage charger control unit** faulty

Fault effects

♦ None

E1010D

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

♦ High-voltage DC voltage sensor 1 - above limit value
♦ High-voltage DC voltage sensor 1 - below limit value
♦ High-voltage DC voltage sensor 1 - short circuit to B+
♦ High-voltage DC voltage sensor 1 - short circuit to ground
♦ High-voltage DC voltage sensor 2 - above limit value
♦ High-voltage DC voltage sensor 2 - below limit value
♦ High-voltage DC voltage sensor 2 - short circuit to B+
♦ High-voltage DC voltage sensor 2 - short circuit to ground
♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage DC voltage sensor 1 or 2 faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Reduced charging power
- ♦ Active charging process is cancelled or charging is not possible

E1010E

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

♦ High-voltage DC voltage sensor 1 - above limit value
♦ High-voltage DC voltage sensor 1 - below limit value
♦ High-voltage DC voltage sensor 1 - short circuit to B+
♦ High-voltage DC voltage sensor 1 - short circuit to ground
♦ High-voltage DC voltage sensor 2 - above limit value
♦ High-voltage DC voltage sensor 2 - below limit value
♦ High-voltage DC voltage sensor 2 - short circuit to B+
♦ High-voltage DC voltage sensor 2 - short circuit to ground
♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage DC voltage sensor 1 or 2 faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Reduced charging power
- ♦ Active charging process is cancelled or charging is not possible

E1010F

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

♦ High-voltage DC voltage sensor 1 - above limit value
♦ High-voltage DC voltage sensor 1 - below limit value
♦ High-voltage DC voltage sensor 1 - short circuit to B+
♦ High-voltage DC voltage sensor 1 - short circuit to ground
♦ High-voltage DC voltage sensor 2 - above limit value
♦ High-voltage DC voltage sensor 2 - below limit value
♦ High-voltage DC voltage sensor 2 - short circuit to B+
♦ High-voltage DC voltage sensor 2 - short circuit to ground
♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage DC voltage sensor 1 or 2 faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Reduced charging power
- ♦ Active charging process is cancelled or charging is not possible

E10111

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

♦ High-voltage DC voltage sensor 1 - above limit value
♦ High-voltage DC voltage sensor 1 - below limit value
♦ High-voltage DC voltage sensor 1 - short circuit to B+
♦ High-voltage DC voltage sensor 1 - short circuit to ground
♦ High-voltage DC voltage sensor 2 - above limit value
♦ High-voltage DC voltage sensor 2 - below limit value
♦ High-voltage DC voltage sensor 2 - short circuit to B+
♦ High-voltage DC voltage sensor 2 - short circuit to ground
♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage DC voltage sensor 1 or 2 faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Reduced charging power
- ♦ Active charging process is cancelled or charging is not possible

E10113

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

♦ High-voltage DC voltage sensor 1 - above limit value
♦ High-voltage DC voltage sensor 1 - below limit value
♦ High-voltage DC voltage sensor 1 - short circuit to B+
♦ High-voltage DC voltage sensor 1 - short circuit to ground
♦ High-voltage DC voltage sensor 2 - above limit value
♦ High-voltage DC voltage sensor 2 - below limit value
♦ High-voltage DC voltage sensor 2 - short circuit to B+
♦ High-voltage DC voltage sensor 2 - short circuit to ground
♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage DC voltage sensor 1 or 2 faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Reduced charging power
- ♦ Active charging process is cancelled or charging is not possible

E10114

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

♦ High-voltage DC voltage sensor 1 - above limit value
♦ High-voltage DC voltage sensor 1 - below limit value
♦ High-voltage DC voltage sensor 1 - short circuit to B+
♦ High-voltage DC voltage sensor 1 - short circuit to ground
♦ High-voltage DC voltage sensor 2 - above limit value
♦ High-voltage DC voltage sensor 2 - below limit value
♦ High-voltage DC voltage sensor 2 - short circuit to B+
♦ High-voltage DC voltage sensor 2 - short circuit to ground
♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage DC voltage sensor 1 or 2 faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Reduced charging power
- ♦ Active charging process is cancelled or charging is not possible

E10116

Diagnostic information - high-voltage charger control unit

High-voltage DC voltage sensors 1 and 2

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- High-voltage system active

Fault setting condition(s)

♦ High-voltage DC voltage sensor 1 - above limit value
♦ High-voltage DC voltage sensor 1 - below limit value
♦ High-voltage DC voltage sensor 1 - short circuit to B+
♦ High-voltage DC voltage sensor 1 - short circuit to ground
♦ High-voltage DC voltage sensor 2 - above limit value
♦ High-voltage DC voltage sensor 2 - below limit value
♦ High-voltage DC voltage sensor 2 - short circuit to B+
♦ High-voltage DC voltage sensor 2 - short circuit to ground
♦ High-voltage DC voltage sensors 1 **and** 2, difference value implausible

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage DC voltage sensor 1 or 2 faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Reduced charging power
- ♦ Active charging process is cancelled or charging is not possible

E10117

Diagnostic information - high-voltage charger control unit

High-voltage DC current sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ High-voltage DC current sensor, above limit value
♦ High-voltage DC current sensor, below limit value
♦ High-voltage DC current sensor - short circuit to B+
♦ High-voltage DC current sensor - short circuit to ground

Possible fault causes

♦ Infrastructure
♦ High-voltage DC current sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10118

Diagnostic information - high-voltage charger control unit

High-voltage DC current sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ High-voltage DC current sensor, above limit value
♦ High-voltage DC current sensor, below limit value
♦ High-voltage DC current sensor - short circuit to B+
♦ High-voltage DC current sensor - short circuit to ground

Possible fault causes

♦ Infrastructure
♦ High-voltage DC current sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E1011A

Diagnostic information - high-voltage charger control unit

High-voltage DC current sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ High-voltage DC current sensor, above limit value
♦ High-voltage DC current sensor, below limit value
♦ High-voltage DC current sensor - short circuit to B+
♦ High-voltage DC current sensor - short circuit to ground

Possible fault causes

♦ Infrastructure
♦ High-voltage DC current sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10121

Diagnostic information - high-voltage charger control unit

High-voltage system - short circuit

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Short circuit in high-voltage system

Possible fault causes

♦ High-voltage line(s)
♦ **High-voltage interior heater**
♦ **High-voltage battery heater** (only Panamera GII)
♦ **High-voltage distributor**
♦ **High-voltage A/C compressor**
♦ **High-voltage charger control unit**
♦ **High-voltage battery** or **high-voltage battery control unit**
♦ **High-voltage power electronics control unit**
♦ **High-voltage power electronics control unit** (FA) (only 918 Spyder)

Fault effects

- ♦ Switch-off of high-voltage system
- ♦ Charging not possible

E10200

Diagnostic information - high-voltage charger control unit

High-voltage AC voltage sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- High-voltage AC voltage sensor, above limit value
- High-voltage AC voltage sensor, below limit value
- High-voltage AC voltage sensor, signal implausible
- High-voltage AC voltage sensor - short circuit to B+
- High-voltage AC voltage sensor - short circuit to ground
- High-voltage AC voltage sensor - open circuit

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage AC voltage sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10202

Diagnostic information - high-voltage charger control unit

High-voltage AC voltage sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- High-voltage AC voltage sensor, above limit value
- High-voltage AC voltage sensor, below limit value
- High-voltage AC voltage sensor, signal implausible
- High-voltage AC voltage sensor - short circuit to B+
- High-voltage AC voltage sensor - short circuit to ground
- High-voltage AC voltage sensor - open circuit

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage AC voltage sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10203

Diagnostic information - high-voltage charger control unit

High-voltage AC current sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● High-voltage AC current sensor, above limit value
● High-voltage AC current sensor, below limit value
● High-voltage AC current sensor - short circuit to B+
♦ High-voltage AC current sensor - short circuit to ground

Possible fault causes

♦ Infrastructure
♦ High-voltage AC current sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E1020A

Diagnostic information - high-voltage charger control unit

High voltage of infrastructure

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Voltage L1 - above limit value (U > 264 V)
♦ Voltage L1 - below limit value (U < 90 V)
♦ Voltage L1 - open circuit

Possible fault causes

♦ Operating error (charging station not activated within 4 minutes of inserting the plug)
♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ Contact resistance between charging plug and charging socket too high (soiling or foreign objects present)
♦ Charging socket damp/wet (water drain of the charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Charging station (infrastructure) faulty (voltage is not connected or is too high)
♦ Vehicle wiring harness faulty (open circuit in high-voltage line L1 or Control-Pilot

(communication line) due to possible previous repair work)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

E1020D

Diagnostic information - high-voltage charger control unit

High voltage of infrastructure

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Voltage L1 - above limit value (U > 264 V)
♦ Voltage L1 - below limit value (U < 90 V)
♦ Voltage L1 - open circuit

Possible fault causes

♦ Operating error (charging station not activated within 4 minutes of inserting the plug)
♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ Contact resistance between charging plug and charging socket too high (soiling or foreign objects present)
♦ Charging socket damp/wet (water drain of the charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Charging station (infrastructure) faulty (voltage is not connected or is too high)
♦ Vehicle wiring harness faulty (open circuit in high-voltage line L1 or Control-Pilot

(communication line) due to possible previous repair work)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

E1020E

Diagnostic information - high-voltage charger control unit

High-voltage AC voltage sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- High-voltage AC voltage sensor, above limit value
- High-voltage AC voltage sensor, below limit value
- High-voltage AC voltage sensor, signal implausible
- High-voltage AC voltage sensor - short circuit to B+
- High-voltage AC voltage sensor - short circuit to ground
- High-voltage AC voltage sensor - open circuit

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage AC voltage sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E1020F

Diagnostic information - high-voltage charger control unit

High-voltage AC voltage sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- High-voltage AC voltage sensor, above limit value
- High-voltage AC voltage sensor, below limit value
- High-voltage AC voltage sensor, signal implausible
- High-voltage AC voltage sensor - short circuit to B+
- High-voltage AC voltage sensor - short circuit to ground
- High-voltage AC voltage sensor - open circuit

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage AC voltage sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10211

Diagnostic information - high-voltage charger control unit

High-voltage AC voltage sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- High-voltage AC voltage sensor, above limit value
- High-voltage AC voltage sensor, below limit value
- High-voltage AC voltage sensor, signal implausible
- High-voltage AC voltage sensor - short circuit to B+
- High-voltage AC voltage sensor - short circuit to ground
- High-voltage AC voltage sensor - open circuit

Possible fault causes

♦ Infrastructure faulty
♦ High-voltage AC voltage sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10212

Diagnostic information - high-voltage charger control unit

High-voltage AC current sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● High-voltage AC current sensor, above limit value
● High-voltage AC current sensor, below limit value
● High-voltage AC current sensor - short circuit to B+
♦ High-voltage AC current sensor - short circuit to ground

Possible fault causes

♦ Infrastructure
♦ High-voltage AC current sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10213

Diagnostic information - high-voltage charger control unit

High-voltage AC current sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● High-voltage AC current sensor, above limit value
● High-voltage AC current sensor, below limit value
● High-voltage AC current sensor - short circuit to B+
♦ High-voltage AC current sensor - short circuit to ground

Possible fault causes

♦ Infrastructure
♦ High-voltage AC current sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10215

Diagnostic information - high-voltage charger control unit

High-voltage AC current sensor

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● High-voltage AC current sensor, above limit value
● High-voltage AC current sensor, below limit value
● High-voltage AC current sensor - short circuit to B+
♦ High-voltage AC current sensor - short circuit to ground

Possible fault causes

♦ Infrastructure
♦ High-voltage AC current sensor faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Active charging process is cancelled or charging is not possible

E10500

Diagnostic information - high-voltage charger control unit

Charging-socket battery symbol LED

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10501

Diagnostic information - high-voltage charger control unit

Charging-socket battery symbol LED

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10502

Diagnostic information - high-voltage charger control unit

Charging-socket battery symbol LED

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10800

Diagnostic information - high-voltage charger control unit

Charging-socket plug symbol LED

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10801

Diagnostic information - high-voltage charger control unit

Charging-socket plug symbol LED

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10802

Diagnostic information - high-voltage charger control unit

Charging-socket plug symbol LED

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10900

Diagnostic information - high-voltage charger control unit

Charging-socket plug symbol LED

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10901

Diagnostic information - high-voltage charger control unit

Charging-socket plug symbol LED

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10902

Diagnostic information - high-voltage charger control unit

Charging-socket plug symbol LED

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging status not clearly identifiable

E10C00

Diagnostic information - high-voltage charger control unit

Charge-now button

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Operating error (button pressed for a long time)
♦ Charge-now button stuck/jammed
♦ Wiring harness faulty (open circuit/short circuit in the signal line to the Charge-now button due to due to possible previous repair work)
♦ Charge-now button faulty

Fault effects

♦ Change between time-shifted charging and immediate charging not possible
♦ Time-shifted charging can be cancelled only via the menu in the instrument cluster to permit immediate charging

E10C01

Diagnostic information - high-voltage charger control unit

Charge-now button

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Operating error (button pressed for a long time)
♦ Charge-now button stuck/jammed
♦ Wiring harness faulty（open circuit/short circuit in the signal line to the Charge-now button due to due to possible previous repair work)
♦ Charge-now button faulty

Fault effects

♦ Change between time-shifted charging and immediate charging not possible
♦ Time-shifted charging can be cancelled only via the menu in the instrument cluster to permit immediate charging

E10C04

Diagnostic information - high-voltage charger control unit

Charge-now button, LEDs

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Line(s) - short circuit or open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Function light LED ⇒ Charge-now status can no longer be recognized on the Charge-now button
♦ LED lighting ⇒ Charge-now button locating lighting does not function

E10E02

Diagnostic information - high-voltage charger control unit

Charge-now button, LEDs

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Line(s) - short circuit or open circuit
♦ Charging socket
♦ LED faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Function light LED ⇒ Charge-now status can no longer be recognized on the Charge-now button
♦ LED lighting ⇒ Charge-now button locating lighting does not function

E10F00

Diagnostic information - high-voltage charger control unit

Charging-socket lid lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Charging socket lid lock coded
- Ignition on

Fault setting condition(s)

- Open circuit detected
- Short circuit to B+
- Short circuit to ground
- Activation time exceeded

Possible fault causes

♦ Charging socket lid lock - mechanical fault
♦ Short circuit to B+ in lines
♦ Short circuit to ground in lines
♦ Short circuit between lines
♦ Open circuit in line
♦ **Charging socket lid lock actuating element** faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Charging-socket lid lock activation not possible
- ♦ Charging remains possible through mechanical emergency unlocking

E10F01

Diagnostic information - high-voltage charger control unit

Charging-socket lid lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Charging socket lid lock coded
- Ignition on

Fault setting condition(s)

- Open circuit detected
- Short circuit to B+
- Short circuit to ground
- Activation time exceeded

Possible fault causes

♦ Charging socket lid lock - mechanical fault
♦ Short circuit to B+ in lines
♦ Short circuit to ground in lines
♦ Short circuit between lines
♦ Open circuit in line
♦ **Charging socket lid lock actuating element** faulty
♦ **High-voltage charger control unit**

Fault effects

- ♦ Charging-socket lid lock activation not possible
- ♦ Charging remains possible through mechanical emergency unlocking

E11403

Diagnostic information - high-voltage charger control unit

Charging-socket temperature

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

P31D1:
● **Temperature sensor** - signal implausible
● **Temperature sensor** - above limit value
● **Temperature sensor** - below limit value

P31D2:
● Temperature > 60 °C (140 °F)

Possible fault causes

P31D1:
♦ Signal line, loose contact
♦ Vehicle wiring harness faulty (short circuit/open circuit in the signal line due to possible previous repair work)
♦ **Temperature sensor** faulty

P31D2:
♦ Contact resistance of the high-voltage line too high
♦ **Temperature sensor** faulty

Fault effects

P31D1:
♦ Charging power restricted
♦ Active charging process is cancelled or charging is not possible

P31D2:
♦ Active charging process is cancelled or charging is not possible

E11404

Diagnostic information - high-voltage charger control unit

Charging-socket temperature

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

P31D1:
● **Temperature sensor** - signal implausible
● **Temperature sensor** - above limit value
● **Temperature sensor** - below limit value

P31D2:
● Temperature > 60 °C (140 °F)

Possible fault causes

P31D1:
♦ Signal line, loose contact
♦ Vehicle wiring harness faulty (short circuit/open circuit in the signal line due to possible previous repair work)
♦ **Temperature sensor** faulty

P31D2:
♦ Contact resistance of the high-voltage line too high
♦ **Temperature sensor** faulty

Fault effects

P31D1:
♦ Charging power restricted
♦ Active charging process is cancelled or charging is not possible

P31D2:
♦ Active charging process is cancelled or charging is not possible

E1140C

Diagnostic information - high-voltage charger control unit

Charging-socket temperature

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

P31D1:
● **Temperature sensor** - signal implausible
● **Temperature sensor** - above limit value
● **Temperature sensor** - below limit value

P31D2:
● Temperature > 60 °C (140 °F)

Possible fault causes

P31D1:
♦ Signal line, loose contact
♦ Vehicle wiring harness faulty (short circuit/open circuit in the signal line due to possible previous repair work)
♦ **Temperature sensor** faulty

P31D2:
♦ Contact resistance of the high-voltage line too high
♦ **Temperature sensor** faulty

Fault effects

P31D1:
♦ Charging power restricted
♦ Active charging process is cancelled or charging is not possible

P31D2:
♦ Active charging process is cancelled or charging is not possible

E11500

Diagnostic information - high-voltage charger control unit

Charging-socket plug lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Charging plug not inserted properly
♦ Check charging plug/charging socket for soiling or foreign objects
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging plug faulty
♦ Plug lock blocked, mechanical fault
♦ Vehicle wiring harness faulty (open circuit/short circuit in the line(s) to the **plug lock servo motor** due to possible previous repair work)
♦ **Plug lock servo motor** faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11501

Diagnostic information - high-voltage charger control unit

Charging-socket plug lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Charging plug not inserted properly
♦ Check charging plug/charging socket for soiling or foreign objects
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging plug faulty
♦ Plug lock blocked, mechanical fault
♦ Vehicle wiring harness faulty (open circuit/short circuit in the line(s) to the **plug lock servo motor** due to possible previous repair work)
♦ **Plug lock servo motor** faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11502

Diagnostic information - high-voltage charger control unit

Charging-socket plug lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Charging plug not inserted properly
♦ Check charging plug/charging socket for soiling or foreign objects
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging plug faulty
♦ Plug lock blocked, mechanical fault
♦ Vehicle wiring harness faulty (open circuit/short circuit in the line(s) to the **plug lock servo motor** due to possible previous repair work)
♦ **Plug lock servo motor** faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11503

Diagnostic information - high-voltage charger control unit

Charging-socket plug lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Charging plug not inserted properly
♦ Check charging plug/charging socket for soiling or foreign objects
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging plug faulty
♦ Plug lock blocked, mechanical fault
♦ Vehicle wiring harness faulty (open circuit/short circuit in the line(s) to the **plug lock servo motor** due to possible previous repair work)
♦ **Plug lock servo motor** faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11606

Diagnostic information - high-voltage charger control unit

Charging-socket plug lock

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Charging plug not inserted properly
♦ Check charging plug/charging socket for soiling or foreign objects
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging plug faulty
♦ Plug lock blocked, mechanical fault
♦ Vehicle wiring harness faulty (open circuit/short circuit in the line(s) to the **plug lock servo motor** due to possible previous repair work)
♦ **Plug lock servo motor** faulty
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11700

Diagnostic information - high-voltage charger control unit

Control-Pilot (communication line)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ No or implausible signal via Control-Pilot (communication line)
♦ Short circuit to B+
♦ Short circuit to B- or open circuit

Possible fault causes

♦ Operating error (charging station not activated within 4 minutes of inserting the plug)
♦ Charging cable not properly plugged in at the vehicle or at the charging station
♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ Charging cable faulty
♦ Charging socket faulty
♦ Vehicle wiring harness faulty (open circuit in Control-Pilot (communication line) due to possible previous repair work)
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11701

Diagnostic information - high-voltage charger control unit

Control-Pilot (communication line)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ No or implausible signal via Control-Pilot (communication line)
♦ Short circuit to B+
♦ Short circuit to B- or open circuit

Possible fault causes

♦ Operating error (charging station not activated within 4 minutes of inserting the plug)
♦ Charging cable not properly plugged in at the vehicle or at the charging station
♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ Charging cable faulty
♦ Charging socket faulty
♦ Vehicle wiring harness faulty (open circuit in Control-Pilot (communication line) due to possible previous repair work)
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11800

Diagnostic information - high-voltage charger control unit

Proximity line (plug detection)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Control-Pilot (communication line) active, but no or implausible signal via proximity line (plug detection)
♦ Proximity line (plug detection) - short circuit or open circuit detected

Possible fault causes

♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ PRX resistor (2.7 kohm) between CP/PE pin in charging socket faulty
♦ Contact resistance between charging plug and charging socket too high (dirty or foreign objects present)
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Vehicle wiring harness faulty (open circuit or short circuit in the proximity line (plug detection) due to possible previous repair work)
♦ Short circuit between lines
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11801

Diagnostic information - high-voltage charger control unit

Proximity line (plug detection)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Control-Pilot (communication line) active, but no or implausible signal via proximity line (plug detection)
♦ Proximity line (plug detection) - short circuit or open circuit detected

Possible fault causes

♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ PRX resistor (2.7 kohm) between CP/PE pin in charging socket faulty
♦ Contact resistance between charging plug and charging socket too high (dirty or foreign objects present)
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Vehicle wiring harness faulty (open circuit or short circuit in the proximity line (plug detection) due to possible previous repair work)
♦ Short circuit between lines
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

E11802

Diagnostic information - high-voltage charger control unit

Proximity line (plug detection)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

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Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs. In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

♦ Control-Pilot (communication line) active, but no or implausible signal via proximity line (plug detection)
♦ Proximity line (plug detection) - short circuit or open circuit detected

Possible fault causes

♦ Universal charger (ICCPD) faulty (perform a self-test)
♦ PRX resistor (2.7 kohm) between CP/PE pin in charging socket faulty
♦ Contact resistance between charging plug and charging socket too high (dirty or foreign objects present)
♦ Charging socket damp/wet (water drain on charging-socket housing blocked)
♦ Charging socket plug contacts worn or charging plug socket contacts spread apart
♦ Charging cable or charging socket faulty
♦ Vehicle wiring harness faulty (open circuit or short circuit in the proximity line (plug detection) due to possible previous repair work)
♦ Short circuit between lines
♦ **High-voltage charger control unit**

Fault effects

♦ Charging not possible

FF0000

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0001

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

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♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0003

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0004

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0006

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0007

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0009

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, temperature - above limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal temperature , above limit value (T > 120 °C/248 °F)

Possible fault causes

♦ Internal components too hot
♦ Ambient temperature of the **high-voltage battery control unit** too high
♦ Check low-temperature cooling circuit system ⇒ Bleed if necessary
♦ Temperature sensor faulty
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Cancellation of charging process or charging not possible

FF000A

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, temperature - above limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal temperature , above limit value (T > 120 °C/248 °F)

Possible fault causes

♦ Internal components too hot
♦ Ambient temperature of the **high-voltage battery control unit** too high
♦ Check low-temperature cooling circuit system ⇒ Bleed if necessary
♦ Temperature sensor faulty
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Cancellation of charging process or charging not possible

FF000B

Diagnostic information - high-voltage charger control unit

Function restriction, coolant temperature - above limit value

DANGER

High voltage!
Death or severe injuries due to high voltage or high current!

♦ De-energise the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Coolant temperature - above limit value (T > 70 °C/158 °F)

Possible fault causes

♦ Ambient temperature of the **high-voltage battery control unit** too high
♦ Check low-temperature cooling circuit system ⇒ Bleed if necessary

Fault effects

♦ Reduction in charging power

FF000C

Diagnostic information - high-voltage charger control unit

Infrastructure

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Possible fault causes

♦ Fault in charging station infrastructure
♦ Charging socket soiled/faulty
♦ Charging cable faulty

Fault effects

♦ Charging not possible

FF000E

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF000F

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0011

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0012

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0015

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, temperature - above limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal temperature , above limit value (T > 120 °C/248 °F)

Possible fault causes

♦ Internal components too hot
♦ Ambient temperature of the **high-voltage battery control unit** too high
♦ Check low-temperature cooling circuit system ⇒ Bleed if necessary
♦ Temperature sensor faulty
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Cancellation of charging process or charging not possible

FF0016

Diagnostic information - high-voltage charger control unit

High-voltage charger control unit, temperature - above limit value

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

● Internal temperature , above limit value (T > 120 °C/248 °F)

Possible fault causes

♦ Internal components too hot
♦ Ambient temperature of the **high-voltage battery control unit** too high
♦ Check low-temperature cooling circuit system ⇒ Bleed if necessary
♦ Temperature sensor faulty
♦ **High-voltage charger control unit** faulty

Fault effects

♦ Cancellation of charging process or charging not possible

FF001A

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF001B

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF001D

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF001E

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0020

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

FF0021

Diagnostic information - high-voltage charger control unit

Temperature sensor(s)

⚠DANGER

High voltage!
Risk of death or serious injuries due to high voltage or high current!

♦ De-energize the vehicle in accordance with the guidelines.
♦ Work must not be performed on parts carrying a high voltage.

► **Please read the following document in the PIWIS information system:**

♦ **2X00IN** Isolating high-voltage electrical system from power supply/Starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

⇒ Infrastructure connected to the vehicle

Fault setting condition(s)

- **Temperature sensor** - above limit value
- **Temperature sensor** - below limit value
- **Temperature sensor** - short circuit to B+
- **Temperature sensor** - short circuit to ground

Possible fault causes

♦ **Temperature sensor** stuck (faulty)
♦ **High-voltage charger control unit**

Fault effects

♦ Cancellation of charging process or charging not possible

Porsche AG
PDK - TCU summary table for Sports Cars MY12 / 13

Component/ System	Fault code		Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Parameters		Enable Conditions Value	Time Required	MIL (USA) Illumination
Automatic Transmission											
Pressure Regulator 1											
	P0962		circuit continuity, short to gnd	Voltage [V]		approx. 0V	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA	40ms, cont	2 DC
	P17A9		signal too high (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P17A1		signal too low (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P0960		circuit continuity, open circuit	Voltage [V]			pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P0963		circuit continuity, short to power	Voltage [V]		approx. Ubatt	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
Pressure Regulator 2											
	P0966		circuit continuity, short to gnd	Voltage [V]		approx. 0V	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA	40ms, cont	2 DC
	P17AA		signal too high (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P17A2		signal too low (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P0964		circuit continuity, open circuit	Voltage [V]			pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P0967		circuit continuity, short to power	Voltage [V]		approx. Ubatt	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
Pressure Regulator 3											
	P0970		circuit continuity, short to gnd	Voltage [V]		approx. 0V	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA	40ms, cont	2 DC
	P17AB		signal too high (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P17A3		signal too low (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		

Porsche AG
PDK - TCU summary table for Sports Cars MY12 / 13

Component/ System	Fault code		Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Parameters		Enable Conditions Value	Time Required	MIL (USA) Illumination
Automatic Transmission											
Pressure Regulator 4											
	P2720		circuit continuity, short to gnd	Voltage [V]		approx. 0V	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA	40ms, cont	2 DC
	P17AC		signal too high (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P17A4		signal too low (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
Pressure Regulator 5											
	P2729		circuit continuity, short to gnd	Voltage [V]		approx. 0V	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA	40ms, cont	2 DC
	P17AD		signal too high (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P17A5		signal too low (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P2727		circuit continuity, open circuit	Voltage [V]			pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P2730		circuit continuity, short to power	Voltage [V]		approx. Ubatt	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
Pressure Regulator 6											
	P2738		circuit continuity, short to gnd	Voltage [V]		approx. 0V	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA	40ms, cont	2 DC
	P17AE		signal too high (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P17A6		signal too low (target / actual)	Ampere [mA]		> 35 mA	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P2736		circuit continuity, open circuit	Voltage [V]			pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		
	P2739		circuit continuity, short to power	Voltage [V]		approx. Ubatt	pressure regulator supplied pressure regulator in closed loop		> 3,5V > 0mA		

Porsche AG
PDK - TCU summary table for Sports Cars MY12 / 13

Component/ System	Fault code		Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Parameters		Enable Conditions Value	Time Required	MIL (USA) Illumination
Automatic Transmission											
Shift solenoid MV1	P0973		circuit continuity, short to gnd	Voltage [V]		approx. 0V	Highside voltage		>4V	40ms, cont	2 DC
	P0974		circuit continuity, short to power	Voltage [V]		approx. Ubatt	Highside voltage		>4V	40ms, cont	
	P0754		circuit continuity, open circuit	Voltage [V]			Highside voltage		>4V	40ms, cont	
Shift solenoid MV2	P0976		circuit continuity, short to gnd	Voltage [V]		approx. 0V	Highside voltage		>4V	40ms, cont	2 DC

Porsche AG
PDK - TCU summary table for Sports Cars MY12 / 13

Component/ System	Fault code		Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Parameters		Enable Conditions Value	Time Required	MIL (USA) Illumination
Automatic Transmission											
	P0977		circuit continuity, short to power	Voltage [V]		approx. Ubatt	Highside voltage		>4V	40ms, cont	
	P0759		circuit continuity, open circuit	Voltage [V]			Highside voltage		>4V	40ms, cont	
Battery Voltage	P1752		too low	Voltage [V]		<7V	Enginespeed		>400 1/min	120 ms, cont	2 DC
	P0562		too low	Voltage [V]		>7V <9V	Enginespeed		>400 1/min	2500 ms, cont	
	P0563		too high	Voltage [V]		>16V	Jumpstart		not active	1000 ms, cont	
Pressure Regulator Supply Voltage (1)	P1830		short to gnd	Voltage [V]		<0,05V	Battery voltage		>7V	40ms, cont	2 DC
	P1838		short to power	Voltage [V]		>4V	Battery voltage Only during initialisation		>7V	40ms	
Pressure Regulator Supply Voltage (2)	P1831		short to gnd	Voltage [V]		<1,7V	Battery voltage		>7 V	40ms, cont	2 DC
	P1839		short to power	Voltage [V]		>4V	Battery voltage Only during initialisation		>7V	40ms	
	P1841		open circuit	Voltage [V]			Battery voltage		>7V	40ms, cont	

Porsche AG
PDK - TCU summary table for Sports Cars MY12 / 13

Component/ System	Fault code		Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Parameters		Enable Conditions Value	Time Required	MIL (USA) Illumination
Automatic Transmission											
Pressure Regulator Supply Voltage (3)	P1832		short to gnd	Voltage [V]		<1,7V	Battery voltage		>7V	40ms, cont	2 DC
	P183A		short to power	Voltage [V]		>4V	Battery voltage Only during initialisation		>7V	40ms	
	P1842		open circuit	Voltage [V]			Battery voltage		>7V	40ms, cont	
Sensor Supply 5V	P170A		too high	Voltage [V]		>5,5 V	Battery voltage		>7V	50ms, cont	2 DC
	P1706		too low	Voltage [V]		<4,5 V	Battery voltage		>7V	50ms, cont	
Shiftrods	P1731		duty cycle not in the allowed range	Duty cycle [%]		<10% or >90 %	Sensor supply 5V		ok	40ms, cont	2 DC
	P1732		duty cycle not in the allowed range	Duty cycle [%]		<10% or >90 %	Sensor supply 5V		ok	40ms, cont	
	P1733		duty cycle not in the allowed range	Duty cycle [%]		<10% or >90 %	Sensor supply 5V		ok	40ms, cont	
	P1734		duty cycle not in the allowed range	Duty cycle [%]		<10% or >90 %	Sensor supply 5V		ok	40ms, cont	
Watchdog / Monitoring unit	P0702		ATIC-Error in initialisation				Ignition		ON	0ms, cont	2 DC
	P0702		ATIC80 watchdog				Ignition		ON	0ms, cont	
	P0702		repeated Resets				Ignition		ON	0ms, cont	
	P0702		FS-IST-Error Monitoring Unit				Ignition		ON	0ms, cont	
	P0702		SOPC-Error Monitoring Unit				Ignition		ON	0ms, cont	
	P0702		RAM-Error in MC				Ignition		ON	0ms, cont	
	P0702		ROM-Error in MC				Ignition		ON	0ms, cont	
EPROM	P0605		EPROM/ Flash-Checksum				Ignition		ON	20ms, cont	2 DC
RAM-Test	P0604		RAM-Test				Ignition		ON	10ms, cont	
EEPROM	P0603		EEPROM-Emulation Checksum				Ignition		ON	10ms, cont	
SPI - Bus	P1715		SPI Communication error				Ignition		ON	0ms, cont	
Double Fault	P1760		2 active error reaction which fits not together							40ms, cont	2 DC

Porsche AG
PDK - TCU summary table for Sports Cars MY12 / 13

Component/ System	Fault code		Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Parameters		Enable Conditions Value	Time Required	MIL (USA) Illumination
Automatic Transmission											
Pressure Sensor 1	P0841		Plausibility check (target / actual)	Pressure[bar] Temperature dependent pressure thresholds		Temp; Pressure -30°C; 2,25bar -10°C; 2,05bar 0°C; 2bar 10°C; 2bar 45°C; 2bar 90°C; 2bar	Sensor supply 5V Engine		no fault present running	0,44 ...10,5s, cont	2 DC
	P0843		circuit continuity, short cut to plus	Pressure[bar]		>21bar	Sensor supply 5V		no fault present	0,04 ...10,0s, cont	
	P181A		circuit continuity, open circuit or short cut to gnd	Pressure[bar]		<0,35bar	Sensor supply 5V		no fault present	0,04 ...10,0s, cont	
Pressure Sensor 2	P0846		Plausibility check (target / actual)	Pressure[bar] Temperature dependent pressure thresholds		Temp, Pressure -30°C; 2,25bar -10°C; 2,05bar 0°C; 2bar 10°C; 2bar 45°C; 2bar 90°C; 2bar	Sensor supply 5V Engine		no fault present running	0,44 ...10,5s, cont	2 DC
	P0848		circuit continuity, short cut to plus	Pressure[bar]		>21bar	Sensor supply 5V		no fault present	0,04 ...10,0s, cont	
	P181B		circuit continuity, open circuit or short cut to gnd	Pressure[bar]		<0,35bar	Sensor supply 5V		no fault present	0,04 ...10,0s, cont	
CAN Bus Off	U0073		Bus Off				Battery voltage Ignition Delay after Ignition on Jumpstart		> 7V ON 1500ms not active	0ms, cont	2 DC
Timeout Engine Control	U0100		Timeout Engine Control				Battery voltage CAN Bus connection Delay after Ignition on		> 7V ok 1500ms	10 times CAN cycle time, cont	2 DC
Engine Code	P0614		Data base is not compatible with the engine				CAN Bus connection Communication engine controller output shaft speed		ok ok <10 rpm	2s	2 DC
Failure Substitute function	P1775		Error Reaction(open clutches and disengage gears) cannot be executed				engine speed clutch x related failure clutch y related failure		> 250rpm detected (in filtering) not detected in this DC	9,9s	2 DC
Variant Code	P1749		Country Code is not programmed							immediatel y	1 DC
BIN-file	P174C		incorrect BIN-file							immediatel y	2 DC

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PDK - TCU summary table for Sports Cars MY12 / 13

Component/ System	Fault code		Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Parameters		Enable Conditions Value	Time Required	MIL (USA) Illumination
Automatic Transmission											
NVRAM-BIN Check	P174E		Defective/unplausible NVRAM content at system start	Checksum of NVRAM data			Once after ignition on			immediatel y	2 DC
Slip Clutch 1	P17B7		Slip too high (Enginespeed/ Output speed)	Slip		>500RPM	Status Speed sensor Sensor supply 5V		ok ok	0 ...1,5s, cont	2 DC
	P17B5		Slip too high (Enginespeed/ Output speed)	Slip		>250RPM	Status Speed sensor Sensor supply 5V		ok ok	0 ...1,5s, cont	2 DC
Slip Clutch 2	P17B8		Slip too high (Enginespeed/ Output speed)	Slip		>500RPM	Status Speed sensor Sensor supply 5V		ok ok	0,5 ...1,5s, cont	2 DC
	P17B6		Slip too high (Enginespeed/ Output speed)	Slip		>250RPM	Status Speed sensor Sensor supply 5V		ok ok	0,5 ...1,5s, cont	2 DC
Block Clutch 1	P17BB		Plausibility check (target / actual)	Pressure[bar]		> Touch point pressure +2bar	Clutch Status pressure sensor		is opening ok	0,5 ...10,5s, cont	2 DC
Block Clutch 2	P17BC		Plausibility check (target / actual)	Pressure[bar]		> Touch point pressure + 2bar	Clutch Status pressure sensor		is opening ok	0,5 ...10,5s, cont	2 DC
overspeed clutch 1	P1757		clutch speed too high	overspeed		>12000RPM	Status Speed sensor Sensor supply 8,5V Status engine speed		ok ok ok	10ms, cont	1 DC
overspeed clutch 2	P1758		clutch speed too high	overspeed		>12000RPM	Status Speed sensor Sensor supply 8,5V Status engine speed		ok ok ok	10ms, cont	1 DC
Plausibility Pressure Clutch 1	P17B1		Plausibility check (target / actual)	Pressure[bar]		> Touch point pressure + 1bar	Clutch Status pressure sensor		is open ok	0,04 ...10,0s, cont	2 DC
Plausibility Pressure Clutch 2	P17B2		Plausibility check (target / actual)	Pressure[bar]		> Touch point pressure + 1bar	Clutch Status pressure sensor		is open ok	0,04 ...10,0s, cont	2 DC
Plausibility Pressure Clutch 2	P17B4		Plausibility check during filling up	Pressure[bar]		> 10bar	Clutch Status pressure sensor		is closing ok	0,04 ...10,0s, cont	2 DC
Plausibility Pressure Clutch 1	P17B3		Plausibility check during filling up	Pressure[bar]		> 10bar	Clutch Status pressure sensor		is closing ok	0,04 ...10,0s, cont	2 DC

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PDK - TCU summary table for Sports Cars MY12 / 13

Component/ System	Fault code		Monitor Strategy Description	Malfunction Criteria		Threshold Value	Secondary Parameters		Enable Conditions Value	Time Required	MIL (USA) Illumination
Automatic Transmission											
Plausibility Pressure Clutch 1	P17BD		Plausibility check during overlapping	relation engine speed to target clutch speed		<20%	status speed sensor status engine speed		o.k. o.k.	2,3 - 3,5s, cont	2 DC
Plausibility Pressure Clutch 2	P17BE		Plausibility check during overlapping	relation engine speed to target clutch speed		<20%	status speed sensor status engine speed		o.k. o.k.	2,3 - 3,5s, cont	2 DC
hydraulic Multiplexer	P1767		failure in hydraulic multiplexer	shiftrod position incorrect			status shiftrod sensors		o.k.	30ms, cont	2 DC
gear selector valve 1	P1771		gear selector valve 1 pressurized	shiftrod position incorrect			status shiftrod sensors		o.k.	30ms, cont	2 DC
	P1773		gear selector valve 1 not pressureized or failure in hydraulic multiplexer	shiftrod position incorrect			status shiftrod sensors		o.k.	30ms, cont	
gear selector valve 2	P1772		gear selector valve 2 pressurized	shiftrod position incorrect			status shiftrod sensors		o.k.	30ms, cont	2 DC
	P1774		gear selector valve 2 not pressureized or failure in hydraulic multiplexer	shiftrod position incorrect			status shiftrod sensors		o.k.	30ms, cont	
Ratio Check	P0731		Ratio Check of gears 2, 4, 6 / difference between input speed and output speed				status wheel speed status speed sensor		o.k. o.k.	2,0s, cont	2 DC
	P0732		Ratio Check of gears 1, 3, 5, 7 / difference between input speed and output speed				status wheel speed status speed sensor			2,0s, cont	
Trim values	P186F		adjustment data incompatible							0ms, cont	2 DC

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Shift Solenoid										
S1	P0973	Shift Solenoid "A" Control Circuit Low	Conduction check in ON/OFF solenoid.	Comparison of the signal of solenoid monitor and solenoid driver output	Wrong output signal for more than 100 ms	--	--	100ms 5 times	continous	2 DCY
S1	P0974	Shift Solenoid "A" Control Circuit High								
TV	P2754	Transmission Fluid Cooler Control Circuit Low	Conduction check in ON/OFF solenoid.	Comparison of the signal of solenoid monitor and solenoid driver output	Wrong output signal for more than 100 ms	--	--			
TV	P2755	Transmission Fluid Cooler Control Circuit High								
Pressure Control Solenoid										
SLT	P0748	Pressure Control Solenoid "A" Electrical	Linear solenoid feedback current check	Comparison of target current and Feedback current	Sum of difference of two current >15000	Input AD value Voltage Main Solenoid Switch	< 1333mA > 10.5 V ON	2 times	continous	2 DCY
SLB1	P0778	Pressure Control Solenoid "B" Electrical								
SLC1	P0798	Pressure Control Solenoid "C" Electrical								
SLC2	P2716	Pressure Control Solenoid "D" Electrical								
SLC3	P2725	Pressure Control Solenoid "E" Electrical								
SLC4	P2734	Pressure Control Solenoid "F" Electrical								
SLU	P2759	Torque Converter Clutch Pressure Control Solenoid Control Circuit Electrical								
SLT	P0963	Pressure Control Solenoid "A" Control Circuit High	Input AD value check in every Linear solenoid.	Detection of wrong input AD value	Feedback current > 1333mA (AD value > 1000) for more than 100 ms			100ms 5 times		
SLB1	P0777	Pressure Control Solenoid "B" Stuck On								
SLC1	P0797	Pressure Control Solenoid "C" Stuck On								
SLC2	P2715	Pressure Control Solenoid "D" Stuck On								

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
SLC3	P2724	Pressure Control Solenoid "E" Stuck On								
SLC4	P2733	Pressure Control Solenoid "F" Stuck On								
SLU	P2758	Torque Converter Clutch Pressure Control Solenoid Control Circuit Stuck On								
SLT	P0962	Pressure Control Solenoid "A" Control Circuit Low			Feedback current < 23mA (AD value < 15) for more than 100 ms			100ms 5 times		
SLB1	P0776	Pressure Control Solenoid "B" Performance/Stuck Off								
SLC1	P0796	Pressure Control Solenoid "C" Performance/Stuck Off								
SLC2	P2714	Pressure Control Solenoid "D" Performance/Stuck Off								
SLC3	P2723	Pressure Control Solenoid "E" Performance/Stuck Off								
SLC4	P2732	Pressure Control Solenoid "F" Performance/Stuck Off								
SLU	P2757	Torque Converter Clutch Pressure Control Solenoid Control Circuit Performance/Stuck Off								
Speed sensor										

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Output speed sensor	P0720	Output Speed Sensor Circuit	Electrical check	Detection of wrong input AD value	Voltage < 0.2 Volt (AD value < 45) for more than 100 ms Or (AD value > 545) Voltage > 3.8 Volt for more than 100 ms	Output sensor	Not after failure decision for output sensor "no pulse check"	100ms 5 times	continous	2 DCY
Output speed sensor	P0721	Output Speed Sensor Circuit Range/Performance	No pulse check	Comparison pulse of input revolution and output revolution	No pulse of input sensor more than 12 times	Engine speed No emergency mode Gear engagement condition Range Inhibitor switch Input sensor S1,SLC1,SLC2,SLC3,SLC4,SLB1,SLT (Input rev. / defined current gear ratio) Output sensor	> 400rpm Engage D,S No fault Active No fault >= 300 rpm Not during failure detection or after failure decision for output sensor electrical failure.	500ms		

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Input speed sensor	P0715	Input/Turbine Speed Sensor "A" Circuit	Electrical check	Detection of wrong input AD value	Voltage < 0.2 Volt (AD value < 45) for more than 100 ms Or (AD value > 545) Voltage > 3.8 Volt for more than 100 ms	Input sensor	Not after failure decision for input sensor "no pulse check"	100ms 5 times		
Input speed sensor	P0716	Input/Turbine Speed Sensor "A" Circuit Range/Performance	No pulse check	Comparison pulse of input revolution and output revolution	No pulse of input sensor more than 30 times	Engine speed Output sensor Output speed Input sensor	> 400rpm Active >= 300rpm Not during failure detection or after failure decision for input sensor electrical failure.	500ms		
Inhibitor switch										
Inhibitor switch	P0706	Transmission Range Sensor "A" Circuit Range/Performance	A, B, C and PA signal check in every shift lever position.	Detection of wrong combination of the A, B, C and PA signal	Wrong combination for more than 350 ms	--	--	350 ms		2 DCY
Inhibitor switch	P0709	Transmission Range Sensor "A" Circuit Intermittent		Detection of no signal of the A, B, C and PA signal	All signals lost					
Oil temperature sensor										

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Oil temperature sensor	P0710	Transmission Fluid Temperature Sensor "A" Circuit	Electrical check	Detection of wrong input AD value	Measurementblock shows Value between 30°C and 150°C and doesn't change this value by 5° during 10 min	--	--	100ms	continous	2 DCY
Oil temperature sensor	P0712	Transmission Fluid Temperature Sensor "A" Circuit Low			Measurementblock shows Value of 200°C	--	--	300s		
Oil temperature sensor	P0713	Transmission Fluid Temperature Sensor "A" Circuit High			Measurementblock shows Value of -43°C	--	--	12s		
Microcontroller Hardware										
Flash ROM	P0605	Internal Control Module Read Only Memory (ROM) Error	ROM area check	Comparison of stored checksum value and calculated checksum	Two checksum values are not the same.	--	--	40 s	continous	2 DCY
Random Access Memory	P0604	Internal Control Module Random Access Memory	RAM area check	Comparison of writing data and reading data.	Writing data is different from	--	--			
Safety processor	P0613	TCM Processor	2nd CPU detects miscalculation	Check-calculation of 1st CPU failed	Single reset does not cover problem	--	--	5 s		
CAN										
Bus off	U0001	High Speed CAN Communication Bus	CAN communication check	Detection of communication error	CAN BUS off condition for more than 250 ms	ignition on	> 500 ms	250 ms	continous	2 DCY
ECU no communication	U0100	Lost Communication With ECM/PCM "A"	CAN communication check	Detection of communication error	ECU no communication for more than 50 ms	CAN bus	Active	500ms		
						ignition on	> 500 ms			
ECU malfunction	U0401	Invalid Data Received From ECM/PCM "A"	CAN receive data check	ECU signal data freeze	Data counter not updated	CAN bus ECU communication	Active Active	250ms		

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
Accelerator pedal	U0401	Invalid Data Received From ECM/PCM "A"	CAN receive data check	Detection of error signal	0xFF	CAN bus ECU communication ECU data update	Active Active Active	250ms		
Engine speed	U0401	Invalid Data Received From ECM/PCM "A"	CAN receive data check	Detection of error signal	0xFF					
Engine torque	U0401	Invalid Data Received From ECM/PCM "A"	CAN receive data check	Detection of error signal	0xFF					
ECU wrong level	U0301	Software Incompatibility With ECM/PCM	CAN receive data check	Detection of error signal	Transmission coding is manual transmission code (0Fh) Or Q7: Max torque is not same as one in ATCU Touareg: MO_Code is not same as one in ATCU or MO_Leistung is not same as one in ATCU					
Driver Electrical Oil Pump										
EOP_Driver_Error	P0C2A	Auxiliary Transmission Fluid Pump Motor Stalled	Input AD value check of OPST PWM signal	OPST PWM sends signal "Motor system failure"				500ms	continous	2 DCY
EOP_Driver_Input_AD_Failure	P0C2B	Auxiliary Transmission Fluid Pump Control Module Feedback Signal		OPST PWM sends signal "A/D failure"		OPST PWM Signal sends not "Duty continuously low" or "Duty continuously high"				
EOP_Driver_Motor_lock	P0C2A	Auxiliary Transmission Fluid Pump Motor Stalled		OPST PWM Signal sends "Lock or over rev."						

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
EOP_Driver_OPST_Duty_High	P0C2E	Auxiliary Transmission Fluid Pump Control Module Feedback Signal High		OPST PWM Signal sends "Duty continuously high"						
EOP_Driver_OPST_Duty_Low	P0C2D	Auxiliary Transmission Fluid Pump Control Module Feedback Signal Low		OPST PWM Signal sends "Duty continuously low"						
EOP_Driver_OPST_PWM_wrong	P0C2C	Auxiliary Transmission Fluid Pump Control Module Feedback Signal Range/Performance		OPST PWM Signal sends "PWM Wrong"						
EOP_Driver_SIG_PWM_wrong	P0C29	Auxiliary Transmission Fluid Pump Driver Circuit Performance		OPST PWM sends signal "Motor system failure"						
EOP_Driver_temperature_area_stuck	P0C1D	Auxiliary Transmission Fluid Pump Control Module Internal Temperature Sensor Circuit Range/Performance		OPST PWM Signal sends "Over heat (118~125°C)" or OPST PWM Signal sends "Over heat (>125°C)" and Target EOP revolution = 0[rpm]				900s		
Motor Electrical Oil Pump										
EOP_Motor_Functional_Failure_Hybrid	P0C26	Auxiliary Transmission Fluid Pump Motor Current	Functional diagnosis Hybrid only	Comparison of target an actual EOP Motor revolution		EOP System normal		10s	continous	2DCY
EOP_Motor_Functional_Failure_IdleStop	P0C26	Auxiliary Transmission Fluid Pump Motor Current	Functional diagnosis no Hybrid	Comparison of indicated slip and actual slip with stored values		EOP System normal		10s		

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
EOP_Motor_Temp_Sensor_SC-	P0C1E	Auxiliary Transmission Fluid Pump Control Module Internal Temperature Sensor Circuit Low	Electrical check	Measurement block shows value of 208°C		EOP System normal		5x 1s		
EOP_Motor_temp_sensor_temperature_area_stuck	P0C1D	Auxiliary Transmission Fluid Pump Control Module Internal Temperature Sensor Circuit Range/Performance	Electrical check	EOP Motor temperature > 130 [°C] and Target EOP motor revolution = 0[rpm]		EOP System normal		715s		
Functional lock up control										
Lock up control	P0741	Torque Converter Clutch Circuit Performance/Stuck Off	OFF stuck check.	Comparison of engine rpm and input rpm	Engine rpm – input rpm > -100 rpm for 2s (hybrid only) Engine rpm – input rpm > 100 rpm for 2s	Engine speed Shift Lever Estimated engine torque Revolution sensor SLU target current Model oil temp. Common parameter (see footnote)	> 400 rpm < 4000 rpm D or S >= 0 Nm No back up condition > 1000mA >= 20°C common condition (see footnote)	2 s 6 times	continous	2 DCY
Gear ratio error										
1st gear	P0731	Gear 1 Incorrect Ratio	Input and output rpm signal check. Separate error memory for each gear.	Comparison of indicated slip and actual slip with stored values	1. abs(input rev. – output rev. x other gear ratio) < (0.04 x other gear ratio x output rev.) for more than 1s 2. Slip differences > (0.20 x current gear ratio x output rev.) for more	Engine speed Output rev. Shift Lever Brake slip difference of output speed(In case ABS valid) Revolution sensor	> 400rpm > 250rpm D or S off difference < 10% No back up condition	1s 12 times cumulative	continous	2 DCY
2nd gear	P0732	Gear 2 Incorrect Ratio								
3rd gear	P0733	Gear 3 Incorrect Ratio								
4th gear	P0734	Gear 4 Incorrect Ratio								
5th gear	P0735	Gear 5 Incorrect Ratio								
6th gear	P0729	Gear 6 Incorrect Ratio								

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TCU table for Cayenne V6 MY 11

Component / System	Fault Code	SAE Text	Monitor Strategy	Malfunction Criteria	Threshold Value	Secondary Parameters	Enable Conditions	Monitor Time Length	Frequency of Checks	MIL Illum.
7th gear **8th gear**	P076F P1810	Gear 7 Incorrect Ratio Gear 8 Incorrect Ratio			than 1 s	Model oil temp. Common parameter (see footnote)	>= 20°C common condition (see footnote)			

Cayenne , MY 2011 =>

Diagnosis information - Rear-differential lock

000214..... 1
0007F3..... 2
0007F3..... 3
0007F4..... 4
0007F6..... 5
000807..... 6
000808..... 7
000809..... 8
00080A..... 9
00080B..... 10
00080B..... 11
00080E..... 12
00080E..... 13
000945..... 14
000968..... 15
000969..... 16
00096C..... 17
003FD8..... 18
003FDA..... 19
003FDB..... 20
003FDC..... 21
003FE1..... 22

Diagnostic information - rear-differential lock

Power supply

ⓘ NOTE

Visual inspection : In the following fault-finding section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connections on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE

Control unit replacement: Before replacement, the ground connections, power supply and plug connections on the control unit must be checked and to be found OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on transfer box control unit

Possible fault causes

- ♦ Battery empty or faulty
- ♦ Fuse faulty
- ♦ Short circuit to ground
- ♦ Open circuit
- ♦ Three-phase generator faulty
- ♦ Control unit faulty

Possible fault effects

- ♦ The functions available in the rear-axle differential lock control unit cannot be activated

Diagnostic information - rear-differential lock

Potentiometer 1, rear-differential lock

ⓘ NOTE
This fault relates to the signal for potentiometer >1< (sensor 1), which is integrated as a unit with potentiometer >2< (sensor 2) and the temperature sensor in the servo motor.

ⓘ NOTE
Visual inspection: In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connection on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on rear-differential lock control unit

Possible fault causes

- ♦ Short circuit to B+
- ♦ Open circuit/short circuit to ground
- ♦ Potentiometer faulty
- ♦ Rear-differential lock control unit faulty

Diagnostic information - Rear-differential lock

Valve

ⓘ NOTE
Visual inspection: In the next fault finding section, please check first that the affected >contacts < of the control unit plug connection and the >contacts< of the plug connection on the valve are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on transfer box control unit
- Engine running
- Selector lever position >P<
- Engage rear-differential lock

Possible fault causes

- Short circuit to ground
- Open circuit in line
- Valve
- **Control module** faulty

Diagnostic information - rear-differential lock

Potentiometer 2, rear-differential lock

ⓘ NOTE
This fault relates to the signal for potentiometer >2< (sensor 2), which is integrated as a unit with potentiometer >1< (sensor 1) and the temperature sensor in the servo motor.

ⓘ NOTE
Visual inspection: In the next troubleshooting section, please check first that the affected > contacts< of the transfer box control unit plug connection and the >contacts< of the plug connection on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on rear-differential lock control unit

Possible fault causes

- ♦ Short circuit to B+
- ♦ Open circuit/short circuit to ground
- ♦ Potentiometer faulty
- ♦ Rear-differential lock control unit faulty

Diagnostic information - Rear-differential lock

Power supply for sensors

ⓘ NOTE

This fault relates to the power supply for the sensors: potentiometer >1< (sensor 1) and potentiometer >2< (sensor 2) as well as the servo motor temperature sensor, which are integrated as a unit in the servo motor.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Rear-differential control unit internal function test

Possible fault causes

♦ >Upper limit value exceeded<,
Voltage supply line (5 V) short circuit to B+ (12 V)
♦ >Lower limit value exceeded<,
Voltage supply line (5 V) short circuit to ground
♦ Rear-differential lock control unit faulty

Affected contacts on the rear-differential lock control unit connector

♦ Potentiometer 1 / 2
♦ Power supply, 5 V temperature sensor

Diagnostic information - Axle-differential lock

Control unit malfunction

This fault causes the power/voltage supply to the servo motor >A/B<, brakes >A/B<, sensors and CAN communication to switch off.

ⓘ NOTE
Before replacing the control unit, the ground connections, power supply and plug connections on the control unit must be checked.

After the test drive, read out the fault memory again with the **PIWIS Tester**. Additional fault sources that could damage the control unit are to be recognized and remedied.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

ⓘ NOTE
The internal function test must be completed successfully before the functions stored in the transverse lock control unit can be activated.

- Ignition on
- Transverse lock control unit internal function test

Possible fault causes

♦ >Implausible signal<, a fault being detected in the computer during the internal function test in the transfer box control unit.

Possible fault effects

♦ The functions available in the axle-differential lock control unit cannot be activated

Diagnostic information - rear-differential lock

Power supply to rear-differential lock servo motor

ⓘ NOTE
Visual inspection: In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connection on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on rear-differential lock control unit
- Engine running
- Selector-lever position >P<
- Engage rear-differential lock

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit in line
- ♦ Control unit faulty

Diagnostic information - rear-differential lock

Voltage/ground supply for servo motor brake

ⓘ NOTE

Visual inspection: In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connection on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE

Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on transfer box control unit
- Engine running
- Selector-lever position >P<
- Engage rear-differential lock

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit in line
- ♦ Control unit faulty

Diagnostic information - rear-differential lock

Voltage/ground supply for servo motor brake

ⓘ NOTE

Visual inspection: In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connection on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE

Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on transfer box control unit
- Engine running
- Selector-lever position >P<
- Engage rear-differential lock

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit in line
- ♦ Control unit faulty

Diagnostic information - rear-differential lock

Servo motor temperature sensor

ⓘ NOTE
The servo motor temperature sensor is integrated with potentiometer >1< (sensor 1) and potentiometer >2< (sensor 2) as a unit in the servo motor.

ⓘ NOTE
Visual inspection: In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connection on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on rear-differential lock control unit

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit in line
- ♦ Servo motor temperature sensor faulty

Diagnostic information - rear-differential lock

Motor or position sensor polarity reversal

Diagnostic conditions

- Ignition on

Possible fault causes

- If work was carried out previously on the electric lines:
  - ♦ Motor lines connected the wrong way around
  - ♦ Position sensor lines connected the wrong way around

- If **NO** work was carried out previously on the electric lines:
  - ♦ Wrong rear-differential lock control unit (**see** ⓘ)

ⓘ INFORMATION

- **This only applies to Panamera vehicles from model year 2014!**

The 2 digits in the 10th + 11th places of the 11-digit spare part number are decisive:
- 970.618.303.**03** ⇒ Wrong rear-differential lock control unit
- 970.618.303.**04** (or higher) ⇒ **Correct** rear-differential lock control unit

Diagnostic information - Axle-differential lock

Axle-differential lock mechanical fault

ⓘ NOTE
After successful read out, the fault memory must be erased and then read out again after satisfying the diagnostic conditions below.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Transverse lock control unit internal function test
- Vehicle stationary
- Engine running
- Brake actuated
- Selector lever position >N<
- Via the left rocker switch on the >selector switch (running gear control unit)<, alternately select the functions >LOW RANGE< and >axle-differential lock LOW RANGE 100%< (see Driver's Manual)

Possible fault causes

♦ >Mechanical fault<, mechanical wear in axle-differential lock

Diagnostic information - Axle-differential lock

Axle-differential lock

ⓘ NOTE
After successful read out, the fault memory must be erased and then read out again after satisfying the diagnostic conditions below.

ⓘ NOTE
Visual inspection : In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connections on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/wires.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Please observe the coding of the control unit. After the test drive, read out the fault memory again with the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and remedied.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Transverse lock control unit internal function test
- Vehicle stationary
- Engine running
- Brake actuated
- Selector lever position >N<
- Via the left rocker switch on the >>selector switch (running gear control unit)< <, alternately select the functions >LOW RANGE< and >axle-differential lock LOW RANGE 100%< (see Driver's Manual)

Possible fault causes

♦ >Mechanical fault<, mechanical wear in axle-differential lock

Diagnostic information - Axle-differential lock

Current sensor in control unit

ⓘ NOTE
The current sensor is integrated in the transverse lock control unit and can not be separately replaced.

ⓘ NOTE
Visual inspection : In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connections on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/wires.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Please observe the coding of the control unit. After the test drive, read out the fault memory again with the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and remedied.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Transverse lock control unit internal function test

Possible fault causes

♦ Implausible signal

Diagnostic information - Rear-differential lock

Valve

ⓘ NOTE
Visual inspection: In the next fault finding section, please check first that the affected >contacts < of the control unit plug connection and the >contacts< of the plug connection on the valve are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on transfer box control unit
- Engine running
- Selector lever position >P<
- Engage rear-differential lock

Possible fault causes

- ♦ Short circuit to ground
- ♦ Open circuit in line
- ♦ Valve
- ♦ **Control module** faulty

Diagnostic information - rear-differential lock

Servo motor brake

ⓘ NOTE
Visual inspection: In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connection on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on transfer box control unit
- Engine running
- Selector-lever position >P<
- Engage rear-differential lock

Possible fault causes

- ♦ Short circuit to ground
- ♦ Open circuit in line
- ♦ Rear-differential lock control unit faulty

Diagnostic information - rear-differential lock

Motor or position sensor polarity reversal

Diagnostic conditions

- Ignition on

Possible fault causes

♦ Motor lines connected the wrong way around
♦ Position sensor lines connected the wrong way around

Diagnostic information - Axle-differential lock

Control unit faulty

ⓘ NOTE
Before replacing the control unit, the ground connections, power supply and plug connections on the control unit must be checked.

After the test drive, read out the fault memory again using the Porsche PIWIS Tester II. Additional causes of faults that could damage the transverse lock control unit should be detected and remedied.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Transverse lock control unit internal function test

Possible fault causes

♦ Axle-differential lock control unit faulty

Possible fault effects

♦ The functions available in the axle-differential lock control unit cannot be activated

Diagnostic information - Axle-differential lock

Control unit faulty

ⓘ NOTE
Before replacing the control unit, the ground connections, power supply and plug connections on the control unit must be checked.

After the test drive, read out the fault memory again using the Porsche PIWIS Tester II. Additional causes of faults that could damage the transverse lock control unit should be detected and remedied.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Transverse lock control unit internal function test

Possible fault causes

♦ Axle-differential lock control unit faulty

Possible fault effects

♦ The functions available in the axle-differential lock control unit cannot be activated

Diagnostic information - Axle-differential lock

Control unit faulty

ⓘ NOTE
Before replacing the control unit, the ground connections, power supply and plug connections on the control unit must be checked.

After the test drive, read out the fault memory again using the Porsche PIWIS Tester II. Additional causes of faults that could damage the transverse lock control unit should be detected and remedied.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Transverse lock control unit internal function test

Possible fault causes

♦ Axle-differential lock control unit faulty

Possible fault effects

♦ The functions available in the axle-differential lock control unit cannot be activated

Diagnostic information - rear-differential lock

Power supply to rear-differential lock servo motor

ⓘ NOTE
Visual inspection: In the next troubleshooting section, please check first that the affected > contacts< of the control unit plug connection and the >contacts< of the plug connection on the servo motor are neither damaged nor corroded. Remove any soiling or corrosion/oxidation. Replace damaged parts/lines.

ⓘ NOTE
Control unit replacement: Before replacing a control unit, the ground connections, power supply and plug connections on the control unit must be checked to make sure that they are OK. Always check the control unit coding. After the test drive, read out the fault memory again using the **PIWIS Tester**. Additional causes of faults that could damage the control unit should be detected and corrected.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on rear-differential lock control unit
- Engine running
- Selector-lever position >P<
- Engage rear-differential lock

Possible fault causes

- ♦ Short circuit to B+
- ♦ Short circuit to ground
- ♦ Open circuit in line
- ♦ Control unit faulty

Diagnostic information - Axle-differential lock

Control unit faulty

ⓘ NOTE

Before replacing the control unit, the ground connections, power supply and plug connections on the control unit must be checked.

After the test drive, read out the fault memory again using the Porsche PIWIS Tester II. Additional causes of faults that could damage the transverse lock control unit should be detected and remedied.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Transverse lock control unit internal function test

Possible fault causes

♦ Axle-differential lock control unit faulty

Possible fault effects

♦ The functions available in the axle-differential lock control unit cannot be activated

Cayenne , MY 2011 =>

Diagnosis information - All-wheel drive

000001 1
000002 2
000010 3
000011 4
000012 5
000013 6
000101 7
000102 8
000103 9
000104 10
000105 11
000106 12
000107 13
000108 14
000109 15
000110 16
000111 17
000112 18
000113 19
000114 20
000115 21
000116 22
000117 23
000118 24
000119 25
000120 26
000121 27
000122 28
000123 29
000124 30
000125 31
001001 32
C11000 33
C11001 34
C11002 35
C11003 36
C11004 37
C11005 38
C11006 39

C11017..... 40

000001

Diagnosis information All-wheel final drive

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

- Voltage drop below Threshold (5V)
- **Supply voltage** Too high
- **Supply voltage** too low

Possible fault causes

- Signal implausible
- **Supply voltage** Battery

Fault effects

- No all-wheel drive function

Diagnosis information All-wheel final drive

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

- Voltage drop below Threshold (5V)
- **Supply voltage** Too high
- **Supply voltage** too low

Possible fault causes

- Signal implausible
- **Supply voltage** Battery

Fault effects

- No all-wheel drive function

Diagnosis information All-wheel final drive

000010 Travel sensor Servo motor Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test
- **Servo motor** at standstill

Possible fault causes

♦Short circuit to B+/ground or open circuit in the line
♦Faulty Final stage
♦System self test Fault

Guided Fault Finding
♦Control unit faulty

Diagnostic information - all-wheel final drive

000011 Servo motor actuator faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill (engine torque hold)
- **Clutch** in run-on mode

Possible fault causes

♦ Corrosion on all-wheel drive servo motor plug connection
♦ Short circuit to B+/ground or open circuit in the line
♦ System self-diagnosis fault

Guided Fault Finding

♦ Check all-wheel drive servo motor plug connection for corrosion or damage
♦ If the plug connection is OK, the all-wheel drive control unit (PTM) is faulty and must be replaced.

Diagnosis information All-wheel final drive

000012 Actuator Servo motor Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test
- Clutch Active
- **Servo motor** at standstill

Possible fault causes
♦Short circuit to B+/ground or open circuit in the line
♦System self test Fault

Guided Fault Finding
♦Control unit faulty

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnostic information - all-wheel final drive

000101-000109, 000013 Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** active
- **Servo motor** at standstill

Possible fault causes
♦ Short circuit to B+/ground or open circuit in the line
♦ Fault during system self-diagnosis during the starting process

Fault effects
♦ No all-wheel drive function
♦ Fault message in instrument cluster: *all-wheel drive failure, rear-wheel drive only, continued driving possible*

Guided Fault Finding

♦ If the fault code is currently displayed and cannot be deleted, the all-wheel drive control unit is faulty

♦ If the fault code is only stored in the fault memory and can be deleted, no further action is required

Diagnosis information All-wheel final drive

000110 Engine torque Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test
- Clutch position loss

Possible fault causes

♦Fault Stop
♦Fault **Travel sensor**
♦Fault Stop Position/s

Guided Fault Finding
♦**Transfer box**

Diagnosis information All-wheel final drive

000111 Plausibility check Servo motor Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test
- Clutch position loss

Possible fault causes

♦Fault Stop
♦Fault **Travel sensor**
♦Fault Stop Position/s

Guided Fault Finding
♦Control unit faulty
♦**Transfer box**

Diagnosis information All-wheel final drive

000112 Armature resistance Servo motor Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test

Possible fault causes

♦ Armature circuit resistance Signal implausible

Guided Fault Finding
♦Control unit faulty

Diagnosis information All-wheel final drive

000113 Calibration Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test

Possible fault causes

♦ Mechanical or electrical fault during initial calibration

Guided Fault Finding
♦ Drive link test Forced calibration perform
♦ Drive link test Faulty **Transfer box** Faulty

Diagnosis information All-wheel final drive

000114 Transfer box End of life reached

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test

Possible fault causes

♦ Detection of a disc packet at max. wear limit

Guided Fault Finding
♦ **Transfer box** Faulty

Diagnosis information All-wheel final drive

000115 Classification Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test

Possible fault causes

♦ Fault in area Commissioning

Guided Fault Finding
♦ Perform control unit commissioning procedure under Maintenance/repairs

Diagnostic information - all-wheel final drive

000116 Offset compensation faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 9 V ... 16 V
- Ignition on
- **All-wheel drive control unit (PTM)** internal function test

Possible fault causes

♦ Fault in determining the offset current in the control unit.

Fault effects

- No all-wheel drive function

Diagnostic information - all-wheel final drive

000117 Service life, all-wheel drive

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 9 V ... 16 V
- Ignition on
- **All-wheel drive control unit (PTM)** internal function test

Possible fault causes

♦ End of the design service life of the **all-wheel drive control unit (PTM)**

Fault finding information

- Replace **all-wheel drive control unit (PTM)**

Diagnostic information - all-wheel final drive

000118 Control unit temperature - above limit value

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 9 V ... 16 V
- Ignition on
- **All-wheel drive control unit (PTM)** internal function test

Possible fault causes

♦ Overtemperature of **all-wheel drive control unit (PTM)**

Fault finding information

- Allow **all-wheel drive control unit (PTM)** to cool down

Diagnostic information - all-wheel final drive

000120/000119/000118 Clutch temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** open

Possible fault causes

♦ Overtemperature
♦ Corrosion on all-wheel drive servo motor plug connection

Fault effects

- For P000118 + P000119 Control unit overtemperature fault
=> Check wheel speed sensors => Control unit faulty
- In case of U000120 **Clutch** open, no function of all-wheel final drive
=> Check wheel speed sensors => Control unit faulty

Diagnostic information - all-wheel final drive

000120/000119/000118 Clutch temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test
- **Clutch** open

Possible fault causes

♦ Overtemperature
♦ Corrosion on all-wheel drive servo motor plug connection

Fault effects

- For P000118 + P000119 Control unit overtemperature fault
=> Check wheel speed sensors => Control unit faulty
- In case of U000120 **Clutch** open, no function of all-wheel final drive
=> Check wheel speed sensors => Control unit faulty

Diagnosis information All-wheel final drive

U000121 Oil service life reached

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

► Oil change to Workshop Manual perform

000122

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

Diagnosis information All-wheel final drive

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

- Voltage drop below Threshold (5V)
- **Supply voltage** Too high
- **Supply voltage** too low

Possible fault causes

- Signal implausible
- **Supply voltage** Battery

Fault effects

- No all-wheel drive function

Diagnosis information All-wheel final drive

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

- Voltage drop below Threshold (5V)
- **Supply voltage** Too high
- **Supply voltage** too low

Possible fault causes

- Signal implausible
- **Supply voltage** Battery

Fault effects

- No all-wheel drive function

Diagnosis information - All-wheel drive

PSM activation by All-wheel drive

ⓘ INFORMATION

This entry in the fault memory is used only for information purposes.
It is stored in order to be able to follow the behaviour of the vehicle/control unit.

♦ The reason for PSM activation is also stored in the All-wheel drive fault memory.
► Follow the description for the fault that caused PSM activation.

♦ If no other faults are stored in the All-wheel drive fault memory, check to see if a clutch class was coded.
► See Actual values ▶ A_General ▶ A60_Offset class, transfer gear
ⓘ Required offset class = same letter as on the final-drive housing of the front axle
► See Actual values ▶ A_General ▶ A90_Offset, transfer gear
ⓘ Required Increasing class = same letter as on the final-drive housing of the front axle

► If actual value = >no class<, then:
► Enter the clutch class using the PIWIS Tester
▶ Drive links/checks ▶ Set classification memory

Diagnostic conditions

• Ignition on

Fault setting condition(s)

♦ Faulty All-wheel drive, or an operating state that requires protection for the All-wheel drive.

Fault effects

♦ PSM was forcibly switched on by the All-wheel drive control unit.
♦ For documentation purposes, this is stored in the fault memory when the fault occurs.
♦ This switch-on request is also set if PSM was not switched off.
♦ It is only cancelled again if the engine was restarted and the ca use of the fault is no longer present.

Diagnostic information - all-wheel final drive

001001 Invalid control-unit signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 9 V ... 16 V
- Ignition on
- **All-wheel drive control unit (PTM)** internal function test

Possible fault causes

♦ Violation of the signal value range

Fault finding information

- This is a note
- No action is necessary
- Check **all-wheel drive control unit (PTM)** for further faults

Diagnosis information All-wheel final drive

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

- Voltage drop below Threshold (5V)
- **Supply voltage** Too high
- **Supply voltage** too low

Possible fault causes

- Signal implausible
- **Supply voltage** Battery

Fault effects

- No all-wheel drive function

Diagnosis information All-wheel final drive

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

- Voltage drop below Threshold (5V)
- **Supply voltage** Too high
- **Supply voltage** too low

Possible fault causes

- Signal implausible
- **Supply voltage** Battery

Fault effects

- No all-wheel drive function

Diagnosis information All-wheel final drive

011002/011003 Temperature lower limit value / upper limit value implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Possible fault causes

- Overtemperature
- Signal implausible

Fault effects

- No all-wheel drive function

Guided Fault Finding
♦Control unit faulty

Diagnosis information All-wheel final drive

011002/011003 Temperature lower limit value / upper limit value implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Possible fault causes

- Overtemperature
- Signal implausible

Fault effects

- No all-wheel drive function

Guided Fault Finding
♦Control unit faulty

Diagnostic information - all-wheel final drive

C11004 Data record

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 9 V ... 16 V
- Ignition on
- **All-wheel drive control unit (PTM)** internal function test

Possible fault causes

♦ **All-wheel drive control unit (PTM)** incorrectly coded or not coded

Diagnostic information - overall all-wheel drive system

C11005 Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel drive control unit (PTM)** internal function test

Possible fault causes

♦ Corrosion on all-wheel drive servo motor plug connection
♦ Fault in monitoring of the overall system
♦ Timeout in the stop tests
♦ Broken mechanism suspected due to angle monitoring

Guided Fault Finding

♦ Check all-wheel drive servo motor plug connection for corrosion or damage
♦ If the plug connection is OK, the all-wheel drive control unit (PTM) is faulty and must be replaced.

Fault effects

- No all-wheel drive function
- PSM is activated by the all-wheel drive control unit (PTM)

Diagnosis information All-wheel final drive

U011006 Version coding Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 9 V ... 16 V
- Ignition on
- **All-wheel control unit (PTM)** Internal function test

Possible fault causes

♦ **Vehicle type** incorrectly coded or not coded

Diagnosis information All-wheel final drive

000113 Calibration Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **All-wheel control unit (PTM)** Internal function test

Possible fault causes

♦ Mechanical or electrical fault during initial calibration

Guided Fault Finding
♦ Drive link test Forced calibration perform
♦ Drive link test Faulty **Transfer box** Faulty

Cayenne , MY 2011 =>

Diagnosis information - PDCC

000001..... 1
000002..... 2
000003..... 3
000005..... 4
000010..... 5
000011..... 6
000100..... 7
000101..... 8
000102..... 9
000103..... 10
000104..... 11
000105..... 12
000106..... 13
000107..... 14
000108..... 15
000109..... 16
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000151..... 52
000200..... 53
000201..... 54
000202..... 55
000203..... 56
000204..... 57
000205..... 58
000210..... 59
000211..... 60
000212..... 61
000213..... 62
000214..... 63
000215..... 64
000220..... 65
000221..... 66
000222..... 67
000223..... 68
000224..... 69
000225..... 70
000230..... 71
000231..... 72
000232..... 73
000233..... 74
000234..... 75
000235..... 76
000240..... 77
000241..... 78

000242 79
000243 80
000244 81
000245 82
001000 83
001001 84
001002 85
001003 86
001004 87
001005 88
001006 89
001007 90
001100 91
001200 92
001201 93
001202 94
001203 95
001204 96
001205 97
002000 98
002001 99
002002 100
002003 101
002004 102
002010 103
002011 104
002012 105
002013 106
002014 107
002015 108
C11000 109
C11001 110
C11004 111
C11005 112

000001

Diagnosis information - PDCC control unit

Vehicle different VIN

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **PDCC control unit** off from a different Vehicle installed

Fault effects

♦ Limited function

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Unexpected system reset

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect fastening of the **Control module** PDCC
- Short Power supply Open circuit

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Power supply Control module

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Overvoltage (>16.5V) for longer than 30 s
♦ Undervoltage (< 9.5V) present for longer than 30 s
Terminal 15 or Terminal 30
♦ **Control module** Faulty

Fault effects

♦ Limited function

Diagnosis information - PDCC control unit

Power supply Control module

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Overvoltage (>16.5V) for longer than 30 s
♦ Undervoltage (< 9.5V) present for longer than 30 s
Terminal 15 or Terminal 30
♦ **Control module** Faulty

Fault effects

♦ Limited function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Fault effects

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Diagnosis information - PDCC control unit

Pressure sensor

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- Engine running

Possible fault causes

- Short circuit to B+/ground or open circuit in the line
- **Valve block** Faulty
- **Control module** PDCC Faulty
- Pressure Outside the valid value range

Fault effects

- No function

Diagnosis information - PDCC control unit

Control module PDCC Oil level sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- Oil level too low

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Control module PDCC Oil level sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- Oil level too low

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Control module PDCC Oil level sensor

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

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Possible fault causes

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Fault effects

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Diagnosis information - PDCC control unit

Control module PDCC Oil level sensor

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Fault effects

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Diagnosis information - PDCC control unit

Control module PDCC Faulty

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Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

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Diagnosis information - PDCC control unit

Control module PDCC Faulty

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Diagnosis information - PDCC control unit

Valve

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Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Valve block** Faulty
- **Control module** PDCC Faulty

Fault effects

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Diagnosis information - PDCC control unit

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Fault effects

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Diagnosis information - PDCC control unit

Control module PDCC Faulty

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Possible fault causes

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Diagnosis information - PDCC control unit

Control module PDCC Faulty

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Possible fault causes

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- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Valve block FA

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines of the **Valve block**
- Pressure valve Faulty
- **Pressure sensor** Front axle chamber 1 Faulty
- **Pressure sensor** Front axle chamber 2 Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Valve block FA

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines of the **Valve block**
- Pressure valve Faulty
- **Pressure sensor** Front axle chamber 1 Faulty
- **Pressure sensor** Front axle chamber 2 Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Valve block FA

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines of the **Valve block**
- Pressure valve Faulty
- **Pressure sensor** Front axle chamber 1 Faulty
- **Pressure sensor** Front axle chamber 2 Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Valve block FA

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines of the **Valve block**
- Pressure valve Faulty
- **Pressure sensor** Front axle chamber 1 Faulty
- **Pressure sensor** Front axle chamber 2 Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Valve block RA

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines of the **Valve block**
- Pressure valve Faulty
- **Pressure sensor** Rear axle chamber 1 Faulty
- **Pressure sensor** Rear axle chamber 2 Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Valve block RA

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines of the **Valve block**
- Pressure valve Faulty
- **Pressure sensor** Rear axle chamber 1 Faulty
- **Pressure sensor** Rear axle chamber 2 Faulty

Fault effects

- No function

000232

Diagnosis information - PDCC control unit

Valve block RA

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines of the **Valve block**
- Pressure valve Faulty
- **Pressure sensor** Rear axle chamber 1 Faulty
- **Pressure sensor** Rear axle chamber 2 Faulty

Fault effects

- No function

000233

Diagnosis information - PDCC control unit

Valve block RA

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines of the **Valve block**
- Pressure valve Faulty
- **Pressure sensor** Rear axle chamber 1 Faulty
- **Pressure sensor** Rear axle chamber 2 Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Pressure relief valve

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- Valve Faulty
- Valve Final stage not calibrated

Fault effects

- No function

000241

Diagnosis information - PDCC control unit

Pressure relief valve

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- Valve Faulty
- Valve Final stage not calibrated

Fault effects

- No function

000242

Diagnosis information - PDCC control unit

Pressure relief valve

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- Valve Faulty
- Valve Final stage not calibrated

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure relief valve

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- Valve Faulty
- Valve Final stage not calibrated

Fault effects

- No function

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Diagnosis information - PDCC control unit

Hydraulic system Fault read in again

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **Hydraulic system** Fault was read in again after delete .

Fault effects

♦ No function

Diagnosis information - PDCC control unit

Pressure build-up **Front axle** insufficient

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- **Hydraulic pump** failure
- **Valve block Front axle** Faulty
- Hydraulic fluid too low
- **Pivoting motor Front axle** Mechanical fault
- **Front anti-roll bar** Mechanical fault
- **Power distributor** Faulty

Fault effects

- No function

001002

Diagnosis information - PDCC control unit

Pressure build-up Rear axle insufficient

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- **Hydraulic pump** failure
- **Valve block** Rear axle Faulty
- Hydraulic fluid too low
- **Pivoting motor** Rear axle Mechanical fault
- **Rear anti-roll bar** Mechanical fault
- **Power distributor** Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure build-up **Front axle** insufficient

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- **Hydraulic pump** failure
- **Valve block Front axle** Faulty
- Hydraulic fluid too low
- **Pivoting motor Front axle** Mechanical fault
- **Front anti-roll bar** Mechanical fault
- **Power distributor** Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure relief valve

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- Valve Faulty
- Valve Final stage not calibrated

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure build-up **Front axle** insufficient

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- **Hydraulic pump** failure
- **Valve block Front axle** Faulty
- Hydraulic fluid too low
- **Pivoting motor Front axle** Mechanical fault
- **Front anti-roll bar** Mechanical fault
- **Power distributor** Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure build-up Rear axle insufficient

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- **Hydraulic pump** failure
- **Valve block** Rear axle Faulty
- Hydraulic fluid too low
- **Pivoting motor** Rear axle Mechanical fault
- **Rear anti-roll bar** Mechanical fault
- **Power distributor** Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

Pressure build-up Rear axle insufficient

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- **Hydraulic pump** failure
- **Valve block** Rear axle Faulty
- Hydraulic fluid too low
- **Pivoting motor** Rear axle Mechanical fault
- **Rear anti-roll bar** Mechanical fault
- **Power distributor** Faulty

Fault effects

- No function

Diagnosis information - PDCC control unit

permissible roll angle exceeded

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

- while driving

Possible fault causes

- Values Vehicle level , **Body acceleration sensor** , **Lateral-acceleration sensor**, **Sensor** Steering angle and **Vehicle speed** for plausibility Check
- **Pivoting motor** front axle or **Pivoting motor** rear axle Mechanical fault
- in the following **Control module** , Fault can be present:
  - **PSM control module**
  - **Steering wheel electronics control module**

Fault effects

- No function

Diagnosis information - PDCC control unit

Low-pressure test Rear axle : Pressure too high

Diagnostic conditions

- Low-pressure test performed

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Pressure valve** Rear axle
♦ **Pressure sensor** Chamber 1
♦ **Pressure sensor** Chamber 2

Diagnosis information - PDCC control unit

Low-pressure test Rear axle : Pressure too low

Diagnostic conditions

- Low-pressure test performed

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Pressure valve** Rear axle
- **Pressure sensor** Chamber 1
- **Pressure sensor** Chamber 2
- **Hydraulic pump** Faulty
- **Pivoting motor** Mechanical fault

001202

Diagnosis information - PDCC control unit

Low-pressure test **Front axle** : Pressure too high

Diagnostic conditions

- Low-pressure test performed

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Pressure valve Front axle**
♦ **Pressure sensor** Chamber 1
♦ **Pressure sensor** Chamber 2

Diagnosis information - PDCC control unit

Low-pressure test **Front axle** : Pressure too low
Diagnostic conditions

- Low-pressure test performed

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Pressure valve Front axle**
- **Pressure sensor** Chamber 1
- **Pressure sensor** Chamber 2
- **Hydraulic pump** Faulty
- **Pivoting motor** Mechanical fault

Diagnosis information - PDCC control unit

Low-pressure test -High-pressure test **Front axle** : **Valve block**

Diagnostic conditions

- Stationary test performed

Possible fault causes

♦ **Pressure sensor** Chamber 1
♦ **Pressure sensor** Chamber 2
♦ **Direction valve Front axle** stuck

Fault effects

♦ Limited function

001205

Diagnosis information - PDCC control unit

Low-pressure test - High-pressure test Rear axle : **Valve block**

Diagnostic conditions

- Stationary test performed

Possible fault causes

♦ **Pressure sensor** Chamber 1
♦ **Pressure sensor** Chamber 2
♦ **Direction valve** Rear axle stuck

Fault effects

♦ Limited function

Diagnosis information - PDCC control unit

High-pressure test not OK

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ High-pressure test was not or not completed without faults.

Fault effects

♦ No function

002001

Diagnosis information - PDCC control unit

High-pressure test Level

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ Reached during High-pressure test level not

Fault effects

♦ Limited function

002002

Diagnosis information - PDCC control unit

High-pressure test Level

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ Reached during High-pressure test level not

Fault effects

♦ Limited function

002003

Diagnosis information - PDCC control unit

High-pressure test Level

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ Reached during High-pressure test level not

Fault effects

♦ Limited function

002004

Diagnosis information - PDCC control unit

High-pressure test Level

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ Reached during High-pressure test level not

Fault effects

♦ Limited function

002010

Diagnosis information - PDCC control unit

High pressure not reached

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ at of the High-pressure test Pressure not reached

Fault effects

♦ Limited function

002011

Diagnosis information - PDCC control unit

High-pressure test no Pressure reduction

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ to of the High-pressure test Pressure not decreased

Fault effects

♦ Limited function

002012

Diagnosis information - PDCC control unit

High pressure not reached

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ at of the High-pressure test Pressure not reached

Fault effects

♦ Limited function

002013

Diagnosis information - PDCC control unit

High-pressure test no Pressure reduction

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ to of the High-pressure test Pressure not decreased

Fault effects

♦ Limited function

Diagnosis information - PDCC control unit

High-pressure test Pressure

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ not calibrated
♦ At the start of the High-pressure test Pressure incorrect

Fault effects

♦ Limited function

Diagnosis information - PDCC control unit

High-pressure test Pressure

Diagnostic conditions

- High-pressure test performed

Possible fault causes

♦ not calibrated
♦ At the start of the High-pressure test Pressure incorrect

Fault effects

♦ Limited function

Diagnosis information - PDCC control unit

Power supply Control module

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Overvoltage (>16.5V) for longer than 30 s
♦ Undervoltage (< 9.5V) present for longer than 30 s
Terminal 15 or Terminal 30
♦ **Control module** Faulty

Fault effects

♦ Limited function

Diagnosis information - PDCC control unit

Power supply Control module

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Overvoltage (>16.5V) for longer than 30 s
♦ Undervoltage (< 9.5V) present for longer than 30 s
Terminal 15 or Terminal 30
♦ **Control module** Faulty

Fault effects

♦ Limited function

C11004

Diagnosis information - PDCC control unit

Control module incorrect or **not coded**

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Control module** PDCC incorrect or **not coded**

Fault effects

♦ Limited function

C11005

Diagnosis information - PDCC control unit

Control module PDCC Faulty

NOTE
The fault code is >present< only when the engine is running or when the vehicle is being driven.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

- Incorrect interpretation in the **Control module**
- **Control module** PDCC Faulty

Fault effects

- Limited function

Cayenne , MY 2011 =>

Diagnosis information - Level control (PASM)

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000115..... 5
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000120..... 7
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0001B1 52
0001B3 53
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0001C8 59
0001D1 60
0001D3 61
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000001

Diagnosis information - Level control

no or incorrect basic setting/adaptation

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Initialization not completed

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Vibration damper

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Vibration damper** off
- Current **Shock absorber strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Level-control control unit (PASM) - sporadic valve fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- The control unit diagnoses electrical faults in the valves of the spring struts or their lines, but cannot assign this fault to any specific spring-strut valve.

⇒ Suspected component: **Level-control control unit (PASM)**

Fault effects

♦ No function restriction for SUV
♦ No function restriction for Panamera from model year E
♦ Red warning message and limp-home mode for Panamera < model year E

000155

Diagnosis information **- Level control**

Control module Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

♦ **Level-control control unit (PASM)** No function

000156

Diagnosis information **- Level control**

Control module Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

♦ **Level-control control unit (PASM)** No function

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

000159

Diagnosis information **- Level control**

Control module Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

♦ **Level-control control unit (PASM)** No function

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Valve Spring strut

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Spring strut** off
- Current Valve **Spring strut**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

000191

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

000193

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

000198

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

0001A1

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

0001B1

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

0001C1

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information **- Level control**

Valve Additional volume

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve Additional volume off
- Current Valve Additional volume
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information - Level control

Switch-over valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary
- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Switch-over valve** Faulty

Fault effects

♦ **Switch-over valve** Function restriction
♦ **Level-control control unit (PASM)** Function restriction

Diagnosis information - Level control

Switch-over valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary
- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Switch-over valve** Faulty

Fault effects

♦ **Switch-over valve** Function restriction
♦ **Level-control control unit (PASM)** Function restriction

Diagnosis information - Level control

Switch-over valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary
- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Switch-over valve** Faulty

Fault effects

♦ **Switch-over valve** Function restriction
♦ **Level-control control unit (PASM)** Function restriction

Diagnosis information - Level control

Switch-over valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary
- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Switch-over valve** Faulty

Fault effects

♦ **Switch-over valve** Function restriction
♦ **Level-control control unit (PASM)** Function restriction

Diagnosis information - Level control

Switch-over valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary
- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Switch-over valve** Faulty

Fault effects

♦ **Switch-over valve** Function restriction
♦ **Level-control control unit (PASM)** Function restriction

Diagnosis information - Level control

Switch-over valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary
- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Switch-over valve** Faulty

Fault effects

♦ **Switch-over valve** Function restriction
♦ **Level-control control unit (PASM)** Function restriction

Diagnosis information - Level control

Switch-over valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary
- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Switch-over valve** Faulty

Fault effects

♦ **Switch-over valve** Function restriction
♦ **Level-control control unit (PASM)** Function restriction

Diagnosis information - Level control

Switch-over valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary
- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Switch-over valve** Faulty

Fault effects

♦ **Switch-over valve** Function restriction
♦ **Level-control control unit (PASM)** Function restriction

Diagnosis information - Level control

Vent solenoid valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- **Vent solenoid valve** off
- Current **Vent solenoid valve**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Vent solenoid valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- **Vent solenoid valve** off
- Current **Vent solenoid valve**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Vent solenoid valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- **Vent solenoid valve** off
- Current **Vent solenoid valve**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnosis information - Level control

Vent solenoid valve

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- **Vent solenoid valve** off
- Current **Vent solenoid valve**
  - ♦ < 0.28 A
  - ♦ > 1.61 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

Diagnostic information - leveling system

Compressor ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle standstill

Fault setting condition(s)

- Ignition on
- **Compressor** ON time PWM > 50% for more than 10 min.

Fault effects

♦ **Leveling system control unit (PASM)** does not function

Diagnosis information - Level control

Relay Compressor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Relay **Compressor** to
- Current Relay **Compressor** > 4,34 A

Fault effects

♦ **Level-control control unit (PASM)** Function restriction
♦ Warning light

000210

Diagnosis information **- Level control**

Valve **Vibration damper** ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Shock absorber strut** ON time PWM > 40% via 10 min

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

000211

Diagnosis information **- Level control**

Valve **Vibration damper** ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Shock absorber strut** ON time PWM > 40% via 10 min

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

000212

Diagnosis information **- Level control**

Valve **Vibration damper** ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Shock absorber strut** ON time PWM > 40% via 10 min

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

000213

Diagnosis information **- Level control**

Valve **Vibration damper** ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- Valve **Shock absorber strut** ON time PWM > 40% via 10 min

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information - Level control

Compressor Switch-over valve ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- **Switch-over valve** ON time PWM > 75% via 10 min

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information - Level control

Compressor Switch-over valve ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- **Switch-over valve** ON time PWM > 75% via 10 min

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

000220

Diagnosis information **- Level control**

Vent solenoid valve ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle is stationary

Fault setting condition(s)

- Ignition on
- **Vent solenoid valve** ON time PWM > 20% via 10 min

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

000230

Diagnosis information - Level control

Sensor Vehicle level, **Body acceleration sensor** Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Sensor** Vehicle level, **Body acceleration sensor**
  - ♦ > 5.25 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level **Body acceleration sensor** Short circuit to ground

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Sensor** Vehicle level **Body acceleration sensor**
  - ♦ < 4.75 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Signal Short circuit to B+
- Signal Open circuit
- Power supply Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

000233

Diagnosis information - Level control

Sensor Vehicle level

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Signal Short circuit to ground
- Signal Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

000235

Diagnosis information - Level control

Sensor Vehicle level, **Body acceleration sensor** Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Sensor** Vehicle level, **Body acceleration sensor**
  - ♦ > 5.25 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

000236

Diagnosis information - Level control

Sensor Vehicle level **Body acceleration sensor** Short circuit to ground

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Sensor** Vehicle level **Body acceleration sensor**
  - ♦ < 4.75 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Signal Short circuit to B+
- Signal Open circuit
- Power supply Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

000238

Diagnosis information - Level control

Sensor Vehicle level

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Signal Short circuit to ground
- Signal Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Signal Short circuit to B+
- Signal Open circuit
- Power supply Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Signal Short circuit to ground
- Signal Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

000240

Diagnosis information - Level control

Sensor Vehicle level, **Body acceleration sensor** Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Sensor** Vehicle level, **Body acceleration sensor**
  - ♦ > 5.25 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level **Body acceleration sensor** Short circuit to ground

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Sensor** Vehicle level **Body acceleration sensor**
  - ♦ < 4.75 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Signal Short circuit to B+
- Signal Open circuit
- Power supply Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Signal Short circuit to ground
- Signal Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Body acceleration sensor** > 4,55 V
- Short circuit to B+
- Open circuit Ground

Fault effects

♦ Limited function **Level-control control unit (PASM)**

for G1 as of model year E:
♦ none Warning light

for all other model lines and models:
♦ Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Short circuit to ground

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Ignition on

for G1:
● Voltage **Body acceleration sensor** < 1,00 V

for all other model lines and models:
● Voltage **Body acceleration sensor** < 0.45 V

● Short circuit to ground
● Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function

for G1 as of model year E:
♦ none Warning light

for all other model lines and models:
♦ Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Body acceleration sensor** > 4,55 V
- Short circuit to B+
- Open circuit Ground

Fault effects

♦ Limited function **Level-control control unit (PASM)**

for G1 as of model year E:
♦ none Warning light

for all other model lines and models:
♦ Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Short circuit to ground

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Ignition on

for G1:
● Voltage **Body acceleration sensor** < 1,00 V

for all other model lines and models:
● Voltage **Body acceleration sensor** < 0.45 V

● Short circuit to ground
● Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function

for G1 as of model year E:
♦ none Warning light

for all other model lines and models:
♦ Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Body acceleration sensor** > 4,55 V
- Short circuit to B+
- Open circuit Ground

Fault effects

♦ Limited function **Level-control control unit (PASM)**

for G1 as of model year E:
♦ none Warning light

for all other model lines and models:
♦ Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Short circuit to ground

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

for G1:
- Voltage **Body acceleration sensor** < 1,00 V

for all other model lines and models:
- Voltage **Body acceleration sensor** < 0.45 V

- Short circuit to ground
- Open circuit

Fault effects

♦ **Level-control control unit (PASM)** No function

for G1 as of model year E:
♦ none Warning light

for all other model lines and models:
♦ Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Body acceleration sensor** > 4,55 V
- Short circuit to B+
- Open circuit Ground

Fault effects

♦ Limited function **Level-control control unit (PASM)**

for G1 as of model year E:
♦ none Warning light

for all other model lines and models:
♦ Warning light yellow

Diagnosis information - Level control

Pressure transmitter Signal lead Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Voltage **Pressure transmitter** Signal lead
  - ♦ > 4.75 V

Possible fault causes

- Short circuit to B+ Signal lead **Pressure transmitter**
- Clogged/pinched air line between spring strut and valve block

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Pressure transmitter Signal lead Open circuit, Short circuit to ground

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Body acceleration sensor**
  - ♦ < 0.125V
- Open circuit Signal
- Open circuit Power supply

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Sensor Vehicle level Mechanical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Vehicle speed** >7 km/h (4 mph)
- No cornering
- no Inclination
- Distortion detected

►**Connecting link for anti-roll bar** bent

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

000263

Diagnosis information - Level control

Vehicle Inclination , Mechanical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Vehicle speed** >7 km/h (4 mph)
- Measured value : **Front axle** > Rear axle or
  Rear axle > **Front axle**

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

000267

Diagnosis information - Level control

Signal **Door**

NOTE
The Signal **Door** / Rear lid comes from **Rear-end electronics**

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Short circuit to B+/ground or open circuit in the line

Fault effects

♦ **Level-control control unit (PASM)** No function

000268

Diagnosis information - Level control

Signal **Door**

NOTE
The Signal **Door** / Rear lid comes from **Rear-end electronics**

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Short circuit to B+/ground or open circuit in the line

Fault effects

♦ **Level-control control unit (PASM)** No function

000270

Diagnosis information **- Level control**

Transport mode Active

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Transport mode Active

Fault effects

♦ **Level-control control unit (PASM)** No function

Diagnosis information - Level control

Body acceleration sensor Implausible signal

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- no Vehicle is stationary
- no movement Signal **Body acceleration sensor**

Fault effects

- **Level-control control unit (PASM)** No function
- Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Implausible signal

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- no Vehicle is stationary
- no movement Signal **Body acceleration sensor**

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Body acceleration sensor Implausible signal

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- no Vehicle is stationary
- no movement Signal **Body acceleration sensor**

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Supply voltage** at least 30 Second(s) < 10 V (C11000)
- **Supply voltage** at least 30 Second(s) > 16 V (C11001)
- **Supply voltage** briefly > 16 V or < 10 V (000274)

for G1 as of model year E:
- **Supply voltage** at least 60 Second(s) < 10 V (C11000)
- **Supply voltage** at least 60 Second(s) > 16 V (C11001)
- **Supply voltage** briefly > 16 V or < 10 V (000274)

Fault effects

♦ Level control not possible

000275

Diagnosis information - Level control

Sensor Vehicle level Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Signal **Sensor** Vehicle level f > 1,000 Hz

Fault effects

♦**Level-control control unit (PASM)** Limp-home 1 or 7 (in case of failure of several sensor signals)
♦Warning light yellow (emergency mode 1)
♦Warning light red (emergency mode 7)

Possible fault causes

- Signal lead **Sensor** Vehicle level Short circuit to B+
- **Sensor** Vehicle level Faulty

000276

Diagnosis information - Level control

Sensor Vehicle level Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Sensor** Vehicle level
  f < 588 Hz
- **Sensor** Vehicle level Faulty

Fault effects

- **Level-control control unit (PASM)** No function
- Warning light yellow

000277

Diagnosis information - Level control

Sensor Vehicle level Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Signal **Sensor** Vehicle level f > 1,000 Hz

Fault effects

♦**Level-control control unit (PASM)** Limp-home 1 or 7 (in case of failure of several sensor signals)
♦Warning light yellow (emergency mode 1)
♦Warning light red (emergency mode 7)

Possible fault causes

- Signal lead **Sensor** Vehicle level Short circuit to B+
- **Sensor** Vehicle level Faulty

Diagnosis information - Level control

Sensor Vehicle level Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Sensor** Vehicle level
  f < 588 Hz
- **Sensor** Vehicle level Faulty

Fault effects

- **Level-control control unit (PASM)** No function
- Warning light yellow

000279

Diagnosis information - Level control

Sensor Vehicle level Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Signal **Sensor** Vehicle level f > 1,000 Hz

Fault effects

♦**Level-control control unit (PASM)** Limp-home 1 or 7 (in case of failure of several sensor signals)
♦Warning light yellow (emergency mode 1)
♦Warning light red (emergency mode 7)

Possible fault causes

- Signal lead **Sensor** Vehicle level Short circuit to B+
- **Sensor** Vehicle level Faulty

Diagnosis information - Level control

Sensor Vehicle level Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Sensor** Vehicle level
  f < 588 Hz
- **Sensor** Vehicle level Faulty

Fault effects

- **Level-control control unit (PASM)** No function
- Warning light yellow

00027B

Diagnosis information - Level control

Sensor Vehicle level Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Signal **Sensor** Vehicle level f > 1,000 Hz

Fault effects

♦**Level-control control unit (PASM)** Limp-home 1 or 7 (in case of failure of several sensor signals)
♦Warning light yellow (emergency mode 1)
♦Warning light red (emergency mode 7)

Possible fault causes

- Signal lead **Sensor** Vehicle level Short circuit to B+
- **Sensor** Vehicle level Faulty

Diagnosis information - Level control

Sensor Vehicle level Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Sensor** Vehicle level
  f < 588 Hz
- **Sensor** Vehicle level Faulty

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

00027D

Diagnosis information **- Level control**

Pressure transmitter Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Actual pressure not suitable CLOSED Setpoint pressure

Fault effects

♦ **Level-control control unit (PASM)** No function

00027E

Diagnostic information - leveling system

Compressor ON time exceeded

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Vehicle standstill

Fault setting condition(s)

- Ignition on
- **Compressor** ON time PWM > 50% for more than 10 min.

Fault effects

♦ **Leveling system control unit (PASM)** does not function

000280

Diagnosis information **- Level control**

Temperature sensor Compressor Signal lead Open circuit Short circuit to B+

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Temperature sensor Compressor** Signal lead 2.9 V

Fault effects

- **Level-control control unit (PASM)** No function
- Warning light yellow

000281

Diagnosis information **- Level control**

Temperature sensor Compressor Open circuit¸ Short circuit to ground

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Voltage **Temperature sensor Compressor** 0.10 V

Fault effects

- **Level-control control unit (PASM)** No function
- Warning light yellow

000283

Diagnosis information - Level control

Control position not adjustable, vehicle too high or too low

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Control position is reached after 12 s not - downward control
- Control position is reached after 25 s not - upward control from accumulator
- Control position is reached after 60 s not - upward control from environment

Fault effects

- **Level control** No level adjustment
- Warning light red
- **Level control** Limp-home 7

Possible fault causes

- Pressure retaining valves, valves in valve block
- Pneumatic lines not connected correctly
- Compressor relay power supply fuse faulty
- Leak in the pneumatic system
- Leak in the compressor (in combination with fault codes 000320 and 000328)

Diagnosis information - Level control

Control position not adjustable, vehicle too high or too low

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Control position is reached after 12 s not - downward control
- Control position is reached after 25 s not - upward control from accumulator
- Control position is reached after 60 s not - upward control from environment

Fault effects

♦ **Level control** No level adjustment
♦ Warning light red
♦ **Level control** Limp-home 7

Possible fault causes

- Pressure retaining valves, valves in valve block
- Pneumatic lines not connected correctly
- Compressor relay power supply fuse faulty
- Leak in the pneumatic system
- Leak in the compressor (in combination with fault codes 000320 and 000328)

000285

Diagnosis information **- Level control**

Leak in air system **Level control**

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Leak in air system to 5 x switch-on

Fault effects

♦ **Level-control control unit (PASM)** Limited function
♦ Warning light yellow

Diagnosis information - Level control

Service mode not completed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Control unit is in diagnostic mode
- Calibration cancelled

Fault effects

♦ **Level control** - Level control deactivated
♦ Warning light red

Measures

- Switch off ignition / Switch on ignition
- Fault memory delete
- If available, perform drive link test >Complete diagnostic session<

Diagnosis information - Level control

Ventilation not possible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Compressor** , **Direction valve** or **Vent solenoid valve** Faulty

Fault effects

- **Level-control control unit (PASM)** No function
- Warning light yellow

Diagnosis information - Level control

System filling not possible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Direction valve** Faulty
- **Compressor** Faulty
- Leaks in the **System**

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light yellow

Diagnosis information - Level control

Supply voltage too low No function **Level control** in run-on mode

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Battery positive voltage too low

Fault effects

♦No level control in run-on mode

Diagnosis information - Level control

Level control switched off, mode Car jack

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

Mode Car jack manual switched

Fault effects

♦ **Level control** No function

Diagnosis information - Level control

Valve Additional volume Gear change implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- 5 x **ON** Valve Additional volume
- Voltage Valve Additional volume
  < 12.5 V
  > 14.5 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information - Level control

Valve Additional volume Gear change implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- 5 x **ON** Valve Additional volume
- Voltage Valve Additional volume
  < 12.5 V
  > 14.5 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information - Level control

Valve Additional volume Gear change implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- 5 x **ON** Valve Additional volume
- Voltage Valve Additional volume
  < 12.5 V
  > 14.5 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information - Level control

Valve Additional volume Gear change implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- 5 x **ON** Valve Additional volume
- Voltage Valve Additional volume
  < 12.5 V
  > 14.5 V

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Warning light red

Diagnosis information - Level control

Level control implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Engine running

- **Door** and **Cover** Closed
- **Level control** Active

Level control from ► Vehicle not lowering
Level control Open ► Vehicle not lifting

Fault effects

♦ **Level-control control unit (PASM)** No function
♦ Yellow warning message in instrument cluster

Possible fault causes

- Pneumatic lines connected incorrectly
- Leak in the compressor (in combination with fault codes 000284 and 000328)
- Faulty fuse for compressor relay supply
- Faulty compressor relay

Diagnosis information - Level control

Supply voltage continuously too low

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

für G1 bis Modelljahr D:
● 5 x Fault code 000274 in **Level-control control unit (PASM)**

for all other model lines and models:
● 10 x Fault code 000274 in **Level-control control unit (PASM)**

Fault effects

♦ Limited function **PASM control module**

♦ for G1 as of model year E: Warning light yellow
♦ for all other model lines and models: Warning light red

Diagnosis information - Level control

Sensor Vehicle level Outside the valid value range

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

for G1:
- Signal from >70% Open <30% or from <30% Open >70%

for all other model lines and models:
- Signal from >90% Open <10% or from <10% Open >90%

Fault effects

- Limited function **Level-control control unit (PASM)**
- Warning light yellow
- Warning light red

Diagnosis information - Level control

Sensor Vehicle level Outside the valid value range

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

for G1:
- Signal from >70% Open <30% or from <30% Open >70%

for all other model lines and models:
- Signal from >90% Open <10% or from <10% Open >90%

Fault effects

- Limited function **Level-control control unit (PASM)**
- Warning light yellow
- Warning light red

Diagnosis information - Level control

Sensor Vehicle level Outside the valid value range

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

for G1:
- Signal from >70% Open <30% or from <30% Open >70%

for all other model lines and models:
- Signal from >90% Open <10% or from <10% Open >90%

Fault effects

- Limited function **Level-control control unit (PASM)**
- Warning light yellow
- Warning light red

Diagnosis information - Level control

Sensor Vehicle level Outside the valid value range

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

for G1:
- Signal from >70% Open <30% or from <30% Open >70%

for all other model lines and models:
- Signal from >90% Open <10% or from <10% Open >90%

Fault effects

- Limited function **Level-control control unit (PASM)**
- Warning light yellow
- Warning light red

000326

Diagnosis information **- Level control**

Leak in air system **Level control**

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Leak in air system to 1 x switch-on

Fault effects

♦ **Level-control control unit (PASM)** Limited function
♦ Warning light yellow

Diagnosis information - Level control

Limp-home PASM

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

► No signal/communication via CAN from :
- **Lateral acceleration sensor** ⇒ **PSM control module**
- Brake pressure ⇒ **PSM control module**
- **Vehicle speed** Steering angle ⇒ **Steering wheel electronics control module**
- **Vehicle speed** ⇒ **PSM control module**
- Starter ⇒ **Front-end electronics** / **DME control module**
- **Engine speed** ⇒ **DME control module**
- Ignition on ⇒ **Front-end electronics**
- Vehicle level **Front axle** or Rear axle and **Body acceleration sensor** ⇒ **Level-control control unit (PASM)**
- 2 **Body acceleration sensor** ⇒ **Level-control control unit (PASM)**

Fault effects

♦ **Level-control control unit (PASM)** No function , Limited function
♦ Warning light yellow

Diagnosis information - Level control

Compressor Leak

For vehicles with chassis numbers:

970: xxx-xxx
92A: xxx-xxx

simultaneous occurrence of the fault memory entries:

- 000284 Control position not adjustable, vehicle too high or too low
- 000320 Level control implausible
- 000328 System air quantity too low

requires that the ideal power supply and activation of the compressor must be ensured.

Tests:

- Fuse, compressor PASM / LF
- Relay, compressor PASM / LF
- Wiring, compressor PASM / LF

If no function restriction can be determined,
a leak in the compressor unit must be assumed and it must be replaced.

Diagnosis information - Level control

System air quantity too low

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- System air quantity below the nominal filling quantity

Fault effects

♦ **Level-control control unit (PASM)** No function

Possible fault causes

- Leak in the pneumatic system
- Stuck bypass valve
- Leak in the compressor (in combination with fault codes 000284 and 000320)

Diagnostic information - level control

Extreme level reached; vehicle too high/too low

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- At least 3 level sensors must function without faults

Possible fault causes

♦ One axle is higher/lower than the defined height limit

Fault 000334 (vehicle too high) is set if the following deviation from normal level is measured:
Front axle: > 50 mm (2 inches)
Rear axle: > 50 mm (2 inches)

Fault 000335 (vehicle too low) is set if the following deviation from normal level is measured:
Front axle: < -60 mm (-2.4 inches)
Rear axle: < -60 mm (-2.4 inches)

ⓘ An extreme level can also result from an air spring system filling process, for example.
► To correct to normal level, perform the "height sensor component test" procedure under "Maintenance/repairs" in vehicle diagnostics.

Fault effects

♦ Warning light red

Setpoints

The faults for extreme-level detection are set to passive as soon as the measured values lie within the tolerance and are simultaneously at least 10 mm (0.4 inch) away from the respective limit value:
000334: Front axle/rear axle < 40 mm (1.6 inches)
000335: Front axle/rear axle > -50 mm (-2 inches)

Diagnostic information - level control

Extreme level reached; vehicle too high/too low

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- At least 3 level sensors must function without faults

Possible fault causes

♦ One axle is higher/lower than the defined height limit

Fault 000334 (vehicle too high) is set if the following deviation from normal level is measured:
Front axle: > 50 mm (2 inches)
Rear axle: > 50 mm (2 inches)

Fault 000335 (vehicle too low) is set if the following deviation from normal level is measured:
Front axle: < -60 mm (-2.4 inches)
Rear axle: < -60 mm (-2.4 inches)

ⓘ An extreme level can also result from an air spring system filling process, for example.
► To correct to normal level, perform the "height sensor component test" procedure under "Maintenance/repairs" in vehicle diagnostics.

Fault effects

♦ Warning light red

Setpoints

The faults for extreme-level detection are set to passive as soon as the measured values lie within the tolerance and are simultaneously at least 10 mm (0.4 inch) away from the respective limit value:
000334: Front axle/rear axle < 40 mm (1.6 inches)
000335: Front axle/rear axle > -50 mm (-2 inches)

000341

Diagnosis information - Level-control control unit (PASM)

Switch Loading aid - Electrical fault

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Signal implausible (only redundant switch contact is enabled or lifting/lowering without redundant switch contact is enabled, see wiring diagram)
- Switch Loading aid actuated continuously (stuck or actuated for > 60 s)
- Switch Loading aid Faulty

Fault effects

- Limited function Switch Loading aid

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

000343

Diagnosis information - Level-control control unit (PASM)

Switch Loading aid - Electrical fault

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Signal implausible (only redundant switch contact is enabled or lifting/lowering without redundant switch contact is enabled, see wiring diagram)
- Switch Loading aid actuated continuously (stuck or actuated for > 60 s)
- Switch Loading aid Faulty

Fault effects

- Limited function Switch Loading aid

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

000344

Diagnosis information - Level-control control unit (PASM)

Switch Loading aid - LED electrical fault

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- Switch Loading aid Faulty

Fault effects

- Limited function Switch Loading aid

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - Level-control control unit (PASM)

Switch Loading aid - LED electrical fault

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- Switch Loading aid Faulty

Fault effects

- Limited function Switch Loading aid

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

000346

Diagnosis information - Level-control control unit (PASM)

Switch Loading aid - LED electrical fault

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- Switch Loading aid Faulty

Fault effects

- Limited function Switch Loading aid

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

000347

Diagnosis information - Level-control control unit (PASM)

Switch Loading aid - Electrical fault

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Signal implausible (only redundant switch contact is enabled or lifting/lowering without redundant switch contact is enabled, see wiring diagram)
- Switch Loading aid actuated continuously (stuck or actuated for > 60 s)
- Switch Loading aid Faulty

Fault effects

- Limited function Switch Loading aid

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

000352

Diagnosis information - Level-control control unit (PASM)

Vehicle Identification Number (VIN) implausible

Diagnostic conditions

♦ Ignition on

Possible fault causes

♦ **Level-control control unit (PASM)** off for a different Vehicle installed

Fault effects

♦ Limited function

000353

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

Diagnosis information - Level control

Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Supply voltage** at least 30 Second(s) < 10 V (C11000)
- **Supply voltage** at least 30 Second(s) > 16 V (C11001)
- **Supply voltage** briefly > 16 V or < 10 V (000274)

for G1 as of model year E:
- **Supply voltage** at least 60 Second(s) < 10 V (C11000)
- **Supply voltage** at least 60 Second(s) > 16 V (C11001)
- **Supply voltage** briefly > 16 V or < 10 V (000274)

Fault effects

♦ Level control not possible

Diagnosis information - Level control

Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Supply voltage** at least 30 Second(s) < 10 V (C11000)
- **Supply voltage** at least 30 Second(s) > 16 V (C11001)
- **Supply voltage** briefly > 16 V or < 10 V (000274)

for G1 as of model year E:
- **Supply voltage** at least 60 Second(s) < 10 V (C11000)
- **Supply voltage** at least 60 Second(s) > 16 V (C11001)
- **Supply voltage** briefly > 16 V or < 10 V (000274)

Fault effects

♦ Level control not possible

C11005

Diagnosis information **- Level control**

Control module Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

♦ **Level-control control unit (PASM)** No function

C11006

Diagnosis information - Level-control control unit (PASM)

Control module not coded

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Level-control control unit (PASM) not coded**

Fault effects

♦ Limited function

C11007

Diagnosis information - Level-control control unit (PASM)

Control module Calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Level-control control unit (PASM)** Calibration incorrect or not carried out

Fault effects

♦ Limited function

C11008

ⓘ INFORMATION

No information is available at present for this fault code.

Please contact your importer if necessary.

Cayenne , MY 2015 =>

Diagnosis information - Tire Pressure Monitoring (TPM)

00C058 1
800302 2
800304 3
800401 4
800404 5
800405 6
800406 7
800407 8
800408 9
802101 10
802102 11
802103 12
802201 13
802202 14
802203 15
802301 16
802302 17
802303 18
802401 19
802402 20
802403 21
803001 22
803002 23
803003 24
803004 25
803005 26
803006 27
803007 28
803008 29
803009 30
80300A 31
80300B 32
80300C 33
803100 34
C11005 35
C11006 36
C11007 37
C12000 38
C12018 39

C1201F..... 40
C12096..... 41
C1209D..... 42
D01100..... 43
D01200..... 44

00C058

Diagnosis information - Tire pressure monitoring system control module

Production mode Active

Diagnostic conditions

- Ignition on

Possible fault causes

♦ Production mode Active

Fault setting condition(s)

- Production mode Active switched

800302

Diagnosis information - Tire pressure monitoring system control module

Data record **Instrument cluster** implausible

Diagnostic conditions

● Wheel set selection performed / Modification loading

Possible fault causes

● Setpoint pressure **Instrument cluster** implausible :
Outside the valid value range (**1.7** ... **5.1** bar)
● Setpoint pressure **Instrument cluster** not present

ⓘ This fault indicates an incorrect data record in the instrument cluster or an instrument cluster with incorrect parameter assignment.

Fault effects

♦ none or Limited function

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Minimum pressure for Race track mode below limit

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended period of non-use), setting of the fault entry after occurrence of the fault cause can take up to 2 minutes.
- Selection Race track mode **Instrument cluster**

Possible fault causes

- Minimum pressure for Race track mode below limit (Tyre pressure < 1.8 bar)

Fault effects

♦ Warning light **Tire Pressure Monitoring (TPM)**
♦ Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Fault during Learning phase

Diagnostic conditions

- Wheel set selection **Instrument cluster**
- teaching while driving / during Vehicle is stationary

Possible fault causes

- Wheels not detected or not detected as own wheels (less than 4 wheel IDs are received)
- Too many different wheel electronics units are sending data (more than 4 wheel IDs are received)
- The wheel electronics are not allocated to the respective wheel position within the learning phase of 9 minutes. (No direction of rotation detected, insufficient signal strength on the left/right side of the vehicle, faulty wheel electronics)

Fault effects

♦ Learning phase not completed / none **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Fault during Learning phase

Diagnostic conditions

- Wheel set selection **Instrument cluster**
- teaching while driving / during Vehicle is stationary

Possible fault causes

- Wheels not detected or not detected as own wheels (less than 4 wheel IDs are received)
- Too many different wheel electronics units are sending data (more than 4 wheel IDs are received)
- The wheel electronics are not allocated to the respective wheel position within the learning phase of 9 minutes. (No direction of rotation detected, insufficient signal strength on the left/right side of the vehicle, faulty wheel electronics)

Fault effects

♦ Learning phase not completed / none **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Fault during Learning phase

Diagnostic conditions

- Wheel set selection **Instrument cluster**
- teaching while driving / during Vehicle is stationary

Possible fault causes

- Wheels not detected or not detected as own wheels (less than 4 wheel IDs are received)
- Too many different wheel electronics units are sending data (more than 4 wheel IDs are received)
- The wheel electronics are not allocated to the respective wheel position within the learning phase of 9 minutes. (No direction of rotation detected, insufficient signal strength on the left/right side of the vehicle, faulty wheel electronics)

Fault effects

♦ Learning phase not completed / none **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Fault during Learning phase

Diagnostic conditions

- Wheel set selection **Instrument cluster**
- teaching while driving / during Vehicle is stationary

Possible fault causes

- Wheels not detected or not detected as own wheels (less than 4 wheel IDs are received)
- Too many different wheel electronics units are sending data (more than 4 wheel IDs are received)
- The wheel electronics are not allocated to the respective wheel position within the learning phase of 9 minutes. (No direction of rotation detected, insufficient signal strength on the left/right side of the vehicle, faulty wheel electronics)

Fault effects

♦ Learning phase not completed / none **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Fault during Learning phase

Diagnostic conditions

- Wheel set selection **Instrument cluster**
- teaching while driving / during Vehicle is stationary

Possible fault causes

- Wheels not detected or not detected as own wheels (less than 4 wheel IDs are received)
- Too many different wheel electronics units are sending data (more than 4 wheel IDs are received)
- The wheel electronics are not allocated to the respective wheel position within the learning phase of 9 minutes. (No direction of rotation detected, insufficient signal strength on the left/right side of the vehicle, faulty wheel electronics)

Fault effects

♦ Learning phase not completed / none **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Fault during Learning phase

Diagnostic conditions

- Wheel set selection **Instrument cluster**
- teaching while driving / during Vehicle is stationary

Possible fault causes

- Wheels not detected or not detected as own wheels (less than 4 wheel IDs are received)
- Too many different wheel electronics units are sending data (more than 4 wheel IDs are received)
- The wheel electronics are not allocated to the respective wheel position within the learning phase of 9 minutes. (No direction of rotation detected, insufficient signal strength on the left/right side of the vehicle, faulty wheel electronics)

Fault effects

♦ Learning phase not completed / none **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics Faulty

NOTE
Pollution of the environment if wheel electronics are not disposed of correctly.
♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

● while driving

Possible fault causes

● **Wheel electronics** Faulty

NOTE
If **all 4 wheel electronics** are entered as a fault code, the cause may be a fault in the **TPM control unit**.

Fault effects

♦ No monitoring of the tire pressure for the affected wheel
♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics - no Signal

NOTE
Pollution of the environment if wheel electronics are not disposed of correctly.
♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

- Ignition on
- while driving , After a waiting time of approx. **10 min**

Possible fault causes

- none **Wheel electronics** installed
- incorrect component(s) **Wheel electronics** installed
- **Wheel electronics** Faulty

NOTE
If **all 4 wheel electronics** are entered as a fault code, the cause may be a fault in the **TPM control unit**.

Fault effects

♦ No monitoring of the tire pressure for the affected wheel
♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics - Overtemperature

NOTE
Pollution of the environment if wheel electronics are not disposed of correctly.
♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

● while driving

Possible fault causes

● **Temperature Wheel electronics** > 120 °C (°F) (reversible)
● **Wheel electronics** Faulty

Fault effects

♦ No monitoring of the tire pressure for the affected wheel

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics Faulty

NOTE

Pollution of the environment if wheel electronics are not disposed of correctly.

- ♦ Wheel electronics contain batteries with lithium thionyl chloride.
- ♦ Do not disposed of these batteries in normal trash (see Environment Manual).
- ♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

- while driving

Possible fault causes

- **Wheel electronics** Faulty

NOTE

If **all 4 wheel electronics** are entered as a fault code, the cause may be a fault in the **TPM control unit**.

Fault effects

- ♦ No monitoring of the tire pressure for the affected wheel
- ♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics - no Signal

NOTE

Pollution of the environment if wheel electronics are not disposed of correctly.

- ♦ Wheel electronics contain batteries with lithium thionyl chloride.
- ♦ Do not disposed of these batteries in normal trash (see Environment Manual).
- ♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

- Ignition on
- while driving , After a waiting time of approx. **10 min**

Possible fault causes

- none **Wheel electronics** installed
- incorrect component(s) **Wheel electronics** installed
- **Wheel electronics** Faulty

NOTE

If **all 4 wheel electronics** are entered as a fault code, the cause may be a fault in the **TPM control unit**.

Fault effects

- ♦ No monitoring of the tire pressure for the affected wheel
- ♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics - Overtemperature

NOTE
Pollution of the environment if wheel electronics are not disposed of correctly.
♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

● while driving

Possible fault causes

● **Temperature Wheel electronics** > 120 °C (°F) (reversible)
● **Wheel electronics** Faulty

Fault effects

♦ No monitoring of the tire pressure for the affected wheel

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics Faulty

NOTE
Pollution of the environment if wheel electronics are not disposed of correctly.
♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

● while driving

Possible fault causes

● **Wheel electronics** Faulty

NOTE
If **all 4 wheel electronics** are entered as a fault code, the cause may be a fault in the **TPM control unit**.

Fault effects

♦ No monitoring of the tire pressure for the affected wheel
♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics - no Signal

NOTE

Pollution of the environment if wheel electronics are not disposed of correctly.

♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

- Ignition on
- while driving , After a waiting time of approx. **10 min**

Possible fault causes

- none **Wheel electronics** installed
- incorrect component(s) **Wheel electronics** installed
- **Wheel electronics** Faulty

NOTE

If **all 4 wheel electronics** are entered as a fault code, the cause may be a fault in the **TPM control unit**.

Fault effects

♦ No monitoring of the tire pressure for the affected wheel
♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics - Overtemperature

NOTE
Pollution of the environment if wheel electronics are not disposed of correctly.
♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

● while driving

Possible fault causes

● **Temperature Wheel electronics** > 120 °C (°F) (reversible)
● **Wheel electronics** Faulty

Fault effects

♦ No monitoring of the tire pressure for the affected wheel

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics Faulty

NOTE
Pollution of the environment if wheel electronics are not disposed of correctly.
♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

● while driving

Possible fault causes

● **Wheel electronics** Faulty

NOTE
If **all 4 wheel electronics** are entered as a fault code, the cause may be a fault in the **TPM control unit**.

Fault effects

♦ No monitoring of the tire pressure for the affected wheel
♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics - no Signal

NOTE

Pollution of the environment if wheel electronics are not disposed of correctly.

♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

- Ignition on
- while driving , After a waiting time of approx. **10 min**

Possible fault causes

- none **Wheel electronics** installed
- incorrect component(s) **Wheel electronics** installed
- **Wheel electronics** Faulty

NOTE

If **all 4 wheel electronics** are entered as a fault code, the cause may be a fault in the **TPM control unit**.

Fault effects

♦ No monitoring of the tire pressure for the affected wheel
♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

Wheel electronics - Overtemperature

NOTE
Pollution of the environment if wheel electronics are not disposed of correctly.
♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

● while driving

Possible fault causes

● **Temperature Wheel electronics** > 120 °C (°F) (reversible)
● **Wheel electronics** Faulty

Fault effects

♦ No monitoring of the tire pressure for the affected wheel

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Pressure too low (Warning stage 2)

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended idle time), it can take up to 2 minutes for the fault to be entered after the fault cause occurs.

Possible fault causes

- Pressure too low

INFORMATION
The warning thresholds for this fault/this warning are higher than those for warning level 1; they are different depending on country or warning threshold coding and also depend on the current speed.

- Loss of pressure > 20% for EU
- Loss of pressure > 25% for USA
- Loss of pressure > 0.4 bar and **Vehicle speed** > 160 **km/h**
- Loss of pressure > 0.5 bar and **Vehicle speed** < 160 **km/h**

Fault effects

- Warning light **Tire Pressure Monitoring (TPM)**
- Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Minimum pressure below limit

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended idle time), it can take up to 2 minutes for the fault to be entered after the fault cause occurs.

Possible fault causes

- Minimum pressure below limit

INFORMATION
The warning thresholds for this fault/this warning are different depending on country or coding.

- Tyre pressure < 1.6 bar or
- Tyre pressure < 1.4 bar

Fault effects

- Warning light **Tire Pressure Monitoring (TPM)**
- Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Pressure too low (Warning stage 1)

Diagnostic conditions

- Ignition on
- Check for fault condition every 10 minutes

Possible fault causes

- Loss of pressure > 0.3 bar

Fault effects

♦ none - Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Pressure too low (Warning stage 2)

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended idle time), it can take up to 2 minutes for the fault to be entered after the fault cause occurs.

Possible fault causes

- Pressure too low

INFORMATION
The warning thresholds for this fault/this warning are higher than those for warning level 1; they are different depending on country or warning threshold coding and also depend on the current speed.

- Loss of pressure > 20% for EU
- Loss of pressure > 25% for USA
- Loss of pressure > 0.4 bar and **Vehicle speed** > 160 **km/h**
- Loss of pressure > 0.5 bar and **Vehicle speed** < 160 **km/h**

Fault effects

- Warning light **Tire Pressure Monitoring (TPM)**
- Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Minimum pressure below limit

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended idle time), it can take up to 2 minutes for the fault to be entered after the fault cause occurs.

Possible fault causes

- Minimum pressure below limit

INFORMATION
The warning thresholds for this fault/this warning are different depending on country or coding.

- Tyre pressure < 1.6 bar or
- Tyre pressure < 1.4 bar

Fault effects

- Warning light **Tire Pressure Monitoring (TPM)**
- Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Pressure too low (Warning stage 1)

Diagnostic conditions

- Ignition on
- Check for fault condition every 10 minutes

Possible fault causes

- Loss of pressure > 0.3 bar

Fault effects

♦ none - Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Pressure too low (Warning stage 2)

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended idle time), it can take up to 2 minutes for the fault to be entered after the fault cause occurs.

Possible fault causes

- Pressure too low

INFORMATION
The warning thresholds for this fault/this warning are higher than those for warning level 1; they are different depending on country or warning threshold coding and also depend on the current speed.

- Loss of pressure > 20% for EU
- Loss of pressure > 25% for USA
- Loss of pressure > 0.4 bar and **Vehicle speed** > 160 **km/h**
- Loss of pressure > 0.5 bar and **Vehicle speed** < 160 **km/h**

Fault effects

- Warning light **Tire Pressure Monitoring (TPM)**
- Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Minimum pressure below limit

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended idle time), it can take up to 2 minutes for the fault to be entered after the fault cause occurs.

Possible fault causes

- Minimum pressure below limit

INFORMATION
The warning thresholds for this fault/this warning are different depending on country or coding.

- Tyre pressure < 1.6 bar or
- Tyre pressure < 1.4 bar

Fault effects

- Warning light **Tire Pressure Monitoring (TPM)**
- Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Pressure too low (Warning stage 1)

Diagnostic conditions

- Ignition on
- Check for fault condition every 10 minutes

Possible fault causes

- Loss of pressure > 0.3 bar

Fault effects

♦ none - Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Pressure too low (Warning stage 2)

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended idle time), it can take up to 2 minutes for the fault to be entered after the fault cause occurs.

Possible fault causes

- Pressure too low

INFORMATION
The warning thresholds for this fault/this warning are higher than those for warning level 1; they are different depending on country or warning threshold coding and also depend on the current speed.

- Loss of pressure > 20% for EU
- Loss of pressure > 25% for USA
- Loss of pressure > 0.4 bar and **Vehicle speed** > 160 **km/h**
- Loss of pressure > 0.5 bar and **Vehicle speed** < 160 **km/h**

Fault effects

- Warning light **Tire Pressure Monitoring (TPM)**
- Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Minimum pressure below limit

Diagnostic conditions

- Ignition on
- Monitoring Active (e.g. while driving)
- If monitoring is not active (e.g. after an extended idle time), it can take up to 2 minutes for the fault to be entered after the fault cause occurs.

Possible fault causes

- Minimum pressure below limit

INFORMATION
The warning thresholds for this fault/this warning are different depending on country or coding.

- Tyre pressure < 1.6 bar or
- Tyre pressure < 1.4 bar

Fault effects

- Warning light **Tire Pressure Monitoring (TPM)**
- Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Pressure warning - Pressure too low (Warning stage 1)

Diagnostic conditions

- Ignition on
- Check for fault condition every 10 minutes

Possible fault causes

- Loss of pressure > 0.3 bar

Fault effects

♦ none - Monitoring still Active

Diagnosis information - Tire pressure monitoring system control module

Radio interference

Diagnostic conditions

● while driving (to approx. **10 min**)

Possible fault causes

● Radio interference, e.g. due to other radio-transmitting components (wireless headphones, etc.)

Fault setting condition(s)

● Radio interference exists (interference level above limit value)
● Partial reception failure of at least one wheel electronics unit
● Vehicle driving for at least 10 minutes

Fault effects

♦ No monitoring of the tire pressure for the affected wheel
♦ Warning light **Tire Pressure Monitoring (TPM)**

C11005

Diagnosis information - Tire pressure monitoring system control module

Control module Faulty

Diagnostic conditions

- Ignition on

Possible fault causes

- **Tire pressure monitoring system control module** Faulty

Fault effects

♦ none **Tire Pressure Monitoring (TPM)**
♦ Warning light **Tire Pressure Monitoring (TPM)**

Diagnostic information - Tire pressure monitoring system control module

No or incorrect coding

NOTE

Pollution of the environment if wheel electronics are not disposed of correctly.

♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

- **Control module** Tire Pressure Monitoring (TPM) - internal function test
- Ignition on
- Approx. 1 minute of driving

Fault setting condition(s)

- No or incorrect coding/parameters set for Tire Pressure Monitoring (TPM) control unit
- Tire Pressure Monitoring (TPM) control unit is in wrong mode (production) --> perform coding
- Tire Pressure Monitoring (TPM) control unit faulty

Fault effects

♦ System does not function
♦ Display on instrument cluster

Diagnosis information - Tire pressure monitoring system control module

Wheel set selection necessary

Diagnostic conditions

● while driving

Possible fault causes

● **Wheel electronics** new
● Position **Wheel electronics** interchanged

ⓘ After selection of the wheel set in the instrument cluster, the TPM system changes to learning mode and the new or replaced wheel electronics are learned and assigned.

Fault effects

♦ none **Tire Pressure Monitoring (TPM)**

Diagnosis information - Tire pressure monitoring system control module

CAN bus Fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ Loose contact or corrosion on connectors or lines
♦ **CAN high** / **CAN low**
Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ none **Tire Pressure Monitoring (TPM)**

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnostic information - CAN

Communication with control unit not possible

INFORMATION
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences during wake-up. If these are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No power supply to the control unit
- Incorrect control unit coding
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- Communication is no longer possible via the CAN bus
- No other control units can communicate with the control unit

Diagnostic information - CAN

Communication with control unit not possible

INFORMATION
Internal function test completed.

Diagnostic conditions
The PAS control unit initially tests internal function sequences during wake-up. If these are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Key contact (terminal S)
- Ignition ON

Possible fault causes

- No power supply to the control unit
- Incorrect control unit coding
- Short circuit or open circuit in CAN network
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- Communication is no longer possible via the CAN bus
- No other control units can communicate with the control unit

Diagnostic information - CAN

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions
The control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- Ignition on

Possible fault causes

- Incorrect control unit coding
- The peripheral equipment connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- The stated control unit sends only substitute values via the CAN
- Other control units detect these substitute values and set this fault code

Diagnostic information - CAN

Fault entry in the specified control unit

NOTE
Internal function test completed.

Diagnostic conditions
The control unit initially tests internal function sequences after wake-up. If they are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- Ignition on

Possible fault causes

- Incorrect control unit coding
- The peripheral equipment connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- The stated control unit sends only substitute values via the CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - Tire pressure monitoring system control module

Supply voltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Supply voltage** Limit exceeded (Voltage 60 s > 17.5 V)
- **Supply voltage** Below limit (Voltage 60 s < 9.0 V)

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Tire pressure monitoring system control module

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Supply voltage** Limit exceeded (Voltage 60 s > 17.5 V)
- **Supply voltage** Below limit (Voltage 60 s < 9.0 V)

Fault effects

♦ Function not available or available only to a limited extent

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Diagnosis information - PSM

000305..... 1
00030E..... 2
000414..... 3
002085..... 4
002086..... 5
002087..... 6
002088..... 7
002089..... 8
00208A..... 9
004000..... 10
004010..... 11
004014..... 12
004015..... 13
004016..... 14
004020..... 15
004030..... 16
004031..... 17
004040..... 18
004200..... 19
004201..... 20
004210..... 21
004211..... 22
004220..... 23
004221..... 24
004230..... 25
004231..... 26
004240..... 27
004340..... 28
004441..... 29
004442..... 30
005032..... 31
006000..... 32
00C058..... 33
00FF0C..... 34
011B03..... 35
011B08..... 36
011B0C..... 37
011B88..... 38
011D03..... 39

011D08..... 40
011D0C..... 41
011D88..... 42
011F03..... 43
011F08..... 44
011F0C..... 45
011F88..... 46
012203..... 47
012208..... 48
01220C..... 49
012288..... 50
01ED03..... 51
01ED04..... 52
01ED08..... 53
01ED0C..... 54
01ED0E..... 55
01ED8E..... 56
01EF01..... 57
01EF02..... 58
01EF08..... 59
01EF0C..... 60
021A0C..... 61
030A03..... 62
030A04..... 63
030A05..... 64
030A08..... 65
030A0D..... 66
030A0E..... 67
030A88..... 68
030A88..... 69
032C08..... 70
032E08..... 71
032E0C..... 72
041200..... 73
041400..... 74
041403..... 75
046A00..... 76
046A08..... 77
046A88..... 78

048C08 79
049108 80
04FC0C 81
04FC0E 82
04FF05 83
04FF08 84
058F05 85
058F08 86
058F0E 87
058F88 88
059B05 89
059B08 90
059B0C 91
059B8C 92
060608 93
06060E 94
060688 95
070200 96
070308 97
072200 98
082500 99
09410C 100
09EF08 101
09EF0C 102
0ADD08 103
0B1908 104
0B190E 105
0C10EE 106
0C6B01 107
0C6B02 108
0C6B08 109
0C7600 110
0CEA00 111
0D2600 112
0D2601 113
0D2602 114
0D2608 115
0D260E 116
32C0C 117

3FD80E..... 118
3FD90E..... 119
3FDB0E..... 120
3FDC0E..... 121
3FDD0E..... 122
3FDE0E..... 123
3FDF0E..... 124
3FE00E..... 125
3FE08E..... 126
3FE10E..... 127
3FE30E..... 128
3FF40E..... 129
C10A70..... 130
C11000..... 131
C11001..... 132
C11005..... 133
C11006..... 134
C11007..... 135
C12187..... 136
E0ADFF..... 137
E0E9FF..... 138
E108FF..... 139
E132FF..... 140
E159FF..... 141
E15AFF..... 142
E15CFF..... 143
E15DFF..... 144
E188FF..... 145
E189FF..... 146
E18AFF..... 147

000305

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM control module

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **PSM control module** incorrectly coded
♦ **PSM control module** not coded

Fault effects

♦ **Control module** No function / Limited function PSM

Diagnosis information - PSM

Fault Sport mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
This fault is set on vehicles equipped with the Sport Chrono package if one of the following systems is faulty:

- **DME control module**
- **PDK control unit**
- **Gateway control module**
- **PASM control module**
- **Center-differential lock control unit**

Diagnosis information - PSM

Fault Sport mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
This fault is set on vehicles equipped with the Sport Chrono package if one of the following systems is faulty:

- **DME control module**
- **PDK control unit**
- **Gateway control module**
- **PASM control module**
- **Center-differential lock control unit**

Diagnosis information - PSM

Fault Sport mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
This fault is set on vehicles equipped with the Sport Chrono package if one of the following systems is faulty:

- **DME control module**
- **PDK control unit**
- **Gateway control module**
- **PASM control module**
- **Center-differential lock control unit**

Diagnosis information - PSM

Fault Sport mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
This fault is set on vehicles equipped with the Sport Chrono package if one of the following systems is faulty:

- **DME control module**
- **PDK control unit**
- **Gateway control module**
- **PASM control module**
- **Center-differential lock control unit**

Diagnosis information - PSM

Fault Sport mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
This fault is set on vehicles equipped with the Sport Chrono package if one of the following systems is faulty:

- **DME control module**
- **PDK control unit**
- **Gateway control module**
- **PASM control module**
- **Center-differential lock control unit**

Diagnosis information - PSM

Fault Sport mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
This fault is set on vehicles equipped with the Sport Chrono package if one of the following systems is faulty:

- **DME control module**
- **PDK control unit**
- **Gateway control module**
- **PASM control module**
- **Center-differential lock control unit**

Diagnosis information - PSM

PSM hydraulic unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Actual value for ABS valve outlet at rear left is evaluated in the **PSM control module** and does not show a plausible value (**PSM hydraulic unit** faulty).
- Actual value for ABS **Switch-over valve** is evaluated in the **PSM control module** and does not show a plausible value (**PSM hydraulic unit**) faulty).
- Short circuit to B+/mutual short circuit or open circuit in the lines (internally in the **PSM hydraulic unit**)

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

PSM hydraulic unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Actual value for ABS valve outlet at rear left is evaluated in the **PSM control module** and does not show a plausible value (**PSM hydraulic unit** faulty).
- Actual value for ABS **Switch-over valve** is evaluated in the **PSM control module** and does not show a plausible value (**PSM hydraulic unit**) faulty).
- Short circuit to B+/mutual short circuit or open circuit in the lines (internally in the **PSM hydraulic unit**)

Fault effects

♦ The PSM functions are switched off

Diagnostic information - PSM control unit

Multi-collision braking initiated

Diagnostic conditions

- Airbag control unit detected a crash
- Ignition switched on and off again after crash event

Possible fault causes

ⓘ If the airbag control unit detects a crash, the PSM control unit initiates braking in order to prevent a multiple collision.

♦ The fault is set if the PSM control unit has performed multi-collision braking.

Fault effects

♦ The vehicle is no longer ready to drive (because a crash was detected)

Diagnostic information - PSM control unit

Multi-collision brake deactivated

Diagnostic conditions

- Ignition on

Possible fault causes

♦ The multi-collision brake was deactivated via coding
♦ There is a fault in the airbag control unit or PSM control unit, preventing activation of the multi-collision brake
♦ Interference in communication via CAN to the airbag control unit or to the accelerator pedal
♦ A PSM fault or a communication error of the PSM to the airbag or to the accelerator pedal occurred during multi-collision braking.

Fault effects

♦ The multi-collision brake is not active

Diagnostic information - PSM control unit

Multi-collision braking cancelled

Diagnostic conditions

- Ignition on

Possible fault causes

♦ The driver actively cancelled the multi-collision braking process by depressing the accelerator pedal over 90%

Fault effects

♦ The multi-collision brake is not active

Diagnosis information - PSM

Return pump faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving **Vehicle speed** >= 15 km/h (9 mph)

Fault setting condition(s)

- Fuse in current distributor faulty
- **Motor relay** faulty
- **Return pump** locks up/runs too smoothly
- Short circuit to B+/ground or open circuit in the line
- **PSM hydraulic unit** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

PSM hydraulic unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Actual value for ABS valve outlet at rear left is evaluated in the **PSM control module** and does not show a plausible value (**PSM hydraulic unit** faulty).
- Actual value for ABS **Switch-over valve** is evaluated in the **PSM control module** and does not show a plausible value (**PSM hydraulic unit**) faulty).
- Short circuit to B+/mutual short circuit or open circuit in the lines (internally in the **PSM hydraulic unit**)

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

PSM hydraulic unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Actual value for ABS valve outlet at rear left is evaluated in the **PSM control module** and does not show a plausible value (**PSM hydraulic unit** faulty).
- Actual value for ABS **Switch-over valve** is evaluated in the **PSM control module** and does not show a plausible value (**PSM hydraulic unit**) faulty).
- Short circuit to B+/mutual short circuit or open circuit in the lines (internally in the **PSM hydraulic unit**)

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Pressure sensor Fault

ⓘ INFORMATION

The **Pressure sensor** is integrated into the **PSM hydraulic unit** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Pressure sensor** faulty
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Line fault Speed sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Short circuit to B+ in the wiring harness
- Short circuit between the signal and ground line of the **Speed sensor**
- Open circuit in the circuit
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Line fault Speed sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Short circuit to B+ in the wiring harness
- Short circuit between the signal and ground line of the **Speed sensor**
- Open circuit in the circuit
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Line fault Speed sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Short circuit to B+ in the wiring harness
- Short circuit between the signal and ground line of the **Speed sensor**
- Open circuit in the circuit
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM8, TC/ABS

Speed sensor line fault

Diagnostic conditions
The control unit PSM(TC/ABS) initially tests internal function sequences when the ignition is switched on (terminal 15). If they are OK, all diagnosable outputs are then tested and any faults are stored.

- Ignition on

Possible fault causes

- ♦ Short circuit to B+ in wiring harness
- ♦ Short circuit to ground in wiring harness
- ♦ Short circuit between the signal and ground lines of the speed sensor
- ♦ Open circuit in electric circuit
- ♦ PSM(TC/ABS) control unit faulty

Fault effects

- ♦ The PSM/ABS(TC/ABS) functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Wheel speed - Monitoring

ⓘ INFORMATION

Check tire pressure and wheel size. Erase fault memory and carry out a test drive.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- In the circuit of the **Speed sensor** , no electrical Fault is stored.
- The vehicle must be driven.
- The Fault is stored if the averaged speed of a wheel exceeds the speeds of the other wheels by at least 6% for longer than 20 s.
- Vehicle speed is >20 km/h (12 mph)

Fault setting condition(s)

- Wrong wheel size on the vehicle (driving with the **emergency spare wheel** can **NOT** be the cause)
- Tire pressure differs by a large amount
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Stop light switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test
- Actuate foot brake and then release it again

Fault setting condition(s)

- Adjustment of the **Stop light switch** not OK ⇒ See Workshop Manual (Incorrect operation: pedal pushed/pulled up)
- System not bled
- Mechanism of the **Stop light switch** not OK
- Short circuit to B+/ground or open circuit in the line

Diagnosis information - PSM

PSM steering angle sensor not calibrated

ⓘ INFORMATION

● Always in **PIWIS Tester** ⇒ **PSM control module** ⇒ Read out **actual values**, the calibrated values and repeat **calibration** if required.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on
● Drive the vehicle

Fault setting condition(s)

● Open circuit of the power supply
● Work on the chassis
● **PSM steering angle sensor** faulty
● **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

PSM steering angle sensor not initialized

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Drive the vehicle

Fault setting condition(s)

- Open circuit of the power supply
- **PSM steering angle sensor** faulty
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Fault Drive-Off Assistant

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Engine running

- **Clutch pedal** actuated

- Reverse gear engaged

Fault setting condition(s)

- The clutch switch/reversing-light switch was(were) detected as permanently or never actuated

.

Possible fault causes

♦ Clutch switch/reversing light switch:
Incorrect adjustment or a Mechanical fault

Fault effects

♦ Failure of Drive-Off Assistant

Diagnosis information - PSM

Internal control unit fault

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test not completed successfully

Possible fault causes

- **PSM control module** faulty (internal calculation error.)

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Fault Sport mode

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
This fault is set on vehicles equipped with the Sport Chrono package if one of the following systems is faulty:

- **DME control module**
- **PDK control unit**
- **Gateway control module**
- **PASM control module**
- **Center-differential lock control unit**

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM control module

Speed sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM control module

Speed sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM control module

Speed sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM control module

Speed sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - no communication

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Combination sensor**: Open circuit / Short circuit CAN high / **CAN low**
- **Combination sensor** Faulty
- **PSM control module** Faulty

Fault effects

- none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - no communication

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Vehicle is stationary

Possible fault causes

♦ **Combination sensor**: Open circuit / Short circuit CAN high / **CAN low**
♦ **Combination sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Combination sensor** Faulty
- **PSM control module** Faulty

Fault effects

- none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
- Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
- Setpoint resistance **> 0.9 MOhm**

Open circuit :
- Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM control module

Combination sensor - Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Combination sensor** Faulty
- **PSM control module** Faulty

Fault effects

- none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Combination sensor** Faulty
- **PSM control module** Faulty

Fault effects

- none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Combination sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM control module

Combination sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Combination sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

Internal control unit fault

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test not completed successfully

Possible fault causes

- **PSM control module** faulty (internal calculation error.)

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM control module

Combination sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Combination sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty
- Mechanical fault

Fault effects

♦ Function not available or available only to a limited extent

Diagnostic information - CAN

Fault entry in the specified control unit

INFORMATION
Internal function text completed!

Diagnostic conditions

The control unit initially tests internal function sequences after wake-up. If these are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- Ignition on

Possible fault causes

- Incorrect control unit coding
- The peripheral equipment connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- The stated control unit sends only substitute values via the CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Calibration

Fault effects

♦ Function not available or available only to a limited extent

Diagnostic information - CAN

Fault entry in the specified control unit

INFORMATION
Internal function text completed!

Diagnostic conditions

The control unit initially tests internal function sequences after wake-up. If these are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- Ignition on

Possible fault causes

- Incorrect control unit coding
- The peripheral equipment connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- The stated control unit sends only substitute values via the CAN
- Other control units detect these substitute values and set this fault code

Diagnostic information - CAN

Fault entry in the specified control unit

INFORMATION
Internal function text completed!

Diagnostic conditions

The control unit initially tests internal function sequences after wake-up. If these are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- Ignition on

Possible fault causes

- Incorrect control unit coding
- The peripheral equipment connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- The stated control unit sends only substitute values via the CAN
- Other control units detect these substitute values and set this fault code

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty
- Mechanical fault

Fault effects

♦ Function not available or available only to a limited extent

Diagnostic information - CAN

Fault entry in the specified control unit

INFORMATION
Internal function text completed!

Diagnostic conditions

The control unit initially tests internal function sequences after wake-up. If these are OK, all diagnosable outputs are then tested and any faults are stored.
Wake-up of the control unit by:

- Event-controlled CAN message
- Wake-up signal via wake-up line
- Key contact (terminal S)
- Ignition on

Possible fault causes

- Incorrect control unit coding
- The peripheral equipment connected to the specified control unit is faulty
- Control unit faulty (in most cases, faulty coding is the cause and not the control unit)

Fault effects

- The stated control unit sends only substitute values via the CAN
- Other control units detect these substitute values and set this fault code

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnosis information - PSM control module

PSM OFF button - Signal implausible

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Button** stuck

- **Button** Faulty

ⓘ The measured value >PSM-OFF button (CAN, A/C operating panel)< can also be used to test the button signal.

Fault effects

- **PSM OFF button** No function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

Overvoltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on (upon Ignition on , only the PSM warning light lights up; no fault code stored)
- Drive at > 6 km/h (4 mph) (the conditions for storing the fault code are now met)

Fault setting condition(s)

- Overvoltage

Fault effects

♦ No function

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM control module

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **PSM control module** incorrectly coded
♦ **PSM control module** not coded

Fault effects

♦ **Control module** No function / Limited function PSM

Diagnosis information - PSM control module

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **PSM control module** incorrectly coded
♦ **PSM control module** not coded

Fault effects

♦ **Control module** No function / Limited function PSM

Diagnosis information - PSM control module

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **PSM control module** incorrectly coded
♦ **PSM control module** not coded

Fault effects

♦ **Control module** No function / Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM

Faulty Speed sensor

ⓘ INFORMATION

If, in the circuit of the **Speed sensor** , electrical Fault are stored, these must be remedied first. If, after correction of the electrical Fault the **Speed sensor** is stored as Fault , observe the information below.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Driving **Vehicle speed** > 10 km/h (6 mph)

Fault setting condition(s)

Speed sensor is defective, heavy soiling between multi-pole ring and **Speed sensor** , damage on the multi-pole ring or wheel bearing, the magnetic strength of the magnetic plates integrated into the multi-pole ring has decreased greatly, the wheel bearing was incorrectly installed during repair.

- **Speed sensor** Wheel faulty
- Wheel bearing faulty or installed backward
- **PSM control module** faulty

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - No/incorrect calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Combination sensor** No/incorrect calibration
- **Combination sensor** Faulty
- **PSM control module** Faulty

Fault effects

- none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - No/incorrect calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Combination sensor** No/incorrect calibration
- **Combination sensor** Faulty
- **PSM control module** Faulty

Fault effects

- none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Combination sensor** Faulty
- **PSM control module** Faulty

Fault effects

- none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Combination sensor** Faulty
♦ **PSM control module** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **PSM control module** incorrectly coded
♦ **PSM control module** not coded

Fault effects

♦ **Control module** No function / Limited function PSM

Diagnosis information - PSM control module

Brake vacuum sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Brake vacuum sensor** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Calibration

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - PSM control module

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **PSM control module** incorrectly coded
♦ **PSM control module** not coded

Fault effects

♦ **Control module** No function / Limited function PSM

Diagnosis information - PSM

Internal control unit fault

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test not completed successfully

Possible fault causes

- **PSM control module** faulty (internal calculation error.)

Fault effects

♦ The PSM functions are switched off

Diagnosis information - PSM control module

Brake vacuum sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Brake vacuum sensor** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM control module

Brake vacuum sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Brake vacuum sensor** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

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Diagnosis information - PSM control module

PSM OFF button - Signal implausible

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Button** stuck

- **Button** Faulty

ⓘ The measured value >PSM-OFF button (CAN, A/C operating panel)< can also be used to test the button signal.

Fault effects

- **PSM OFF button** No function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM

PSM hydraulic unit - Function restriction

INFORMATION
The faults treated here are caused by faulty components or malfunctions within the hydraulic unit.

Diagnostic conditions
There are several fault paths for the faults in the hydraulic unit. This means that several diagnostic conditions can result in the existing fault entry.

- to Ignition on
- All models: 60 seconds to Ignition on
- while driving (**Vehicle speed** > 30 **km/h**)

Fault setting condition(s)

- Power supply Short circuit to B+/ground/between lines or open circuit in the lines
- Fuses **PSM hydraulic unit** Faulty
- **Sensor** Brake pressure Electrical fault
- Ventil unit Faulty
- **Hydraulic pump** Electrical fault
- **Hydraulic pump** Mechanical fault

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Rolling test mode

Diagnostic conditions

- Ignition on

Possible fault causes

Depending on fault code:

- Rolling test mode Active
- Rolling test mode was active but was cancelled incorrectly

Fault effects

♦ none

Diagnosis information - PSM control module

Stopping distance reduction via ACC - above/below limit value

Diagnostic conditions

- Ignition on

Fault setting condition(s)

These faults are diagnosed when the ACC control unit requests acceleration or deceleration of the vehicle, but the value actually measured via the combination sensor differs greatly from the requested acceleration/deceleration.
This can occur, for example, in case of a sudden approach to an obstacle or abrupt braking (decelerating and thereby falling below the limit value, 0C6B02).
This also could be caused by a faulty hydraulic unit, for example (acceleration is maintained even though deceleration was requested, 0C6B01)

Possible fault causes

♦ Abrupt vehicle deceleration (e.g. rear-end collision)
♦ Extreme driving situation
♦ Implausible acceleration measurement of the combination sensor

♦ Mechanical fault in the hydraulic unit or electrical fault in the PSM control unit

Fault effects

♦ Limited function PSM

Diagnosis information - PSM control module

Stopping distance reduction via ACC - above/below limit value

Diagnostic conditions

- Ignition on

Fault setting condition(s)

These faults are diagnosed when the ACC control unit requests acceleration or deceleration of the vehicle, but the value actually measured via the combination sensor differs greatly from the requested acceleration/deceleration.
This can occur, for example, in case of a sudden approach to an obstacle or abrupt braking (decelerating and thereby falling below the limit value, 0C6B02).
This also could be caused by a faulty hydraulic unit, for example (acceleration is maintained even though deceleration was requested, 0C6B01)

Possible fault causes

♦ Abrupt vehicle deceleration (e.g. rear-end collision)
♦ Extreme driving situation
♦ Implausible acceleration measurement of the combination sensor

♦ Mechanical fault in the hydraulic unit or electrical fault in the PSM control unit

Fault effects

♦ Limited function PSM

Diagnosis information - PSM control module

Stopping distance reduction - check ACC fault memory content

Diagnostic conditions

- Ignition on

Fault setting condition(s)

These faults are diagnosed if an internal function test of the components involved in stopping distance reduction fails.
The components and functions are tested before, during and after a deceleration or acceleration request by the ACC control unit.

Possible fault causes

♦ CAN communication disturbed
♦ Other fault memory entries and therefore possibly faulty components in the braking system (combination sensor, brake-pedal sensor, hydraulic unit, PSM control unit).

Fault effects

♦ Limited function PSM

Diagnosis information - PSM control module

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **PSM control module** incorrectly coded
♦ **PSM control module** not coded

Fault effects

♦ **Control module** No function / Limited function PSM

Diagnosis information - PSM control module

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **PSM control module** incorrectly coded
♦ **PSM control module** not coded

Fault effects

♦ **Control module** No function / Limited function PSM

Diagnosis information - PSM control module

Brake vacuum sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Brake vacuum sensor** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM control module

Brake vacuum sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Brake vacuum sensor** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM control module

Brake vacuum sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Brake vacuum sensor** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM control module

Brake vacuum sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Brake vacuum sensor** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM control module

Brake vacuum sensor - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Brake vacuum sensor** Faulty

Fault effects

♦ none or Limited function PSM

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM control module

PSM OFF button - Signal implausible

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Button** stuck

- **Button** Faulty

ⓘ The measured value >PSM-OFF button (CAN, A/C operating panel)< can also be used to test the button signal.

Fault effects

- **PSM OFF button** No function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Diagnosis information - PSM

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- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Diagnosis information - PSM

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- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Diagnosis information - PSM

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- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Diagnosis information - PSM

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- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Diagnosis information - PSM

PSM control module faulty

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM control module

Rolling test mode

Diagnostic conditions

- Ignition on

Possible fault causes

Depending on fault code:

- Rolling test mode Active
- Rolling test mode was active but was cancelled incorrectly

Fault effects

♦ none

Diagnosis information - PSM

Undervoltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on (upon Ignition on , only the PSM warning light lights up; no fault code stored)
- Drive at > 6 km/h (4 mph) (the conditions for storing the fault code are now met)

Fault setting condition(s)

- Fuse in fuse holder
- Undervoltage
- Short circuit to ground in the wiring harness
- Open circuit in the circuit
- **PSM control module** faulty

C11001

Diagnosis information - PSM

Overvoltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on (upon Ignition on , only the PSM warning light lights up; no fault code stored)
- Drive at > 6 km/h (4 mph) (the conditions for storing the fault code are now met)

Fault setting condition(s)

- Overvoltage

Fault effects

♦ No function

C11005

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

Version coding faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Drive the vehicle

Fault setting condition(s)
♦ The wrong vehicle model or the wrong vehicle type is coded in the **Gateway control module**
♦ The wrong engine type or the wrong transmission type is coded in the **DME control module**
♦ Wrong **PSM hydraulic unit** installed

Check and correction of variant coding in the PIWIS Tester:

Gateway control module
► Check and correct the **coded variant** in the **PIWIS Tester** ⇒ **Gateway** ⇒ **Coding** ⇒ **Vehicle variants** ⇒ **Vehicle model, vehicle type**

DME control module
► Check and correct the **coded variant** in the **PIWIS Tester** ⇒ **DME** ⇒ **Vehicle data** ⇒ **Engine type, transmission type**

PSM control module (Vehicles with PCCB brake system)
► Check and correct the **coded variant** in the **PIWIS Tester** ⇒ **PSM(TC/ABS)** ⇒ **Coding** ⇒ **Variant** (code the variant matching the vehicle here)

Fault effects

♦ The PSM functions are switched off

C11007

Diagnosis information - PSM

Combination sensor not calibrated

INFORMATION
This fault code does NOT lead to:

♦ Activation of the warning light in the instrument cluster (PSM) warning light stays OFF)
♦ Functional impairments in the PSM- system remains fully functional.

INFORMATION
The transverse and axial acceleration sensor and the rate-of-turn sensor are integrated into the >combination sensor< housing. If a fault is detected in one of these three sensors, the > combination sensor< must be replaced. The integrated axial acceleration sensor must be calibrated after replacement.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Connect PIWIS Tester to the vehicle
- Ignition on and read/erase **Fault memory PSM control module**
- Drive the vehicle
- Connect PIWIS Tester to the vehicle after the test drive
- Ignition on and read out **Fault memory** again

Fault setting condition(s)

- The **Combination sensor** was not calibrated
or calibration was carried out incorrectly.

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Combination sensor** Faulty
- **PSM control module** Function restriction

Fault effects

- none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Combination sensor** Faulty
- **PSM control module** Faulty

Fault effects

- none or Limited function PSM

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty
- Mechanical fault

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Diagnosis information - PSM

PSM control module faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **PSM control module** internal function test

Possible fault causes

♦ **PSM control module** faulty

NOTE
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

♦ In case of control-unit damage, only the PSM control unit (TC/ABS) is replaced.
♦ Please observe the coding of the control module.
♦ After the Test drive , read out the **Fault memory** again with the PIWIS Tester. Additional fault sources that could damage the **PSM control module** should be recognized and remedied.

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Diagnosis information - PSM control module

Combination sensor - Signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- while driving

Possible fault causes

♦ Intermittent contact or Short circuit to B+/ground/between lines or open circuit in the lines (**Combination sensor** <=> **PSM control module**)
♦ **Combination sensor** incorrect installed
♦ **Combination sensor** Faulty

Fault effects

♦ none or Limited function PSM

Cayenne , MY 2011 =>

Diagnosis information - Parking Brake

000001..... 1
000002..... 2
000003..... 3
000004..... 4
000005..... 5
000006..... 6
000007..... 7
000008..... 8
000010..... 9
000011..... 10
000012..... 11
000012..... 12
000013..... 13
000013..... 14
000014..... 15
000016..... 16
000017..... 17
000018..... 18
000019..... 19
000020..... 20
000021..... 21
000022..... 22
000023..... 23
000024..... 24
000025..... 25
000026..... 26
000028..... 27
000029..... 28
000030..... 29
000031..... 30
000032..... 31
000033..... 32
000034..... 33
000035..... 34
000036..... 35
000037..... 36
000038..... 37
000040..... 38
000041..... 39

000042..... 40
000043..... 41
000044..... 42
000045..... 43
000046..... 44
00C058..... 45
C11000..... 46
C11001..... 47
C11005..... 48
C11006..... 49

000001

ⓘDiagnosis information - Control module

Temperature

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Device temperature** - Limit exceeded
- **Device temperature** - Below limit

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

Temperature

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Device temperature** - Limit exceeded
- **Device temperature** - Below limit

Fault effects
Function not available or available only to a limited extent

000003

Diagnosis information - Spreader device

Diagnostic conditions

- Ignition on

Fault setting condition(s)
Overtemperature **Spreader device** (reversible)

Fault effects
none or Limited function **Parking brake control unit**

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
- blocked

- no or incorrect basic setting/adaptation
The free play must be within the specified value range

Fault effects
No function

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Drive link is electrically actuated without detectable mechanical reaction.

Fault effects
No function

Diagnosis information - Parking brake control unit

Service mode Active

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Control module** new
- Loop-in incomplete / Faulty
- No/incorrect calibration

Fault effects

none or Limited function **Parking brake control unit**

Diagnosis information - Component(s)

Clutch sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Min. and max. stops could not be recognized

Fault effects

- DAR (DriveAwayRelease) not available
- Roller test bench mode not available

Diagnosis information - Component(s)

Clutch sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- while driving

Fault setting condition(s)
No clutch pedal actuations are detected during the trip.

Fault effects
DAR (DriveAwayRelease) not available

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Short circuit to B+/mutual short circuit or open circuit in the lines

Fault effects
The affected function no longer reacts

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Short circuit to B+/mutual short circuit or open circuit in the lines

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Short circuit to B+/mutual short circuit or open circuit in the lines

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Parking brake control unit

Parking brake control unit - Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Parking brake** actuated

Possible fault causes

- **Plug** and / or Contacts damaged
- Overvoltage / Undervoltage Terminal 30 **Connection**
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Parking brake control unit** Faulty
- **Spreader device** right / left Faulty

Fault effects

- none or Limited function **Parking brake**

Diagnosis information - Drive link

Speed sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
- Signal implausible

- Short circuit to B+/ground or open circuit in the line

Fault effects
Function temporarily unavailable or available only to a limited extent

ⓘDiagnosis information - Control module

No/incorrect calibration

⚠WARNING
♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Calibration incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

No/incorrect calibration

⚠WARNING
♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Calibration incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Parking brake control unit

Parking brake No function

Diagnostic conditions

- Ignition on
- Actuation **Parking brake**

Fault setting condition(s)

- Overload **Parking brake** (reversible)
- Internal control unit fault (reversible)
- Fault entry **PSM control module** (**Speed sensor**)

Fault effects

Parking brake control unit - Function temporarily unavailable or available only to a limited extent

Diagnosis information - Parking brake control unit

DAR (DriveAwayRelease) not available

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Doors not closed
- Driver seat belt not fastened

Fault effects
The parking brake does not release automatically when the intention to drive off is detected

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

No/incorrect calibration

⚠WARNING
♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Calibration incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Maximum difference reached

ⓘ This fault entry can be an indication of worn-out parking-brake shoes.

Fault effects
The parking brake can only be released but no longer applied. The actuators automatically move to assembly position for renewed adjustment/calibration.

Diagnosis information - Parking brake control unit

Parking brake No function

Diagnostic conditions

- Ignition on
- Actuation **Parking brake**

Fault setting condition(s)

- Overload **Parking brake** (reversible)
- Internal control unit fault (reversible)
- Fault entry **PSM control module** (**Speed sensor**)

Fault effects

Parking brake control unit - Function temporarily unavailable or available only to a limited extent

Diagnostic information - parking brake control unit

Emergency braking via parking brake not available

ⓘ During emergency braking using the parking brake, the parking brake button is pressed and held when travelling at a speed of more than 5 km/h (3 mph). The parking brake control unit then sends a deceleration request to the PSM control unit, which then initiates braking using the PSM hydraulic system. As soon as the vehicle speed falls below a certain limit value (approx. 2 km/h or 1.5 mph), the parking brake is closed and the vehicle is brought to a standstill.

Diagnostic conditions

- Emergency braking performed using the parking brake (see above)

Fault setting condition(s)

- Emergency braking function could not be performed

Possible fault causes

♦ Other fault memory entries in the parking brake control unit or PSM control unit that prevent braking using PSM/the parking brake

Fault effects

♦ Emergency braking function is not available
♦ Warning in instrument cluster

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

No/incorrect calibration

⚠WARNING
♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Calibration incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

Power supply

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - Below limit - 9 V
- Power supply - Limit exceeded - 16 V

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Drive link is electrically actuated without detectable mechanical reaction.
- Open circuit

Fault effects
No function

ⓘDiagnosis information - Control module

No/incorrect calibration

⚠WARNING
♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Calibration incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

No/incorrect calibration

⚠WARNING
♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Calibration incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
- blocked

- no or incorrect basic setting/adaptation
The free play must be within the specified value range

Fault effects
No function

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Drive link is electrically actuated without detectable mechanical reaction.

Fault effects
No function

Diagnosis information - Drive link

Speed sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
- Signal implausible

- Short circuit to B+/ground or open circuit in the line

Fault effects
Function temporarily unavailable or available only to a limited extent

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Maximum difference reached

ⓘ This fault entry can be an indication of worn-out parking-brake shoes.

Fault effects
The parking brake can only be released but no longer applied. The actuators automatically move to assembly position for renewed adjustment/calibration.

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Drive link is electrically actuated without detectable mechanical reaction.
- Open circuit

Fault effects
No function

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnosis information - Front-end electronics

Relay stuck

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition off
- Feedback activated but Relay **not** activated

Fault effects

Engine start **not** possible

Diagnosis information - Drive link

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
End of service life reached

INFORMATION
Observe Technical Information notice 34/09 when changing the drive links.

Diagnosis information - Parking brake control unit

Drive Away Release (DAR)

Diagnostic conditions

- Ignition on

Possible fault causes

♦ Signal Reversing-light switch implausible (**Rear-end electronics**)
♦ Signal Gear information implausible (Fault memory **DME control module** or **PDK control unit**)

Fault effects

♦ DAR (DriveAwayRelease) not available

Diagnosis information - Parking brake control unit

Drive Away Release (DAR)

Diagnostic conditions

- Ignition on

Possible fault causes

♦ Signal Reversing-light switch implausible (**Rear-end electronics**)
♦ Signal Gear information implausible (Fault memory **DME control module** or **PDK control unit**)

Fault effects

♦ DAR (DriveAwayRelease) not available

Diagnosis information - Component(s)

Clutch sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Short circuit to B+/mutual short circuit or open circuit in the lines

Fault effects
The affected function no longer reacts

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

00C058

Diagnosis information - Parking brake control unit

Production mode Active

Diagnostic conditions

- Ignition on

Possible fault causes

♦ Production mode Active

Fault setting condition(s)

- Production mode Active switched

ⓘDiagnosis information - Control module

Power supply

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - Below limit - 9 V
- Power supply - Limit exceeded - 16 V

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

Power supply

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - Below limit - 9 V
- Power supply - Limit exceeded - 16 V

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

No/incorrect coding

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Coding incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

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Diagnosis information - Power steering

000001..... 1
000003..... 2
000004..... 3
000005..... 4
000006..... 5
000007..... 6
000008..... 7
000009..... 8
00000A..... 9
00000C..... 10
00000D..... 11
00000E..... 12
000010..... 13
000011..... 14
C11000..... 15
C11001..... 16
C11002..... 17
C11003..... 18
C11006..... 19
D00000..... 20
D00001..... 21
D00002..... 22
D00003..... 23
D00005..... 24
D00007..... 25

000001

Diagnosis information - Power steering

Hydraulic pump Function restriction

NOTE
In the event of a fault, check whether the fault is permanently "present". To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Diagnostic conditions

- Ignition on or Engine running

Possible fault causes

♦ **Hydraulic pump** Function restriction

Fault effects

Power steering Function restriction

Diagnosis information - Power steering

Hydraulic pump Function restriction

NOTE
In the event of a fault, check whether the fault is permanently "present". To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Diagnostic conditions

- Ignition on or Engine running

Possible fault causes

♦ **Hydraulic pump** Function restriction

Fault effects

Power steering Function restriction

Diagnosis information - Power steering

Hydraulic pump Function restriction

NOTE
In the event of a fault, check whether the fault is permanently "present". To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Diagnostic conditions

- Ignition on or Engine running

Possible fault causes

♦ **Hydraulic pump** Function restriction

Fault effects

Power steering Function restriction

Diagnosis information - Power steering

Hydraulic pump Function restriction

NOTE
In the event of a fault, check whether the fault is permanently "present". To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Diagnostic conditions

- Ignition on or Engine running

Possible fault causes

♦ **Hydraulic pump** Function restriction

Fault effects

Power steering Function restriction

Diagnosis information - Power steering

Temperature

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Temperature** Limit exceeded
- **Temperature** Below limit

Fault effects

♦ none or Limited function **Power steering**

000007

Diagnosis information - Power steering

Engine Hydraulic pump

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Hydraulic pump** / Engine blocked
- **Hydraulic pump** / Engine Faulty

Fault effects

No function / Deactivation **Power steering**

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - Power steering

Hydraulic pump Function restriction

NOTE
In the event of a fault, check whether the fault is permanently "present". To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

Diagnostic conditions

- Ignition on or Engine running

Possible fault causes

♦ **Hydraulic pump** Function restriction

Fault effects

Power steering Function restriction

Diagnosis information - Power steering

Engine Hydraulic pump

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Hydraulic pump** / Engine blocked
- **Hydraulic pump** / Engine Faulty

Fault effects

No function / Deactivation **Power steering**

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - Power steering

Engine Hydraulic pump

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Hydraulic pump** / Engine blocked
- **Hydraulic pump** / Engine Faulty

Fault effects

No function / Deactivation **Power steering**

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

00000C

Diagnosis information - Power steering

Engine Hydraulic pump

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Hydraulic pump** / Engine blocked
- **Hydraulic pump** / Engine Faulty

Fault effects

No function / Deactivation **Power steering**

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

00000D

Diagnosis information - Power steering

Engine Hydraulic pump

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Hydraulic pump** / Engine blocked
- **Hydraulic pump** / Engine Faulty

Fault effects

No function / Deactivation **Power steering**

Nominal values Line test

Short circuit to B+ :

♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground :

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :

♦ Setpoint resistance **< 2 Ohm**

Diagnosis information - Power steering

Temperature

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Temperature** Limit exceeded
- **Temperature** Below limit

Fault effects

♦ none or Limited function **Power steering**

Diagnosis information - Power steering

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Supply voltage** Limit exceeded
- **Supply voltage** Below limit

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Power steering

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Supply voltage** Limit exceeded
- **Supply voltage** Below limit

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Power steering

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Supply voltage** Limit exceeded
- **Supply voltage** Below limit

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Power steering

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Supply voltage** Limit exceeded
- **Supply voltage** Below limit

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Power steering

Temperature

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Temperature** Limit exceeded
- **Temperature** Below limit

Fault effects

♦ none or Limited function **Power steering**

Diagnosis information - Power steering

Temperature

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- **Temperature** Limit exceeded
- **Temperature** Below limit

Fault effects

♦ none or Limited function **Power steering**

ⓘDiagnosis information - Power steering

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- incorrectly coded
- not coded

Fault effects

♦ Function not available or available only to a limited extent

D00000

Diagnosis information - Power steering

Malfunction Communication CAN bus

Diagnostic conditions

- Ignition on

Possible fault causes

- Fault entry in the stated control units (see fault code)
- No signal/no communication CAN bus
- Undervoltage / Overvoltage

Fault effects

♦ none or Limited function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

D00001

Diagnosis information - Power steering

Malfunction Communication CAN bus

Diagnostic conditions

- Ignition on

Possible fault causes

- Fault entry in the stated control units (see fault code)
- No signal/no communication CAN bus
- Undervoltage / Overvoltage

Fault effects

♦ none or Limited function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

D00002

Diagnosis information - Power steering

Malfunction Communication CAN bus

Diagnostic conditions

- Ignition on

Possible fault causes

- Fault entry in the stated control units (see fault code)
- No signal/no communication CAN bus
- Undervoltage / Overvoltage

Fault effects

♦ none or Limited function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

D00003

Diagnosis information - Power steering

Malfunction Communication CAN bus

Diagnostic conditions

- Ignition on

Possible fault causes

- Fault entry in the stated control units (see fault code)
- No signal/no communication CAN bus
- Undervoltage / Overvoltage

Fault effects

♦ none or Limited function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

D00005

Diagnosis information - Power steering

Malfunction Communication CAN bus

Diagnostic conditions

- Ignition on

Possible fault causes

- Fault entry in the stated control units (see fault code)
- No signal/no communication CAN bus
- Undervoltage / Overvoltage

Fault effects

♦ none or Limited function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

D00007

Diagnosis information - Power steering

Malfunction Communication CAN bus

Diagnostic conditions

- Ignition on

Possible fault causes

- Fault entry in the stated control units (see fault code)
- No signal/no communication CAN bus
- Undervoltage / Overvoltage

Fault effects

♦ none or Limited function

Nominal values Line test

Short circuit to B+ :
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground :
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit :
♦ Setpoint resistance **< 2 Ohm**

Cayenne , MY 2011 =>

Diagnosis information - Rear lid

000001..... 1
000002..... 2
000003..... 3
000004..... 4
000005..... 5
000006..... 6
000007..... 7
000008..... 8
000009..... 9
00000A..... 10
00000B..... 11
00000C..... 12
00000D..... 13
00000E..... 14
00000F..... 15
000010..... 16
000011..... 17
000012..... 18
000013..... 19
000014..... 20
000015..... 21
000018..... 22
000019..... 23
00001A..... 24
00001B..... 25
00001C..... 26
00001D..... 27
00001E..... 28
00001F..... 29
000029..... 30
000029..... 31
000032..... 32
000033..... 33
000034..... 34
000035..... 35
000042..... 36
000043..... 37
000044..... 38
000061..... 39

000062..... 40
000063..... 41
000064..... 42

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

No/incorrect calibration

⚠WARNING
♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Calibration incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

No/incorrect coding

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Coding incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

000006

ⓘDiagnostic information - control unit

Control unit faulty

⚠WARNING
♦ Risk of crushing or other injuries from moving components.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
No function

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Control module

Control unit faulty

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

Anti-play prevention active

⚠WARNING
♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Excessive use of the function within a short period

Fault effects
Function temporarily unavailable or available only to a limited extent

ⓘDiagnosis information - Control module

Power supply

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - Below limit - 9 V
- Power supply - Limit exceeded - 16 V

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

Power supply

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - Below limit - 9 V
- Power supply - Limit exceeded - 16 V

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

Power supply

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - Below limit - 9 V
- Power supply - Limit exceeded - 16 V

Fault effects
Function not available or available only to a limited extent

ⓘDiagnosis information - Control module

Power supply

⚠WARNING

♦ Danger of injury and crushing when components are moved.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - Below limit - 9 V
- Power supply - Limit exceeded - 16 V

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Rear lid control unit

Lid button, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines

Fault effects
Limited function

Diagnosis information - Rear lid control unit

Lid button, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines

Fault effects
Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - Hall-effect sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - Hall-effect sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - Hall-effect sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - Hall-effect sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- mechanically sluggish

Fault effects

- Limited function

Diagnosis information - Rear-end electronics

Upper part of lid lock, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rear-end electronics** coded correctly

Fault setting condition(s)

- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Limited function

Diagnostic information - Rear-end electronics

Lid button, rear / **Front lid button**

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
- The button is stuck or permanently actuated.
- Short circuit between the lines

Fault effects
The affected function no longer reacts

Diagnosis information - Rear lid control unit

Actuating cylinder - Hall-effect sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - Hall-effect sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - Hall-effect sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Actuating cylinder - Hall-effect sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Limited function

Diagnosis information - Rear lid control unit

Buzzer/tone generator/loudspeaker

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Sound no longer output

Diagnosis information - Rear lid control unit

Buzzer/tone generator/loudspeaker

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Sound no longer output

Diagnosis information - Rear lid control unit

Buzzer/tone generator/loudspeaker

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Sound no longer output

Diagnosis information - Rear lid control unit

Lid button, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines

Fault effects
Limited function

Diagnosis information - Rear lid control unit

Lid button, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines

Fault effects
Limited function

000063

ⓘDiagnostic information - control unit

Production mode

⚠WARNING
♦ Risk of crushing or other injuries from moving components.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Programming incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

000064

ⓘDiagnostic information - control unit

Production mode

⚠WARNING
♦ Risk of crushing or other injuries from moving components.
♦ Open or close the rear lid only if there are neither persons, animals nor objects in the movement range of the lid.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Programming incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

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Diagnosis information - Driver's door

084E..... 1
084F..... 2
0851..... 3
0852..... 4
084A..... 5
084B..... 6
084C..... 7
0C67..... 8
0CE1..... 9
0D25..... 10
06A9..... 11
05CA..... 12
083F..... 13
083E..... 14
0412..... 15
03B3..... 16
053C..... 17
0846..... 18
0845..... 19
0848..... 20
0847..... 21
0841..... 22
0840..... 23
0844..... 24
0843..... 25
006D..... 26
0003..... 27
0028..... 28
0393..... 29
0398..... 30
0391..... 31
0392..... 32
0214..... 33
0390..... 34
01BE..... 35
01BF..... 36

Diagnostic information - door control unit

084C - Outer door handle switch, continuously actuated

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- The button is stuck or permanently actuated

Possible fault causes

- The button is stuck or permanently actuated
- Short circuit to ground

Fault effects

- No function

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnostic information - Door control unit

Exterior mirror dimming - electrical fault

Diagnostic conditions

- Ignition on
- Automatic dimming active

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Function restrictions

♦ No function or restricted function

Diagnosis information - Control module

Lamp

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Light does not function

Diagnostic information - Control unit

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The affected function no longer reacts

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnostic information - door control unit

084C - Outer door handle switch, continuously actuated

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- The button is stuck or permanently actuated

Possible fault causes

- The button is stuck or permanently actuated
- Short circuit to ground

Fault effects

- No function

Diagnostic information - Door control unit

Data record invalid

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Control unit data record faulty or incorrect

Possible fault causes

♦ Incorrect data record programmed
♦ Data record faulty

Fault effects

♦ Restricted door functionality

Diagnosis information - Control module

Lock cylinder

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects

No function

Diagnosis information - Control module

Lamp

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Light does not function

Diagnostic information - Control unit

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The affected function no longer reacts

Diagnostic information - door control unit

05CA - Central locking motors, short circuit to B+
0843 - Central locking closing unit, implausible signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Central locking system actuated

Fault setting condition(s)

- Short circuit to B+
- Signal implausible

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the lines to the central locking motor
♦ Central locking motor faulty
♦ Door control unit faulty

Fault effects

♦ No function

Diagnostic information - Door control unit

Power windows motor - mechanical fault

Diagnostic conditions

- Ignition on
- Supply voltage > 12 V
- Power windows switch actuated

Possible fault causes

- Window guides stiff
- Power windows mechanism stiff

Diagnostic information - Control unit

Driver power window button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

ⓘDiagnostic information - Door control unit

No/incorrect coding

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Coding incorrect or not carried out

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnostic information - Control unit

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The affected function no longer reacts

Diagnostic information

Door mirror adjusting motor

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test on door control unit
- Door mirror actuated with the mirror adjustment switch

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines
- Door mirror adjusting motor faulty
- Door control unit faulty

Diagnostic information

Door mirror folding motor

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Door mirror folding function active

Possible fault causes

- Folding mirror mechanically stiff/blocked
- Door mirror folding motor faulty
- Door control unit faulty

Diagnostic information - Control unit

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The affected function no longer reacts

Diagnostic information

Door mirror adjusting motor

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test on door control unit
- Door mirror actuated with the mirror adjustment switch

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines
- Door mirror adjusting motor faulty
- Door control unit faulty

Diagnostic information - Door

Central locking system button - signal implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Button pressed > 60 second(s)
- Short circuit to ground

Fault effects

♦ Central locking system button does not work

Diagnostic information - Door control unit

Power windows motor - thermal protection active

Diagnostic conditions

- Ignition on
- Power windows switch actuated

Possible fault causes

♦ Window guides stiff
♦ Frequent actuation of power windows switch

Fault setting condition(s)

- Power windows motor, temperature too high

Fault effects

♦ Function available to a limited extent; power windows can still only be moved towards open

Diagnostic information

Door mirror adjusting motor

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test on door control unit
- Door mirror actuated with the mirror adjustment switch

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines
- Door mirror adjusting motor faulty
- Door control unit faulty

Diagnostic information - door control unit

05CA - Central locking motors, short circuit to B+
0843 - Central locking closing unit, implausible signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Central locking system actuated

Fault setting condition(s)

- Short circuit to B+
- Signal implausible

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines to the central locking motor
- Central locking motor faulty
- Door control unit faulty

Fault effects

- No function

Diagnostic information - Door control unit

Lamp for mirror indicator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground or open circuit
- Faulty

Fault effects

♦ Lamp does not function

Diagnostic information - Door control unit

Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Control module

Child lock button

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- The button is stuck or permanently actuated.
- Short circuit to ground

Fault effects

♦ Switch positions cannot be detected.

Diagnosis information - Control module

Rear right power window button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnostic information

Mirror heating, driver

INFORMATION
This fault was detected by the driver door control unit.

Diagnostic conditions

- Ignition on
- Battery voltage OK (11.4 to 14.5 V)
- Internal function test on driver door control unit
- Engine on
- Switch on mirror heating

Possible fault causes

♦ Mirror heating in door mirror glass faulty
♦ Lines faulty

Function restrictions

♦ No function or restricted function

Diagnosis information - Control module

Passenger power windows button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnosis information - Control module

Rear left power window button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information - Control unit

Driver power window button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

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Diagnosis information - Passenger's door

0003..... 1
0214..... 2
0398..... 3
0412..... 4
0840..... 5
0841..... 6
0843..... 7
0844..... 8
0845..... 9
0846..... 10
0847..... 11
0848..... 12
0851..... 13
0852..... 14
006E..... 15
01BE..... 16
01BF..... 17
053C..... 18
05CA..... 19
083E..... 20
083F..... 21
084A..... 22
084B..... 23
084C..... 24
084E..... 25
084F..... 26
0C67..... 27
0CE1..... 28
0D25..... 29

Diagnostic information - Door control unit

Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnostic information - Door control unit

Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information

Mirror heating, driver

INFORMATION
This fault was detected by the driver door control unit.

Diagnostic conditions

- Ignition on
- Battery voltage OK (11.4 to 14.5 V)
- Internal function test on driver door control unit
- Engine on
- Switch on mirror heating

Possible fault causes

- Mirror heating in door mirror glass faulty
- Lines faulty

Function restrictions

- No function or restricted function

ⓘDiagnostic information - Door control unit

No/incorrect coding

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Coding incorrect or not carried out

Fault effects

♦ Function not available or available only to a limited extent

Diagnostic information - Door control unit

Power windows motor - thermal protection active

Diagnostic conditions

- Ignition on
- Power windows switch actuated

Possible fault causes

♦ Window guides stiff
♦ Frequent actuation of power windows switch

Fault setting condition(s)

- Power windows motor, temperature too high

Fault effects

♦ Function available to a limited extent; power windows can still only be moved towards open

Diagnostic information - Door

Central locking system button - signal implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Button pressed > 60 second(s)
- Short circuit to ground

Fault effects

♦ Central locking system button does not work

Diagnostic information - door control unit

05CA - Central locking motors, short circuit to B+
0843 - Central locking closing unit, implausible signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Central locking system actuated

Fault setting condition(s)

- Short circuit to B+
- Signal implausible

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines to the central locking motor
- Central locking motor faulty
- Door control unit faulty

Fault effects

- No function

Diagnostic information

Door mirror adjusting motor

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test on door control unit
- Door mirror actuated with the mirror adjustment switch

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines
- Door mirror adjusting motor faulty
- Door control unit faulty

Diagnostic information

Door mirror folding motor

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Door mirror folding function active

Possible fault causes

- Folding mirror mechanically stiff/blocked
- Door mirror folding motor faulty
- Door control unit faulty

Diagnostic information

Door mirror adjusting motor

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test on door control unit
- Door mirror actuated with the mirror adjustment switch

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines
- Door mirror adjusting motor faulty
- Door control unit faulty

Diagnostic information

Door mirror adjusting motor

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test on door control unit
- Door mirror actuated with the mirror adjustment switch

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines
- Door mirror adjusting motor faulty
- Door control unit faulty

Diagnostic information - Control unit

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The affected function no longer reacts

Diagnostic information - Door control unit

Exterior mirror dimming - electrical fault

Diagnostic conditions

- Ignition on
- Automatic dimming active

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Function restrictions

♦ No function or restricted function

Diagnosis information - Control module

Lamp

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Light does not function

Diagnostic information - Door control unit

Lamp for mirror indicator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground or open circuit
- Faulty

Fault effects

♦ Lamp does not function

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information - Control unit

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The affected function no longer reacts

Diagnostic information - door control unit

05CA - Central locking motors, short circuit to B+
0843 - Central locking closing unit, implausible signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Central locking system actuated

Fault setting condition(s)

- Short circuit to B+
- Signal implausible

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the lines to the central locking motor
♦ Central locking motor faulty
♦ Door control unit faulty

Fault effects

♦ No function

Diagnostic information - Control unit

Driver power window button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnostic information - Door control unit

Power windows motor - mechanical fault

Diagnostic conditions

- Ignition on
- Supply voltage > 12 V
- Power windows switch actuated

Possible fault causes

- Window guides stiff
- Power windows mechanism stiff

Diagnostic information - Control unit

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The affected function no longer reacts

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnostic information - door control unit

084C - Outer door handle switch, continuously actuated

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- The button is stuck or permanently actuated

Possible fault causes

- The button is stuck or permanently actuated
- Short circuit to ground

Fault effects

- No function

Diagnostic information - door control unit

084C - Outer door handle switch, continuously actuated

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- The button is stuck or permanently actuated

Possible fault causes

- The button is stuck or permanently actuated
- Short circuit to ground

Fault effects

- No function

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnostic information - Door control unit

Data record invalid

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Control unit data record faulty or incorrect

Possible fault causes

♦ Incorrect data record programmed
♦ Data record faulty

Fault effects

♦ Restricted door functionality

Diagnosis information - Control module

Lock cylinder

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects

No function

Diagnosis information - Control module

Lamp

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Light does not function

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Diagnosis information - Rear-end electronics

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00C058

Diagnostic information - Rear-end electronics

Production mode active/Coding Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- One or more production modes or production interventions are activated.
- No/incorrect coding
- **Rear-end electronics** control unit faulty

Fault effects

♦ Comfort functions: Function not available or available only to a limited extent

Diagnosis information - Rear-end electronics

800708 PSM rotation speed signal implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Vehicle speed** > 10 **km/h**
- **Supply voltage** 7 ... 18 V

Fault setting condition(s)

- Signal **Speed sensor** via CAN > 10 s low

Possible fault causes

♦ Fault in system PSM
► Perform diagnosis/fault finding in the following system: PSM
♦ CAN data bus Faulty

Fault effects

♦ **Electronic steering column lock (ELV)** No function

ⓘ INFORMATION

Electronic steering column lock (ELV) is not locked even when the fault becomes passive again. The fault must be deleted from the fault memory so that the **Electronic steering column lock (ELV)** can lock again.

Diagnosis information - Rear-end electronics

800808 Signal Stop light switch implausible

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Actuate foot brake and then release it again

Fault setting condition(s)

- Signal **Stop light switch** via CAN data bus and Signal **Stop light switch** via electrical line of **PSM control module** > 500 ms different.

Possible fault causes

♦ Fault in system PSM
► Perform diagnosis/fault finding in the following system: PSM
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ CAN data bus Faulty
♦ **Control module Rear-end electronics** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines :

♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Rear-end electronics

Sun blind

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- mechanically sluggish
- Engine Faulty

Fault effects
The affected function no longer reacts

Diagnosis information - Rear-end electronics

Sun blind

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- mechanically sluggish
- Engine Faulty

Fault effects
The affected function no longer reacts

Diagnosis information - Rear-end electronics

Upper part of lid lock, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rear-end electronics** coded correctly

Fault setting condition(s)

- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Limited function

Diagnosis information - Rear-end electronics

Upper part of lid lock, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rear-end electronics** coded correctly

Fault setting condition(s)

- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Limited function

Diagnosis information - Component(s)

Relay, heated rear window

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Short circuit between the lines
- Faulty

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Relay, heated rear window

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Short circuit between the lines
- Faulty

Fault effects
The affected function no longer reacts

Diagnosis information - Rear-end electronics

Rear-end electronics Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Power supply Below limit
(Voltage < 9 V for > 15 s)

● Power supply Limit exceeded
(Voltage > 15 V for > 15 s)

Possible fault causes

♦ Fuse Faulty
♦ Short circuit to ground or open circuit in lines
♦ **Control module Rear-end electronics** Faulty

Diagnosis information - Rear-end electronics

Rear-end electronics Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Power supply Below limit
(Voltage < 9 V for > 15 s)

● Power supply Limit exceeded
(Voltage > 15 V for > 15 s)

Possible fault causes

♦ Fuse Faulty
♦ Short circuit to ground or open circuit in lines
♦ **Control module Rear-end electronics** Faulty

Diagnosis information - Rear-end electronics

Rear-end electronics Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Power supply Below limit
(Voltage < 9 V for > 15 s)

● Power supply Limit exceeded
(Voltage > 15 V for > 15 s)

Possible fault causes

♦ Fuse Faulty
♦ Short circuit to ground or open circuit in lines
♦ **Control module Rear-end electronics** Faulty

Diagnosis information - Rear-end electronics

Rear-end electronics Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Power supply Below limit
(Voltage < 9 V for > 15 s)

● Power supply Limit exceeded
(Voltage > 15 V for > 15 s)

Possible fault causes

♦ Fuse Faulty
♦ Short circuit to ground or open circuit in lines
♦ **Control module Rear-end electronics** Faulty

Diagnostic information - Rear-end electronics

802001 Lid button, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Signal **Lid button, rear** actuated

> 45 s

Possible fault causes

- Button is stuck or permanently actuated.

Fault effects

Function not available or available only to a limited extent

Diagnosis information - Interior-surveillance button

802201 Interior-surveillance button - The button is stuck or permanently actuated.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Interior-surveillance button** must be coded
- Ignition on

INFORMATION

Button only installed for Country version USA/Canada (B-pillar on driver side)

Fault setting condition(s)

- Signal **Interior-surveillance button** actuated

> 10 s

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

Upper part of lid lock, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rear-end electronics** coded correctly

Fault setting condition(s)

- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Limited function

Diagnosis information - Rear-end electronics

Sun blind

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- mechanically sluggish
- Engine Faulty

Fault effects
The affected function no longer reacts

Diagnosis information - Rear-end electronics

Upper part of lid lock, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rear-end electronics** coded correctly

Fault setting condition(s)

- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Limited function

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

Rear-end electronics Immobilizer

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Control module Rear-end electronics** Immobilizer Authentication data incorrect
- **Control module Rear-end electronics** incomplete taught
- **Control module Rear-end electronics** not taught (**Control module Rear-end electronics** new)
- Different data **DME control module** <-> **Rear-end electronics** during teaching

► Teach >component protection< using >PIWIS Tester II< ⇒ >Diagnostics< ⇒ >Online teaching functions<.

Fault effects

♦ Alarm system triggers

Diagnosis information - Rear-end electronics

Rear-end electronics Immobilizer

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Control module Rear-end electronics** Immobilizer Authentication data incorrect
- **Control module Rear-end electronics** incomplete taught
- **Control module Rear-end electronics** not taught (**Control module Rear-end electronics** new)
- Different data **DME control module** <-> **Rear-end electronics** during teaching

► Teach >component protection< using >PIWIS Tester II< ⇒ >Diagnostics< ⇒ >Online teaching functions<.

Fault effects

♦ Alarm system triggers

Diagnosis information - Rear-end electronics

Voltage converter, Output implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Supply line** for the **Rear-end electronics** to the **Voltage converter**: Open circuit/short circuit to ground
♦ **Voltage converter** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Rear-end electronics

Upper part of lid lock, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rear-end electronics** coded correctly

Fault setting condition(s)

- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Limited function

Diagnosis information - Rear-end electronics

Upper part of lid lock, rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rear-end electronics** coded correctly

Fault setting condition(s)

- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Limited function

Diagnosis information - Rear-end electronics

81010E Spoiler drive Speed sensor Faulty
81020E Spoiler drive Speed sensor plus Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

Short circuit to ground

Fault effects

Spoiler is de-standardized and moves to a safe position.

Diagnosis information - Rear-end electronics

81010E Spoiler drive Speed sensor Faulty
81020E Spoiler drive Speed sensor plus Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

Short circuit to ground

Fault effects

Spoiler is de-standardized and moves to a safe position.

Diagnosis information - Component(s)

81030E Spoiler drive Position sensor
81040E Spoiler drive plus Position sensor

ⓘ INFORMATION

The Position sensor is a Hall-effect sensor. The extended end position is detected by a Hall-effect sensor.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Current <0.2 mA and >20.0 mA

Fault effects

Spoiler is de-standardized and moves to a safe position.

Diagnosis information - Component(s)

81030E Spoiler drive Position sensor
81040E Spoiler drive plus Position sensor

ⓘ INFORMATION

The Position sensor is a Hall-effect sensor. The extended end position is detected by a Hall-effect sensor.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Current <0.2 mA and >20.0 mA

Fault effects

Spoiler is de-standardized and moves to a safe position.

Diagnosis information - Spoiler drive

81050E Spoiler drive Position conflict
81060E Spoiler drive Plus position conflict

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

Spoiler in position E (retracted), and hall sender reference signal/switching state is implausible.

Fault effects

Spoiler is de-standardized and moves to a safe position.

Diagnosis information - Spoiler drive

81050E Spoiler drive Position conflict
81060E Spoiler drive Plus position conflict

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

Spoiler in position E (retracted), and hall sender reference signal/switching state is implausible.

Fault effects

Spoiler is de-standardized and moves to a safe position.

Diagnosis information - Component(s)

81080C Relay Spoiler drive

ⓘ INFORMATION

Relay serves the purpose of polarity reversal Engine extension/retraction.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Relay Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

81090E Spoiler motor/drive - overcurrent
810A0E Spoiler motor/drive plus - overcurrent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Overload or short circuit to ground

Diagnosis information - Rear-end electronics

81090E Spoiler motor/drive - overcurrent
810A0E Spoiler motor/drive plus - overcurrent

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Overload or short circuit to ground

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - Rear-end electronics

82020E Interior mirror Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Interior mirror** Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

830101 Motor, sliding roof - Overvoltage
830102 Motor, sliding roof - Undervoltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Supply voltage above permissible tolerance
- Supply voltage below permissible tolerance
- Leads Faulty
- **Motor, sliding roof** Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

830101 Motor, sliding roof - Overvoltage
830102 Motor, sliding roof - Undervoltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Supply voltage above permissible tolerance
- Supply voltage below permissible tolerance
- Leads Faulty
- **Motor, sliding roof** Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

83020E Drive Motor, sliding roof Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Sliding roof** coded

Fault setting condition(s)

- **Motor, sliding roof** Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

84010E Roof console Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Roof console** Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnosis information - Control module

Temperature

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Device temperature** - Limit exceeded
- **Device temperature** - Below limit

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Rear-end electronics

85010E Passenger compartment monitoring sensor Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Passenger compartment monitoring sensor** Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

85020E Tilt sensor Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Tilt sensor** Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

High-volume horn for alarm system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Lines/connections
- **High-volume horn for alarm system**

Fault effects
The affected function no longer reacts

Diagnosis information - Rear-end electronics

85040E Alarm-system light-emitting diode Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Alarm-system light-emitting diode** Faulty

Fault effects

♦ **Alarm-system light-emitting diode** No function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Interior-surveillance button

87050E Interior-surveillance button LED faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Interior-surveillance button** must be coded
- Ignition on

INFORMATION

Button only installed for Country version USA/Canada (B-pillar on driver side)

Possible fault causes

♦ LED faulty

Fault setting condition(s)

- **Rear-end electronics** detects overload when button is pressed

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Sun blind

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- mechanically sluggish
- Engine Faulty

Fault effects
The affected function no longer reacts

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

Light bulb

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Light bulb Faulty
- **Power supply** Faulty
- Ground supply Faulty
- Light unit Faulty

Fault effects

Light does not function

Diagnosis information - Rear-end electronics

89010E Alarm siren Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Alarm siren** Faulty

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Component(s)

Button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
The button is stuck or permanently actuated.

Fault effects
The affected function no longer reacts

Diagnosis information - Rear-end electronics

Electronic steering column lock (ELV) ELV enable line

Diagnostic conditions

● The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.
● Ignition on

Fault setting condition(s)

● Below limit
● ELV enable line, Short circuit to ground
● ELV enable line, Short circuit to B+
● ELV enable line, Open circuit

Fault effects

Electronic steering column lock (ELV) No function

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Rear-end electronics

Electronic steering column lock (ELV) ELV enable line

Diagnostic conditions

● The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.
● Ignition on

Fault setting condition(s)

● Below limit
● ELV enable line, Short circuit to ground
● ELV enable line, Short circuit to B+
● ELV enable line, Open circuit

Fault effects

Electronic steering column lock (ELV) No function

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Rear-end electronics

Electronic steering column lock (ELV) ELV enable line

Diagnostic conditions

● The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.
● Ignition on

Fault setting condition(s)

● Below limit
● ELV enable line, Short circuit to ground
● ELV enable line, Short circuit to B+
● ELV enable line, Open circuit

Fault effects

Electronic steering column lock (ELV) No function

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
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Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
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Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

8D010E Sunblind motor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Mechanical fault
- **Supply voltage** Below limit
- Coding incorrect or not carried out (pin 8 on plug housing has no ground)
- **Sunblind motor** Faulty

Fault effects

The affected function no longer reacts

Diagnosis information - Rear-end electronics

Rear-end electronics Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Power supply Below limit
(Voltage < 9 V for > 15 s)

● Power supply Limit exceeded
(Voltage > 15 V for > 15 s)

Possible fault causes

♦ Fuse Faulty
♦ Short circuit to ground or open circuit in lines
♦ **Control module Rear-end electronics** Faulty

Diagnosis information - Rear-end electronics

Rear-end electronics Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Power supply Below limit
(Voltage < 9 V for > 15 s)

● Power supply Limit exceeded
(Voltage > 15 V for > 15 s)

Possible fault causes

♦ Fuse Faulty
♦ Short circuit to ground or open circuit in lines
♦ **Control module Rear-end electronics** Faulty

C11004

Diagnosis information - Rear-end electronics

Control module Rear-end electronics, Programming

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Rear-end electronics** No/incorrect coding
♦ **Control module Rear-end electronics** Faulty

Diagnosis information - Rear-end electronics

C11005 Rear-end electronics Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- RAM/ROM fault

Possible fault causes

♦ **Control module Rear-end electronics** Faulty

Fault effects

- **Rear-end electronics** No function

C11006

Diagnostic information - Rear-end electronics

Production mode active/Coding Faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- One or more production modes or production interventions are activated.
- No/incorrect coding
- **Rear-end electronics** control unit faulty

Fault effects

♦ Comfort functions: Function not available or available only to a limited extent

Diagnosis information - Rear-end electronics

Rear-end electronics Calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Panorama roof system**, Calibration incorrect or not carried out
- **Rear spoiler**, Calibration incorrect or not carried out
- **Roof console Control module Rear-end electronics** incomplete taught
- **Control module Rear-end electronics** not taught (**Control module Rear-end electronics** new)

► In the >PIWIS Tester II< ⇒ >Diagnostics< ⇒ Rear-end electronics => Drive links/tests => Teaching <, perform the respective **standardization/calibration/teaching** operations.

Fault effects

♦ Function not available or available only to a limited extent

C13006

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Component(s)

LIN user

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
No signal/communication

Fault effects
The affected function no longer reacts

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13013

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - Component(s)

LIN user

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
No signal/communication

Fault effects
The affected function no longer reacts

C13106

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Component(s)

LIN user

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
No signal/communication

Fault effects
The affected function no longer reacts

C13112

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13113

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13114

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13206

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Component(s)

LIN user

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
No signal/communication

Fault effects
The affected function no longer reacts

C13212

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13213

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13214

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13232

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - Component(s)

LIN user

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
No signal/communication

Fault effects
The affected function no longer reacts

C13306

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Component(s)

LIN user

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
No signal/communication

Fault effects
The affected function no longer reacts

C13312

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13313

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13314

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

C13326

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - Component(s)

LIN user

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
No signal/communication

Fault effects
The affected function no longer reacts

C13412

Diagnosis information - LIN bus Master

Communication with LIN component

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Eine Kommunikation mit dem im Fehlertext bezeichneten Bauteil war/ist nicht möglich.

Possible fault causes

♦ Die Spannungsversorgung des bezeichneten Bauteils ist nicht oder nur eingeschränkt vorhanden.
♦ Die LIN-Leitung ist zwischen dem Bauteilstecker des bezeichneten Bauteils und dem ersten Splice nach dem Bauteil unterbrochen.
♦ LIN component is incorrectly coded in the control unit.
♦ **LIN component** Faulty
♦ Control unit faulty

Fault effects

♦ Functions in the control unit are available only with restrictions.
♦ Functions in the control unit are not available.
♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - LIN bus Master

LIN master - no communication

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Communication on the LIN bus was cancelled.

Possible fault causes

- ♦ Short circuit to B+/ground or open circuit in the line
- ♦ Cancellation of communication due to detected bit error

Fault effects

- ♦ Functions in the control unit are available only with restrictions.
- ♦ Functions in the control unit are not available.
- ♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Diagnosis information - LIN bus Master

LIN master - no communication

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Communication on the LIN bus was cancelled.

Possible fault causes

- ♦ Short circuit to B+/ground or open circuit in the line
- ♦ Cancellation of communication due to detected bit error

Fault effects

- ♦ Functions in the control unit are available only with restrictions.
- ♦ Functions in the control unit are not available.
- ♦ Fahrzeug übergreifende Funktionen sind nicht verfügbar.

Cayenne, MY 2011 =>

Diagnosis information - Door rear left

0003..... 1
0214..... 2
0412..... 3
0840..... 4
0843..... 5
0852..... 6
01BE..... 7
01BF..... 8
03A9..... 9
05CA..... 10
083E..... 11
083F..... 12
084B..... 13
084C..... 14
0C58..... 15
0C67..... 16
0D25..... 17

Diagnostic information - Door control unit

Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

ⓘDiagnostic information - Door control unit

No/incorrect coding

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Coding incorrect or not carried out

Fault effects

♦ Function not available or available only to a limited extent

Diagnostic information - Door control unit

Power windows motor - thermal protection active

Diagnostic conditions

- Ignition on
- Power windows switch actuated

Possible fault causes

♦ Window guides stiff
♦ Frequent actuation of power windows switch

Fault setting condition(s)

- Power windows motor, temperature too high

Fault effects

♦ Function available to a limited extent; power windows can still only be moved towards open

Diagnostic information - door control unit

05CA - Central locking motors, short circuit to B+
0843 - Central locking closing unit, implausible signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Central locking system actuated

Fault setting condition(s)

- Short circuit to B+
- Signal implausible

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines to the central locking motor
- Central locking motor faulty
- Door control unit faulty

Fault effects

- No function

Diagnosis information - Control module

Lamp

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Light does not function

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information - Control unit

Driver power window button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnostic information - door control unit

05CA - Central locking motors, short circuit to B+
0843 - Central locking closing unit, implausible signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Central locking system actuated

Fault setting condition(s)

- Short circuit to B+
- Signal implausible

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines to the central locking motor
- Central locking motor faulty
- Door control unit faulty

Fault effects

- No function

Diagnostic information - Control unit

Driver power window button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnostic information

Thermal protection for power window, driver

INFORMATION
This fault was detected by the driver door control unit.

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test on driver door control unit

Possible fault causes

- Frequent opening and closing of driver door window
- Window guides stiff

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnostic information - door control unit

084C - Outer door handle switch, continuously actuated

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- The button is stuck or permanently actuated

Possible fault causes

- The button is stuck or permanently actuated
- Short circuit to ground

Fault effects

- No function

Diagnostic information - Door control unit

Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnostic information - Door control unit

Data record invalid

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Control unit data record faulty or incorrect

Possible fault causes

♦ Incorrect data record programmed
♦ Data record faulty

Fault effects

♦ Restricted door functionality

Diagnosis information - Control module

Lamp

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Light does not function

Cayenne, MY 2011 =>

Diagnosis information - Door rear right

0003..... 1
0214..... 2
0412..... 3
0840..... 4
0843..... 5
0852..... 6
01BE..... 7
01BF..... 8
03AA..... 9
05CA..... 10
083E..... 11
083F..... 12
084B..... 13
084C..... 14
0C58..... 15
0C67..... 16
0D25..... 17

Diagnostic information - Door control unit

Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnostic information - Door control unit

Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

ⓘDiagnostic information - Door control unit

No/incorrect coding

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Coding incorrect or not carried out

Fault effects

♦ Function not available or available only to a limited extent

Diagnostic information - Door control unit

Power windows motor - thermal protection active

Diagnostic conditions

- Ignition on
- Power windows switch actuated

Possible fault causes

♦ Window guides stiff
♦ Frequent actuation of power windows switch

Fault setting condition(s)

- Power windows motor, temperature too high

Fault effects

♦ Function available to a limited extent; power windows can still only be moved towards open

Diagnostic information - door control unit

05CA - Central locking motors, short circuit to B+
0843 - Central locking closing unit, implausible signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Central locking system actuated

Fault setting condition(s)

- Short circuit to B+
- Signal implausible

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines to the central locking motor
- Central locking motor faulty
- Door control unit faulty

Fault effects

- No function

Diagnosis information - Control module

Lamp

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Light does not function

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information - Door control unit

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Power supply - below limit value - 9 V
- Power supply - above limit value - 16 V

Fault effects

♦ It may no longer be possible to activate the actuators

Diagnostic information - Control unit

Driver power window button

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnostic information - door control unit

05CA - Central locking motors, short circuit to B+
0843 - Central locking closing unit, implausible signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Central locking system actuated

Fault setting condition(s)

- Short circuit to B+
- Signal implausible

Possible fault causes

- Short circuit to B+/ground or open circuit in the lines to the central locking motor
- Central locking motor faulty
- Door control unit faulty

Fault effects

- No function

Diagnostic information - Control unit

Driver power window button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ The button is stuck or permanently actuated.

Fault effects

♦ The window cannot be opened or closed

Diagnostic information

Thermal protection for power window, driver

INFORMATION
This fault was detected by the driver door control unit.

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test on driver door control unit

Possible fault causes

- Frequent opening and closing of driver door window
- Window guides stiff

Diagnosis information - Component(s)

Function light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects
Light does not function

Diagnostic information - door control unit

084C - Outer door handle switch, continuously actuated

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- The button is stuck or permanently actuated

Possible fault causes

- The button is stuck or permanently actuated
- Short circuit to ground

Fault effects

- No function

Diagnostic information - Door control unit

Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)
Control unit faulty

Fault effects
Function not available or available only to a limited extent

Diagnostic information - Door control unit

Data record invalid

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, delete the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Control unit data record faulty or incorrect

Possible fault causes

♦ Incorrect data record programmed
♦ Data record faulty

Fault effects

♦ Restricted door functionality

Diagnosis information - Control module

Lamp

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

- Light does not function

Cayenne , MY 2015 =>

Diagnosis information - Trailer hitch

B105000 1
B200044 2
B200045 3
B200046 4
B200047 5
B200049 6
B200096 7
B200500 8
B201200 9
C10DB11 10
C10DB11 11
C10DB15 12
C10E401 13
C10E407 14
C10E412 15
C10E413 16
C10E454 17
C10E511 18
C10E512 19
C10E513 20
C10E813 21
C10E900 22
C10EA01 23
C10F311 24
C10F313 25
C10F315 26
C10F411 27
C10F415 28
C10F511 29
C10F515 30
C10F611 31
C10F711 32
C10F715 33
C10F811 34
C10FA11 35
C10FA15 36
C10FB11 37
C10FB15 38
C10FC11 39

C119613..... 40
P057100..... 41
P175700..... 42
P175700..... 43
P175700..... 44
U101100..... 45
U101200..... 46
U101300..... 47
U115A00..... 48
U140000..... 49
U140100..... 50
U140500..... 51

B105000

Diagnostic information - Trailer hitch

Control module Overtemperature

INFORMATION
♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Observe the fault status during fault finding. (Is the fault currently present?)

Diagnostic conditions

- Internal function test on **Control module** Trailer hitch
- Ignition on

Fault setting condition(s)

- Trailer hitch control unit temperature limit value exceeded
- Trailer hitch control unit faulty

Fault effects

♦ System does not function
♦ Display in instrument cluster

B200044

Diagnosis information - Trailer hitch

Control module faulty

INFORMATION

♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Observe the fault status during fault finding. (Is the fault currently present?)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ System switches off
♦ Display in instrument cluster

B200045

Diagnosis information - Trailer hitch

Control module faulty

INFORMATION

♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Observe the fault status during fault finding. (Is the fault currently present?)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnosis information - Trailer hitch

Control module faulty

INFORMATION

♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Observe the fault status during fault finding. (Is the fault currently present?)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnosis information - Trailer hitch

Control module faulty

INFORMATION

♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Observe the fault status during fault finding. (Is the fault currently present?)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnosis information - Trailer hitch

Control module faulty

INFORMATION

♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Observe the fault status during fault finding. (Is the fault currently present?)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ System switches off
♦ Display in instrument cluster

B200096

Diagnosis information - Trailer hitch

Control module faulty

INFORMATION

♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Observe the fault status during fault finding. (Is the fault currently present?)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Trailer hitch

No/incorrect coding

INFORMATION
♦ Under menu item **Coding** in the **PIWIS Tester,** it is possible to switch automatic pivoting calibration of the ball bar on or off.
♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Correct **trailer identification** takes place when a loaded trailer line (load connected) is plugged in.
♦ Observe the fault status during fault finding. (Is the fault currently present?)
♦ A 5-pin plug is pre-installed in the vehicle for the North American market. It is intended for the connection of a brake booster.

Diagnostic conditions

- Internal function test on **Control module** Trailer hitch
- Ignition on

Fault setting condition(s)

- Trailer hitch control unit not coded or incorrect coding/parameters set
- Trailer hitch control unit is in wrong mode (Production) --> Perform coding
- Trailer hitch control unit faulty

Fault effects

♦ System does not function
♦ Display in instrument cluster

Diagnostic information - Trailer hitch

No/incorrect coding

INFORMATION
♦ Under menu item **Coding** in the **PIWIS Tester,** it is possible to switch automatic pivoting calibration of the ball bar on or off.
♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Correct **trailer identification** takes place when a loaded trailer line (load connected) is plugged in.
♦ Observe the fault status during fault finding. (Is the fault currently present?)
♦ A 5-pin plug is pre-installed in the vehicle for the North American market. It is intended for the connection of a brake booster.

Diagnostic conditions

- Internal function test on **Control module** Trailer hitch
- Ignition on

Fault setting condition(s)

- Trailer hitch control unit not coded or incorrect coding/parameters set
- Trailer hitch control unit is in wrong mode (Production) --> Perform coding
- Trailer hitch control unit faulty

Fault effects

♦ System does not function
♦ Display in instrument cluster

C10DB11

Diagnostic information - trailer hitch

Left tail light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Left tail light bulb faulty; trailer
♦ Open circuit in wiring for left tail light; vehicle and/or trailer
♦ Open circuit in ground connection for left tail light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Right tail light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Right tail light bulb faulty; trailer
♦ Open circuit in wiring for right tail light; vehicle and/or trailer
♦ Open circuit in ground connection for right tail light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Left tail light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Left tail light bulb faulty; trailer
♦ Open circuit in wiring for left tail light; vehicle and/or trailer
♦ Open circuit in ground connection for left tail light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

C10E401

Diagnosis information - Trailer hitch

Pivoting motor faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Fuse Faulty : See circuit diagram
- Lines/connections faulty
- **Pivoting motor** faulty

Fault effects

- System switches off
- Display in instrument cluster

C10E407

Diagnosis information - Trailer hitch

Pivoting motor faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Fuse Faulty : See circuit diagram
- Lines/connections faulty
- **Pivoting motor** faulty

Fault effects

- System switches off
- Display in instrument cluster

Diagnosis information - Trailer hitch

Pivoting motor faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Fuse Faulty : See circuit diagram
- Lines/connections faulty
- **Pivoting motor** faulty

Fault effects

- System switches off
- Display in instrument cluster

C10E413

Diagnosis information - Trailer hitch

Pivoting motor faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Fuse Faulty : See circuit diagram
- Lines/connections faulty
- **Pivoting motor** faulty

Fault effects

- System switches off
- Display in instrument cluster

Diagnostic information - Trailer hitch

Control module Trailer hitch Initialization (learning end positions) not successful

INFORMATION

♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Observe the fault status during fault finding. (Is the fault currently present?)

WARNING

Danger of injury and damage when extending or retracting the trailer hitch (ball bar).

♦ Make sure that no persons, animals or obstacles are in the movement range.
♦ Never retract the ball bar when bicycle racks or other parts, for example, are still fitted.
♦ No connectors or adapters may be plugged into the trailer socket when retracting the ball bar.

INFORMATION

● The ball bar of the electrically adjustable trailer hitch must learn the limit stops. The system must perform an initialization run in order to teach these!
● If this has not been performed (button LEDs flash simultaneously), this can be done with the PIWIS Tester (Drive links/checks), or the ball bar can be completely extended or retracted by keeping the button pressed.
● The ball bar can only be moved by actuating the button if the rear lid is open.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on

Possible fault causes

♦ Initialization run was not performed or was not performed completely
♦ Trailer hitch control unit faulty

Diagnosis information - Trailer hitch

Button faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Button** Trailer hitch extended period pressed (> 120 seconds)
- Lines/connections faulty
- **Rocker switch** faulty

Fault effects

- System switches off
- Display on instrument cluster

Diagnosis information - Trailer hitch

Button faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Button** Trailer hitch extended period pressed (> 120 seconds)
- Lines/connections faulty
- **Rocker switch** faulty

Fault effects

- System switches off
- Display on instrument cluster

C10E513

Diagnosis information - Trailer hitch

Button faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Button** Trailer hitch extended period pressed (> 120 seconds)
- Lines/connections faulty
- **Rocker switch** faulty

Fault effects

- System switches off
- Display on instrument cluster

Diagnostic information - Trailer hitch

Power supply Trailer

Diagnostic conditions
The trailer hitch control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Trailer connected

Possible fault causes

♦ Fuse/s faulty: See circuit diagram or operating instructions

♦ Connecting line faulty, short circuit to ground or open circuit
♦ Coding Trailer hitch incorrect
♦ Ground connection not OK
♦ Battery faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

Diagnostic information - Trailer hitch

Power supply Trailer

Diagnostic conditions
The trailer hitch control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Trailer connected

Possible fault causes

♦ Fuse/s faulty: See circuit diagram or operating instructions

♦ Connecting line faulty, short circuit to ground or open circuit
♦ Coding Trailer hitch incorrect
♦ Ground connection not OK
♦ Battery faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

Diagnostic information - Trailer hitch

Power supply Trailer

Diagnostic conditions
The trailer hitch control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Trailer connected

Possible fault causes

♦ Fuse/s faulty: See circuit diagram or operating instructions

♦ Connecting line faulty, short circuit to ground or open circuit
♦ Coding Trailer hitch incorrect
♦ Ground connection not OK
♦ Battery faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

C10F311

Diagnostic information - trailer hitch

Brake light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Brake light bulb faulty; trailer
♦ Open circuit in brake light wiring; vehicle and/or trailer
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

C10F313

Diagnostic information - trailer hitch

Brake light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Brake light bulb faulty; trailer
♦ Open circuit in brake light wiring; vehicle and/or trailer
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Brake light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Brake light bulb faulty; trailer
♦ Open circuit in brake light wiring; vehicle and/or trailer
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

C10F411

Diagnostic information - trailer hitch

Right tail light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Right tail light bulb faulty; trailer
♦ Open circuit in wiring for right tail light; vehicle and/or trailer
♦ Open circuit in ground connection for right tail light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

C10F415

Diagnostic information - trailer hitch

Right tail light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Right tail light bulb faulty; trailer
♦ Open circuit in wiring for right tail light; vehicle and/or trailer
♦ Open circuit in ground connection for right tail light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Left tail light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Left tail light bulb faulty; trailer
♦ Open circuit in wiring for left tail light; vehicle and/or trailer
♦ Open circuit in ground connection for left tail light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

C10F515

Diagnostic information - trailer hitch

Left tail light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Left tail light bulb faulty; trailer
♦ Open circuit in wiring for left tail light; vehicle and/or trailer
♦ Open circuit in ground connection for left tail light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Right direction indicator light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Right direction indicator light bulb faulty; trailer
♦ Open circuit in wiring for right direction indicator light; vehicle and/or trailer
♦ Open circuit in ground connection for right direction indicator light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Left direction indicator light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Left direction indicator light bulb faulty; trailer
♦ Open circuit in wiring for left direction indicator light; vehicle and/or trailer
♦ Open circuit in ground connection for left direction indicator light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Left direction indicator light, trailer

INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Left direction indicator light bulb faulty; trailer
♦ Open circuit in wiring for left direction indicator light; vehicle and/or trailer
♦ Open circuit in ground connection for left direction indicator light
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Rear fog light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

ⓘ INFORMATION

The electric circuit in rear fog light and reversing lights is not monitored for >open circuits<, i.e. >open circuits< are not detected here. This was implemented in this way because some trailers do not have these lights.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Brake light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Brake light bulb faulty; trailer
♦ Open circuit in brake light wiring; vehicle and/or trailer
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Brake light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Brake light bulb faulty; trailer
♦ Open circuit in brake light wiring; vehicle and/or trailer
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

C10FB11

Diagnostic information - trailer hitch

Brake light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Brake light bulb faulty; trailer
♦ Open circuit in brake light wiring; vehicle and/or trailer
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Brake light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Brake light bulb faulty; trailer
♦ Open circuit in brake light wiring; vehicle and/or trailer
♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

Diagnostic information - trailer hitch

Reversing light, trailer

ⓘ INFORMATION

● This and all other lighting faults are only stored by the last trailer used. This means that if another trailer is detected (trailer in socket), all lighting faults will first be deleted.
● During fault finding, check the fault status to see whether the fault is currently present or not!
● Use a suitable test cable (loaded with > 5 W) or a trailer (which is definitely OK) to check whether the fault is present on the vehicle and whether it is a recurring fault.

ⓘ INFORMATION

The electric circuit in rear fog light and reversing lights is not monitored for >open circuits<, i.e. >open circuits< are not detected here. This was implemented in this way because some trailers do not have these lights.

Diagnostic conditions

● Internal function test on trailer hitch control unit
● Ignition on
● Trailer detected via connector in trailer socket

Possible fault causes

♦ Short circuit to ground or B+ in wiring; vehicle and/or trailer
♦ Trailer hitch control unit faulty

C119613

Diagnosis information - Trailer hitch

Button faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Button** Trailer hitch extended period pressed (> 120 seconds)
- Lines/connections faulty
- **Rocker switch** faulty

Fault effects

- System switches off
- Display on instrument cluster

P057100

Diagnosis information - Trailer hitch

Signal Brake light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

The trailer hitch control unit receives the brake light signal in two ways: as an analog signal via the signal line from the **Control module Rear-end electronics**, and via the Comfort CAN bus (9700).

- Lines/connections Brake light **Control module Rear-end electronics**
- Fault in area **Control module Rear-end electronics**

Fault effects

♦ Display on instrument cluster

P175700

Diagnostic information - trailer hitch

Trailer hitch control unit power supply

Diagnostic conditions

The **trailer hitch** control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Engine running (in the case of overvoltage)

Possible fault causes

♦ Vehicle electrical system voltage too low (below lower limit value, < 9.5 V > 30 seconds).
♦ Fuse faulty: (right fuse carrier, fuse 10)
♦ Short circuit to ground or open circuit in the lines
♦ Ground connection not OK
♦ Battery faulty

♦ Vehicle electrical system voltage too high (above upper limit value > 17.7 V)
♦ Generator regulator faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

P175700

Diagnostic information - Trailer hitch

Power supply Trailer

Diagnostic conditions
The trailer hitch control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Trailer connected

Possible fault causes

♦ Fuse/s faulty: See circuit diagram or operating instructions

♦ Connecting line faulty, short circuit to ground or open circuit
♦ Coding Trailer hitch incorrect
♦ Ground connection not OK
♦ Battery faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

Diagnostic information - Trailer hitch

No/incorrect coding

INFORMATION
♦ Under menu item **Coding** in the **PIWIS Tester,** it is possible to switch automatic pivoting calibration of the ball bar on or off.
♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Correct **trailer identification** takes place when a loaded trailer line (load connected) is plugged in.
♦ Observe the fault status during fault finding. (Is the fault currently present?)
♦ A 5-pin plug is pre-installed in the vehicle for the North American market. It is intended for the connection of a brake booster.

Diagnostic conditions

- Internal function test on **Control module** Trailer hitch
- Ignition on

Fault setting condition(s)

- Trailer hitch control unit not coded or incorrect coding/parameters set
- Trailer hitch control unit is in wrong mode (Production) --> Perform coding
- Trailer hitch control unit faulty

Fault effects

♦ System does not function
♦ Display in instrument cluster

U101100

Diagnostic information - trailer hitch

Trailer hitch control unit power supply

Diagnostic conditions

The **trailer hitch** control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Engine running (in the case of overvoltage)

Possible fault causes

♦ Vehicle electrical system voltage too low (below lower limit value, < 9.5 V > 30 seconds).
♦ Fuse faulty: (right fuse carrier, fuse 10)
♦ Short circuit to ground or open circuit in the lines
♦ Ground connection not OK
♦ Battery faulty

♦ Vehicle electrical system voltage too high (above upper limit value > 17.7 V)
♦ Generator regulator faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

Diagnostic information - trailer hitch

Trailer hitch control unit power supply

Diagnostic conditions

The **trailer hitch** control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Engine running (in the case of overvoltage)

Possible fault causes

♦ Vehicle electrical system voltage too low (below lower limit value, < 9.5 V > 30 seconds).
♦ Fuse faulty: (right fuse carrier, fuse 10)
♦ Short circuit to ground or open circuit in the lines
♦ Ground connection not OK
♦ Battery faulty

♦ Vehicle electrical system voltage too high (above upper limit value > 17.7 V)
♦ Generator regulator faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

Diagnostic information - Trailer hitch

No/incorrect coding

INFORMATION
♦ Under menu item **Coding** in the **PIWIS Tester,** it is possible to switch automatic pivoting calibration of the ball bar on or off.
♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Correct **trailer identification** takes place when a loaded trailer line (load connected) is plugged in.
♦ Observe the fault status during fault finding. (Is the fault currently present?)
♦ A 5-pin plug is pre-installed in the vehicle for the North American market. It is intended for the connection of a brake booster.

Diagnostic conditions

- Internal function test on **Control module** Trailer hitch
- Ignition on

Fault setting condition(s)

- Trailer hitch control unit not coded or incorrect coding/parameters set
- Trailer hitch control unit is in wrong mode (Production) --> Perform coding
- Trailer hitch control unit faulty

Fault effects

♦ System does not function
♦ Display in instrument cluster

Diagnostic information - Trailer hitch

No/incorrect coding

INFORMATION
♦ Under menu item **Coding** in the **PIWIS Tester,** it is possible to switch automatic pivoting calibration of the ball bar on or off.
♦ The trailer hitch control unit monitors the circuits to the trailer. Faults in the vehicle and in the trailer are entered as fault entries in the trailer hitch control unit.
♦ Lighting faults are stored only from the last connected trailer. If another trailer is detected (e.g., connector out and in again), all lighting faults are first erased.
♦ Using a suitable test cable (tool) or a functional trailer, it can be tested if the fault on the vehicle is present or is located in the trailer.
♦ Correct **trailer identification** takes place when a loaded trailer line (load connected) is plugged in.
♦ Observe the fault status during fault finding. (Is the fault currently present?)
♦ A 5-pin plug is pre-installed in the vehicle for the North American market. It is intended for the connection of a brake booster.

Diagnostic conditions

- Internal function test on **Control module** Trailer hitch
- Ignition on

Fault setting condition(s)

- Trailer hitch control unit not coded or incorrect coding/parameters set
- Trailer hitch control unit is in wrong mode (Production) --> Perform coding
- Trailer hitch control unit faulty

Fault effects

♦ System does not function
♦ Display in instrument cluster

Diagnostic information - trailer hitch

Trailer hitch control unit power supply

Diagnostic conditions

The **trailer hitch** control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Engine running (in the case of overvoltage)

Possible fault causes

♦ Vehicle electrical system voltage too low (below lower limit value, < 9.5 V > 30 seconds).
♦ Fuse faulty: (right fuse carrier, fuse 10)
♦ Short circuit to ground or open circuit in the lines
♦ Ground connection not OK
♦ Battery faulty

♦ Vehicle electrical system voltage too high (above upper limit value > 17.7 V)
♦ Generator regulator faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

Diagnostic information - trailer hitch

Trailer hitch control unit power supply

Diagnostic conditions

The **trailer hitch** control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on
- Engine running (in the case of overvoltage)

Possible fault causes

♦ Vehicle electrical system voltage too low (below lower limit value, < 9.5 V > 30 seconds).
♦ Fuse faulty: (right fuse carrier, fuse 10)
♦ Short circuit to ground or open circuit in the lines
♦ Ground connection not OK
♦ Battery faulty

♦ Vehicle electrical system voltage too high (above upper limit value > 17.7 V)
♦ Generator regulator faulty
♦ Trailer hitch control unit faulty

Fault effects

♦ System not active

U140500

Diagnosis information - Trailer hitch

Terminal 15

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Terminal 15 Signal not OK (not equal to CAN)
- Fuse F15 Fuse carrier right
- Lines/connections

Fault effects

- System switches off
- Display on instrument cluster

Cayenne , MY 2011 =>

Diagnosis information - Airbag

B100000..... 1
B100001..... 3
B100011..... 5
B100012..... 7
B10001A..... 9
B10001B..... 11
B100053..... 13
B100100..... 15
B100101..... 17
B100111..... 19
B100112..... 21
B10011A..... 23
B10011B..... 25
B100200..... 27
B100201..... 29
B100211..... 31
B100212..... 33
B10021A..... 35
B10021B..... 37
B100253..... 39
B100300..... 41
B100301..... 43
B100311..... 45
B100312..... 47
B10031A..... 49
B10031B..... 51
B100400..... 53
B100401..... 55
B100411..... 57
B100412..... 59
B10041A..... 61
B10041B..... 63
B100453..... 65
B100500..... 67
B100501..... 69
B100511..... 71
B100512..... 73
B10051A..... 75
B10051B..... 77

B100553 79
B100600 81
B100601 83
B100611 85
B100612 87
B10061A 89
B10061B 91
B100653 93
B100700 95
B100701 97
B100711 99
B100712 101
B10071A 103
B10071B 105
B100753 107
B100800 109
B100801 111
B100811 113
B100812 115
B100813 117
B10081A 119
B10081B 121
B100853 123
B100900 125
B100901 127
B100911 129
B100912 131
B100913 133
B10091A 135
B10091B 137
B100953 139
B100A00 141
B100A01 143
B100A11 145
B100A12 147
B100A1A 149
B100A1B 151
B100A53 153
B100B00 155

B100B01 157
B100B11 159
B100B12 161
B100B1A 163
B100B1B 165
B100B53 167
B100C00 169
B100C01 171
B100C11 173
B100C12 175
B100C1A 177
B100C1B 179
B100C53 181
B100E00 183
B100E01 185
B100E11 187
B100E12 189
B100E1A 191
B100E1B 193
B100E53 195
B101000 197
B101001 199
B101011 201
B101012 203
B10101A 205
B10101B 207
B101053 209
B101100 211
B101101 213
B101111 215
B101112 217
B10111A 219
B10111B 221
B101153 223
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B101312 231
B10131A 233

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B101401..... 241
B101411..... 243
B101412..... 245
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B101453..... 251
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B101501..... 255
B101511..... 257
B101512..... 259
B10151A..... 261
B10151B..... 263
B101553..... 265
B101600..... 267
B101604..... 269
B101612..... 271
B101614..... 273
B101629..... 275
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B101701..... 279
B101704..... 281
B101711..... 283
B101712..... 285
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B101E12 389

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B101F13 403
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B102015 413
B102029 415
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B102200 419
B102201 421
B102204 423
B102211 425
B102212 427
B102213 429
B102215 431
B102229 433
B102231 435
B102253 437
B102254 439
B102255 441
B1022F0 443
B102304 445
B102311 447
B102312 449
B102313 451
B102407 453
B102411 455
B102412 457
B102413 459
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B102511 465
B102515 467

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B102701 473
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B102711 477
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B102713 481
B102715 483
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B102753 489
B102800 491
B102800 493
B102800 495
B102800 497
B102800 499
B102900 501
B102900 503
B102A00 505
B102A00 507
B102C46 509
B103500 511
B103500 513
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B103601 517
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B10364A 529
B104200 531
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B104304 547
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B104401 557
B104404 559
B104411 561
B104412 563
B104413 565
B1071F0 567
B10B164 569
B10B200 571
B10B300 573
B10B400 575
B10B500 577
B11B300 579
B11B301 581
B11B311 583
B11B312 585
B11B31A 587
B11B31B 589
B11B353 591
B121400 593
B122511 595
B122512 597
B12251A 599
B12251B 601
B12F100 603
B12F112 605
B12F114 607
B13BCF2 609
B200000 611
B200094 613
B200600 615
B201200 617
B201300 619
B201600 621
U101100 622

U101100..... 624
U101200..... 625
U101300..... 627
U110000..... 629
U110100..... 631
U112100..... 633
U112200..... 634
U112300..... 635

B100000

Diagnosis information - Airbag

Driver's airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Driver's airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Driver's airbag

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Driver's airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Driver's airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Driver's airbag

ⓘ INFORMATION

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⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

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Diagnosis information - Airbag

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Diagnosis information - Airbag

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Diagnosis information - Airbag

Driver's airbag

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Diagnosis information - Airbag

Driver's airbag

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♦ Setpoint resistance **< 2 Ohm**

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Fault effects

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Diagnosis information - Airbag

Driver's airbag

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♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Driver's airbag

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Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Passenger's airbag

ⓘ INFORMATION

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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Passenger's airbag

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♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Passenger's airbag

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⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

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Diagnostic conditions
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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Head airbag

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- **Contusions, crushing injuries or death**

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♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Head airbag

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⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
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⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
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Fault effects

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Diagnosis information - Airbag

Ignition circuit Belt tensioner

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- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

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Diagnosis information - Airbag

Ignition circuit Belt tensioner

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Diagnosis information - Airbag

Ignition circuit Belt tensioner

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Diagnosis information - Airbag

Ignition circuit Belt tensioner

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⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
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Diagnostic conditions
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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

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♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Belt tensioner

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⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
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Driving with attached/connected special tools or commercially available tools
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- **Supply voltage** > 9.1 V
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● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Belt tensioner

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⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
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⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

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Diagnostic conditions
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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
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Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

Side airbag

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Side airbag

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⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

ⓘ INFORMATION

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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

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Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

Side airbag

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Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

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Open circuit:
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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Knee airbag

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Diagnosis information - Airbag

Knee airbag

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Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
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The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Knee airbag

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Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

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► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
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Diagnosis information - Airbag

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Diagnosis information - Airbag

Knee airbag

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Knee airbag

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⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

ⓘ INFORMATION

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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

Side airbag

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Fault effects

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Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

Side airbag

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Open circuit:
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Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

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Fault effects

♦ Warning light for Airbag is **ON**
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Diagnosis information - Airbag

Side airbag

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Diagnosis information - Airbag

Side airbag

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♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

INFORMATION

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⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
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⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

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Diagnostic conditions
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- Ignition on
- Airbag triggering unit Internal function test

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Diagnosis information - Airbag

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Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

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- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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Diagnosis information - Airbag

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Diagnosis information - Airbag

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♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

ⓘ INFORMATION

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⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

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► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

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Diagnostic conditions
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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

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Possible fault causes

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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

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Possible fault causes

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Fault effects

♦ Warning light for Airbag is **ON**
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Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

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Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

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Fault effects

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Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

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Diagnosis information - Airbag

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♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

INFORMATION

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Possible fault causes

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The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

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⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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- Ignition on > 5 Second(s), then:
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- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

Battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

Battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

Battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

B10151A

Diagnosis information - Airbag

Battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

B10151B

Diagnosis information - Airbag

Battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

B101553

Diagnosis information - Airbag

Battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

Indicator light, passenger airbag OFF

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101604

Diagnosis information - Airbag

Indicator light, passenger airbag OFF

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101612

Diagnosis information - Airbag

Indicator light, passenger airbag OFF

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101614

Diagnosis information - Airbag

Indicator light, passenger airbag OFF

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101629

Diagnosis information - Airbag

Indicator light, passenger airbag OFF

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101700

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101701

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101711

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101712

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101713

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B10174A

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101800

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101804

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101811

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101812

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101813

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
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► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B10184A

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
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► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101904

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101911

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101912

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101913

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101929

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B10194A

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

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⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

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► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

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♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

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⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
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♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
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► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
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- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

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♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
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♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101A04

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
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⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
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♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
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♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
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⚠WARNING
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- **Traffic hazard**

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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
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- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

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♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
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♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
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► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
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► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101A13

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

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⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

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⚠WARNING
Driving with attached/connected special tools or commercially available tools
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- **Traffic hazard**

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
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- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

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♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B101A29

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

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⚠WARNING
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- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

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♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

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► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
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♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

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Diagnosis information - Airbag

Airbag sensor

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Diagnosis information - Airbag

Airbag sensor

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Diagnosis information - Airbag

Airbag sensor

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Diagnosis information - Airbag

Airbag sensor

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Fault effects

♦ Warning light for Airbag is **ON**
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Diagnosis information - Airbag

Airbag sensor

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Fault effects

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Diagnosis information - Airbag

Airbag sensor

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Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

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- Ignition off > 2 Second(s), then:
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- Airbag triggering unit Internal function test

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♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
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Line test with no components connected

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Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Buckle switch

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- **Supply voltage** > 9.1 V
- Ignition on > 8 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 8 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Buckle switch

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⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 8 Second(s), then:
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- Ignition on > 8 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
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♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
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The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

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Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

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► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
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- **Traffic hazard**

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Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- **Supply voltage** > 9.1 V
- Ignition on > 8 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 8 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Sensor for seat position

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- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Sensor for seat position incorrect
♦ Sensor for seat position Faulty

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Line test without connected components

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Fault effects

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B101E01

Diagnosis information - Airbag

Sensor for seat position

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Diagnosis information - Airbag

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► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Sensor for seat position incorrect
♦ Sensor for seat position Faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag OFF key-operated switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test
► Actuate the following component: **Airbag OFF key-operated switch**

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

♦ Implausible signal - Measured resistance less than 2,900 Ohm and greater than 1,200 Ohm

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag OFF key-operated switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test
► Actuate the following component: **Airbag OFF key-operated switch**

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

♦ Implausible signal - Measured resistance less than 2,900 Ohm and greater than 1,200 Ohm

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102004

Diagnosis information - Airbag

Airbag OFF key-operated switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test
► Actuate the following component: **Airbag OFF key-operated switch**

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

♦ Implausible signal - Measured resistance less than 2,900 Ohm and greater than 1,200 Ohm

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102011

Diagnosis information - Airbag

Airbag OFF key-operated switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test
► Actuate the following component: **Airbag OFF key-operated switch**

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

♦ Implausible signal - Measured resistance less than 2,900 Ohm and greater than 1,200 Ohm

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102015

Diagnosis information - Airbag

Airbag OFF key-operated switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test
► Actuate the following component: **Airbag OFF key-operated switch**

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

♦ Implausible signal - Measured resistance less than 2,900 Ohm and greater than 1,200 Ohm

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag OFF key-operated switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test
► Actuate the following component: **Airbag OFF key-operated switch**

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

♦ Implausible signal - Measured resistance less than 2,900 Ohm and greater than 1,200 Ohm

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102053

Diagnosis information - Airbag

Airbag OFF key-operated switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test
► Actuate the following component: **Airbag OFF key-operated switch**

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

♦ Implausible signal - Measured resistance less than 2,900 Ohm and greater than 1,200 Ohm

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102200

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102201

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102204

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102211

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102212

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102213

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnostic information - airbag

Occupant detection control unit

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Occupant detection not coded/deactivated
♦ Electrical fault in circuit - short circuit to B+/ground/between lines or open circuit in the lines
♦ Ingress of moisture (e.g. spilled drink, rain, etc.) on the front-passenger seat

♦ Occupant detection control unit faulty
♦ Airbag control unit faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Automatic deactivation of the front-passenger airbag does not work

B102229

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102231

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102253

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102254

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102255

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B1022F0

Diagnostic information - airbag

Occupant detection control unit - calibration incorrect

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on

Possible fault causes

♦ Calibration of occupant detection not performed or not performed correctly

Fault effects

♦ Airbag warning light is **ON**
♦ Automatic deactivation of the front-passenger airbag does not work

B102304

Diagnosis information - Airbag

Pressure sensor Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102311

Diagnosis information - Airbag

Pressure sensor Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102312

Diagnosis information - Airbag

Pressure sensor Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102313

Diagnosis information - Airbag

Pressure sensor Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Fault Belt force sensor / belt buckle switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test

Possible fault causes

ⓘ The belt force sensor/belt buckle switch is installed in the front-passenger buckle and monitors the tensile force acting on the buckle. The belt force sensor/belt buckle switch is powered by the seat occupancy detection control unit.
The belt buckle itself (inserted/not inserted) is wired with the airbag control unit.

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Part stuck and exerting pressure or tension on the belt buckle while the front-passenger seat belt is not fastened
♦ Belt force sensor/belt buckle switch faulty
♦ Seat occupancy detection control unit faulty

Fault effects
Affected ignition circuit does not ignite or does not ignite in the specified time.

B102411

Diagnosis information - Airbag

Fault Belt force sensor / belt buckle switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test

Possible fault causes

ⓘ The belt force sensor/belt buckle switch is installed in the front-passenger buckle and monitors the tensile force acting on the buckle. The belt force sensor/belt buckle switch is powered by the seat occupancy detection control unit.
The belt buckle itself (inserted/not inserted) is wired with the airbag control unit.

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Part stuck and exerting pressure or tension on the belt buckle while the front-passenger seat belt is not fastened
♦ Belt force sensor/belt buckle switch faulty
♦ Seat occupancy detection control unit faulty

Fault effects
Affected ignition circuit does not ignite or does not ignite in the specified time.

B102412

Diagnosis information - Airbag

Fault Belt force sensor / belt buckle switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test

Possible fault causes

ⓘ The belt force sensor/belt buckle switch is installed in the front-passenger buckle and monitors the tensile force acting on the buckle. The belt force sensor/belt buckle switch is powered by the seat occupancy detection control unit.
The belt buckle itself (inserted/not inserted) is wired with the airbag control unit.

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Part stuck and exerting pressure or tension on the belt buckle while the front-passenger seat belt is not fastened
♦ Belt force sensor/belt buckle switch faulty
♦ Seat occupancy detection control unit faulty

Fault effects
Affected ignition circuit does not ignite or does not ignite in the specified time.

B102413

Diagnosis information - Airbag

Fault Belt force sensor / belt buckle switch

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
• Contusions, crushing injuries or death
• Traffic hazard

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test

Possible fault causes

ⓘ The belt force sensor/belt buckle switch is installed in the front-passenger buckle and monitors the tensile force acting on the buckle. The belt force sensor/belt buckle switch is powered by the seat occupancy detection control unit.
The belt buckle itself (inserted/not inserted) is wired with the airbag control unit.

♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Part stuck and exerting pressure or tension on the belt buckle while the front-passenger seat belt is not fastened
♦ Belt force sensor/belt buckle switch faulty
♦ Seat occupancy detection control unit faulty

Fault effects
Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

Passenger's airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Passenger's airbag

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Passenger's airbag

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Passenger's airbag

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Passenger's airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102700

Diagnosis information - Airbag

Seat occupancy sensors

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Implausible signal - The expected signal or message deviates from the specified value.
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines

♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102701

Diagnosis information - Airbag

Seat occupancy sensors

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Implausible signal - The expected signal or message deviates from the specified value.
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines

♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnostic information - airbag

Seat occupancy sensor

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Seat occupancy detection coded out
♦ Implausible signal - the expected signal or message deviates from the specified value.

♦ Electrical fault in circuit - short circuit to B+/ground/between lines or open circuit in the lines
♦ **Seat occupancy sensor** faulty
♦ Airbag triggering unit faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ No belt warning for affected seat
♦ Restricted function/no function of airbag control unit

B102711

Diagnostic information - airbag

Seat occupancy sensor

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Seat occupancy detection coded out
♦ Implausible signal - the expected signal or message deviates from the specified value.

♦ Electrical fault in circuit - short circuit to B+/ground/between lines or open circuit in the lines
♦ **Seat occupancy sensor** faulty
♦ Airbag triggering unit faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ No belt warning for affected seat
♦ Restricted function/no function of airbag control unit

Diagnosis information - Airbag

Seat occupancy sensors

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Implausible signal - The expected signal or message deviates from the specified value.
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines

♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102713

Diagnosis information - Airbag

Seat occupancy sensors

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Implausible signal - The expected signal or message deviates from the specified value.
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines

♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B102715

Diagnosis information - Airbag

Seat occupancy sensors

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Implausible signal - The expected signal or message deviates from the specified value.
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines

♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Seat occupancy sensors

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Implausible signal - The expected signal or message deviates from the specified value.
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines

♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnostic information - airbag

Seat occupancy sensor

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Seat occupancy detection coded out
♦ Implausible signal - the expected signal or message deviates from the specified value.

♦ Electrical fault in circuit - short circuit to B+/ground/between lines or open circuit in the lines
♦ **Seat occupancy sensor** faulty
♦ Airbag triggering unit faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ No belt warning for affected seat
♦ Restricted function/no function of airbag control unit

Diagnosis information - Airbag

Seat occupancy sensors

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Implausible signal - The expected signal or message deviates from the specified value.
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines

♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Driver's airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Passenger's airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Buckle switch

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 8 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 8 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Belt tensioner

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Seat belt force limiter

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Buckle switch

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 8 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 8 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Ignition circuit Belt tensioner

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Control module Airbag

INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Data record implausible - The data/programming version does not match the vehicle equipment.
♦ not compatible - the **Control module** Airbag (Airbag triggering unit) does not match the vehicle
♦ No data record programmed - the **Control module** Airbag (Airbag triggering unit) must be programmed.

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Side airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B103600

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B103601

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B103604

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B103611

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

B103612

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

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Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION
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⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

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Diagnosis information - Airbag

Airbag sensor

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Line test with no components connected

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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Buckle switch

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Possible fault causes

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♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

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Fault effects

♦ Warning light for Airbag is **ON**
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Diagnosis information - Airbag

Buckle switch

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Fault effects

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Diagnosis information - Airbag

Buckle switch

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Diagnosis information - Airbag

Buckle switch

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Diagnosis information - Airbag

Buckle switch

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Diagnosis information - Airbag

Buckle switch

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Diagnosis information - Airbag

Buckle switch

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► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
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⚠WARNING

Driving with attached/connected special tools or commercially available tools
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- **Traffic hazard**

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- **Supply voltage** > 9.1 V
- Ignition on > 8 Second(s), then:
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- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
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The specified values and value ranges correspond to the OK state in each case.

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♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
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Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Buckle switch

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Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 8 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 8 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Buckle switch

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING

Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 8 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 8 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance Seat belt buckle connected - 60 Ohm ⇒ 160 Ohm
♦ Setpoint resistance Seat belt buckle **not** connected - 240 Ohm ⇒ 620 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

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Diagnosis information - Airbag

Ignition circuit Belt tensioner

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.
When you connect the test tool 5056/C and then switch the ignition on and off, the fault code for stage 2 is detected because there is no airbag unit connected to it. The fault code must be deleted after removal of test tool 5056/C and after performing the repair or must be processed in accordance with the corresponding instructions.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)

● Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.
♦ A triggering event (accident or similar) has occurred

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test with no components connected

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Airbag sensor

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ The wiring harness between the airbag triggering unit, driver airbag unit and side airbags in the seats has many disconnection points, which also must be considered as possible fault causes.

In particular, check the:
- **Disconnection point X110.1A1 ⇒ Disconnection point X110.2A1**
- **Disconnection point X120.1A1 ⇒ Disconnection point X120.2A1**

► Additionally observe the following Workshop Manual: >970941< **Main wiring harness** Repair door disconnection point

♦ **Coding** - Ignition circuit is connected and OK, but is not coded. (in case of coding error)
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ **Airbag sensor** incorrect
♦ **Airbag sensor** Faulty

Line test with no components connected

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Seat occupancy detection

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Calibration - **Seat occupancy detection control unit** Calibration incorrect or not carried out
♦ **Seat occupancy detection control unit** serial number incorrect
♦ Electrical fault in circuit - Short circuit to B+/ground/between lines or open circuit in the lines
♦ Short circuit to B+ - Check plug connections, connectors and wiring and correct any problem(s).
♦ Short circuit to ground - Check plug connections, connectors and wiring and correct any problem (s).
♦ Open circuit - Check plug connections, connectors and wiring and correct any problem(s).
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter<

deviates from the specified value.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

High-voltage battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

High-voltage battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

High-voltage battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

High-voltage battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

High-voltage battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

High-voltage battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnosis information - Airbag

High-voltage battery main switch switching unit (**Disconnection element** - Open circuit Battery)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 Second(s), then:
- Ignition off > 2 Second(s), then:
- Ignition on > 5 Second(s)
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Electrical fault in circuit - Electrical connection between two ignition circuits (mutual short circuit). Short circuit in wiring harness of two ignition circuits
♦ Short circuit to B+/ground/between lines or open circuit in the lines
♦ Limit exceeded - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ Below limit - This fault is recognized if the angle measured between >control unit and igniter< deviates from the specified value.
♦ deactivated - The ignition circuit is deactivated, because the wear/age limit was reached.

NOTE
The specified values and value ranges correspond to the OK state in each case.

Ignition circuits

♦ Setpoint resistance - 1.2 Ohm ⇒ 6.0 Ohm

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Warning light for Airbag is **ON**
♦ Affected ignition circuit does not ignite or does not ignite in the specified time.

Diagnostic information - airbag

Occupant detection control unit

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Occupant detection not coded/deactivated
♦ Electrical fault in circuit - short circuit to B+/ground/between lines or open circuit in the lines
♦ Ingress of moisture (e.g. spilled drink, rain, etc.) on the front-passenger seat

♦ Occupant detection control unit faulty
♦ Airbag control unit faulty

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Automatic deactivation of the front-passenger airbag does not work

B122511

Diagnostic information - airbag

Occupant detection pressure sensor (sensor mat)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

B122512

Diagnostic information - airbag

Occupant detection pressure sensor (sensor mat)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

B12251A

Diagnostic information - airbag

Occupant detection pressure sensor (sensor mat)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

B12251B

Diagnostic information - airbag

Occupant detection pressure sensor (sensor mat)

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

ⓘ The occupant detection system is only installed for equipment option (I-no.) '4UQ - Advanced-Airbag'. This system then consists of the occupant detection control unit and the occupant detection pressure sensor (sensor mat). If this equipment is not installed, a simple seat occupancy detection system (seat occupancy sensor) is automatically installed.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines.

ⓘ INFORMATION

The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

B12F100

Diagnostic information - airbag

Indicator light, passenger airbag OFF

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 second(s)
- Internal function test on airbag triggering unit

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines.

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

B12F112

Diagnostic information - airbag

Indicator light, passenger airbag OFF

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 second(s)
- Internal function test on airbag triggering unit

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines.

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

B12F114

Diagnostic information - airbag

Indicator light, passenger airbag OFF

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** > 9.1 V
- Ignition on > 5 second(s)
- Internal function test on airbag triggering unit

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines.

ⓘ INFORMATION
The specified values and value ranges correspond to the OK state in each case.

Line test without connected components

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

Diagnosis information - Airbag

Multi-collision braking did not take place

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools and/ or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Airbag triggering unit detected a crash
- Ignition switched on and off again after crash event

Possible fault causes

ⓘ If the airbag control unit detects a crash, the PSM control unit initiates braking in order to prevent a multiple collision.

♦ The fault is set if the PSM control unit could not perform multi-collision braking.

Fault effects

♦ No functional restrictions for the airbag triggering unit

Diagnostic information - airbag

Airbag control unit faulty

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Airbag control unit faulty

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

B200094

Diagnostic information - airbag

Airbag control unit faulty

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► Never hang the **PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

⚠WARNING
Driving with attached/connected special tools or commercially available tools
- **Contusions, crushing injuries or death**
- **Traffic hazard**

► Never drive with special tools or commercially available tools attached instead of the airbag units.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on airbag triggering unit

Possible fault causes

♦ Airbag control unit faulty

Fault effects

♦ Airbag warning light is **ON**
♦ Restricted function/no function of airbag control unit

Diagnosis information - Airbag

Control module Airbag

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Data record implausible - The data/programming version does not match the vehicle equipment.
♦ not compatible - the **Control module** Airbag (Airbag triggering unit) does not match the vehicle
♦ No data record programmed - the **Control module** Airbag (Airbag triggering unit) must be programmed.

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Control module Airbag

INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Data record implausible - The data/programming version does not match the vehicle equipment.
♦ not compatible - the **Control module** Airbag (Airbag triggering unit) does not match the vehicle
♦ No data record programmed - the **Control module** Airbag (Airbag triggering unit) must be programmed.

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Control module Airbag

INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

WARNING
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► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Data record implausible - The data/programming version does not match the vehicle equipment.
♦ not compatible - the **Control module** Airbag (Airbag triggering unit) does not match the vehicle
♦ No data record programmed - the **Control module** Airbag (Airbag triggering unit) must be programmed.

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Disposal according to ISO

⚠ WARNING
Uncontrolled triggering of the airbag
● Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on
● Airbag triggering unit Internal function test

Possible fault causes

♦ Disposal according to ISO - Fault is entered if disposal ignition was not carried out fully.

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

Diagnosis information - Airbag

Supply voltage

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Below limit (Vehicle voltage)
- Fuse 14 in the Fuse carrier **Instrument panel** right
- Fuse 11 in the **Current distributor**
- **Generator wiring harness**
- **Alternator** Charging current/voltage too low
- Short circuit to ground or open circuit in lines

♦ Limit exceeded (Vehicle voltage)
- **Alternator** Charging current/voltage Too high

NOTE

The specified values and value ranges correspond to the OK state in each case.

♦ Supply voltage Airbag control unit 6.0 V ⇒ 16.5 V

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

U101100

Diagnostic information

Battery

Possible fault causes

- Battery discharged, loads are not deactivated
- Battery not charged
- Negative charging balance, usage behavior of customer
- Contact resistance at the terminal clamps or in the B+ and/or ground line
- Closed-circuit current too great
- Generator or generator regulator faulty
- Battery-acid level and/or density is incorrect
- Battery too old/faulty

Fault effects

- Voltage supply/supply voltage fault entry in various control modules

U101200

Diagnosis information - Airbag

Supply voltage

ⓘ INFORMATION
The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING
Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.

Diagnostic conditions

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ Below limit (Vehicle voltage)
- Fuse 14 in the Fuse carrier **Instrument panel** right
- Fuse 11 in the **Current distributor**
- **Generator wiring harness**
- **Alternator** Charging current/voltage too low
- Short circuit to ground or open circuit in lines

♦ Limit exceeded (Vehicle voltage)
- **Alternator** Charging current/voltage Too high

NOTE
The specified values and value ranges correspond to the OK state in each case.

♦ Supply voltage Airbag control unit 6.0 V ⇒ 16.5 V

Line test without connected components

Short circuit to B+:

♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:

♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:

♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:

♦ Setpoint resistance **> 0.9 MOhm**

U101300

Diagnosis information - Airbag

Control module Airbag

ⓘ INFORMATION

The information contained here in the document does not refer to the installation location of the component. Refer to the fault code text or the diagnosed object text for the installation location of the component (e.g. front, rear, left, right, driver side, passenger side). Refer to the stored fault code for the fault cause.

⚠WARNING

Uncontrolled triggering of the airbag
- **Contusions, crushing injuries or death**

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Airbag triggering unit Internal function test

Possible fault causes

♦ **Coding** - Ignition circuit is connected and OK, but is not coded.
♦ Data record implausible - The data/programming version does not match the vehicle equipment.
♦ not compatible - the **Control module** Airbag (Airbag triggering unit) does not match the vehicle
♦ No data record programmed - the **Control module** Airbag (Airbag triggering unit) must be programmed.

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

U110000

Diagnosis information - Airbag

Component protection

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test

Possible fault causes

♦ Component protection - not taught

Remedial action

► Teach >component protection< using >PIWIS Tester II< ⇒ >Diagnostics< ⇒ >Online teaching functions<.

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

U110100

Diagnosis information - Airbag

Component protection

⚠WARNING
Uncontrolled triggering of the airbag
• Contusions, crushing injuries or death

► **Never hang the PIWIS Tester** on or over the steering wheel.
► Before working on the ignition circuits of the airbag system, always disconnect the battery from the vehicle electrical system and ensure that the vehicle electrical system is de-energized.
► Wait for at least one minute before starting work on the airbag system.
► Perform fault finding on the ignition circuits of the airbag system and its lines only using approved special tools.
► Make sure that the airbag control unit is always installed securely in the vehicle before and after working on the airbag system.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

• Ignition on
• Airbag triggering unit Internal function test

Possible fault causes

♦ Component protection - not taught

Remedial action

► Teach >component protection< using >PIWIS Tester II< ⇒ >Diagnostics< ⇒ >Online teaching functions<.

Fault effects

♦ Warning light for Airbag is **ON**
♦ **Control module** Airbag Limited function / No function

U112100

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

U112200

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

U112300

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Cayenne , MY 2011 =>

Diagnosis information - Memory seat adjustment driver

01BE..... 1
01BF..... 2
0214..... 3
0412..... 4
0758..... 5
0759..... 6
075A..... 7
075B..... 8
076D..... 9
076E..... 10
077B..... 11
077C..... 12
07B1..... 13
07B2..... 14
07B5..... 15
07B8..... 16
07D5..... 17
0CF1..... 18
0CF2..... 19
0CF3..... 20
0CF4..... 21
0CF6..... 22
0CF7..... 23
0CF8..... 24
0CF9..... 25
0CFA..... 26
0CFB..... 27
0CFC..... 28
0CFD..... 29
0D02..... 30
0D03..... 31
0D04..... 32
0D05..... 33
3D00..... 34
3D01..... 35
3D02..... 36
3D03..... 37
3D04..... 38
3D05..... 39

3D0A..... 40
3D0B..... 41
3D0C..... 42
3D0D..... 43
3FDA..... 44
3FDB..... 45

01BE

Diagnosis information - Seat adjustment memory control module

Supply voltage

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Supply voltage** Terminal 30 < 9 V

Fault effects

♦ **Memory seat adjustment** No function

Diagnosis information - Seat adjustment memory control module

Supply voltage

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Supply voltage** Terminal 30 < 9 V

Fault effects

♦ **Memory seat adjustment** No function

Diagnosis information - Seat adjustment memory control module

Supply voltage

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Supply voltage** Terminal 30 < 9 V

Fault effects

♦ **Memory seat adjustment** No function

Diagnostic information - memory seat adjustment control unit

Control unit, **coding**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- No/incorrect coding

Fault effects

♦ Restricted function of **memory seat adjustment control unit**

Diagnosis information - Seat adjustment memory control module

Lumbar support switch

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Limited function **Lumbar support adjustment**

Diagnosis information - Seat adjustment memory control module

Lumbar support switch

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Limited function **Lumbar support adjustment**

Diagnosis information - Seat adjustment memory control module

Lumbar support switch

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Limited function **Lumbar support adjustment**

Diagnosis information - Seat adjustment memory control module

Lumbar support switch

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Limited function **Lumbar support adjustment**

Diagnosis information - Seat adjustment memory control module

Engine Lumbar height adjustment, vertical

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Lumbar curvature motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, Engine Lumbar height adjustment, vertical

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, Lumbar curvature motor

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Seat depth adjustment motor**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Coding pin (Fault code 07D5)

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Seat adjustment memory control module** adapted to wrong seat (Driver's side or Passenger's side)
- Line from coding pin to ground pin in plug Faulty (connector B)

Fault effects

- No seat function restriction
- CAN bus function restriction

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Seat fore-and-aft adjustment motor**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Motor for backrest adjustment**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Seat height adjustment motor**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Seat angle adjustment motor**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

3D03

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Pump Lumbar support adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Pump** Seat contour Faulty

Fault effects

♦ **Lumbar support adjustment** No function

Diagnosis information - Seat adjustment memory control module

Pump valve unit Seat contour

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground or open circuit in the line
- **Pump valve unit** Faulty

Fault effects

♦ Adjustment Seat contour Faulty

Diagnosis information - Seat adjustment memory control module

Activation Ventil unit **Lumbar support adjustment**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground or open circuit in the line
- Ventil unit **Lumbar support adjustment** Faulty

Fault effects

♦ **Lumbar support adjustment** No function

Diagnosis information - Seat adjustment memory control module

Ventil unit **Lumbar support adjustment**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Drive link is electrically actuated without detectable mechanical reaction.

Fault effects

♦ **Lumbar support adjustment** up or down No function

Diagnosis information - Seat adjustment memory control module

Ventil unit **Lumbar support adjustment**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Drive link is electrically actuated without detectable mechanical reaction.

Fault effects

♦ **Lumbar support adjustment** up or down No function

Diagnosis information - Seat adjustment memory control module

Supply voltage Ventil unit **Lumbar support adjustment**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Supply voltage** Terminal 30 < 9 V

Fault effects

♦ **Lumbar support adjustment** No function

Diagnosis information - Seat adjustment memory control module

Seat adjustment memory control module

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ Limited function **Seat adjustment memory control module**

Diagnosis information - Seat adjustment memory control module

Seat adjustment memory control module

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ Limited function **Seat adjustment memory control module**

Cayenne , MY 2011 =>

Diagnosis information - Memory seat adjustment passenger

0003..... 1
0214..... 2
0412..... 3
0758..... 4
0759..... 5
075A..... 6
075B..... 7
076D..... 8
076E..... 9
077B..... 10
077C..... 11
07B1..... 12
07B2..... 13
07B5..... 14
07B8..... 15
07D5..... 16
0CF1..... 17
0CF2..... 18
0CF3..... 19
0CF4..... 20
0CF6..... 21
0CF7..... 22
0CF8..... 23
0CF9..... 24
0CFA..... 25
0CFB..... 26
0CFC..... 27
0CFD..... 28
0D02..... 29
0D03..... 30
0D04..... 31
0D05..... 32
3D00..... 33
3D01..... 34
3D02..... 35
3D03..... 36
3D04..... 37
3D05..... 38
3D0A..... 39

3D0B..... 40
3D0C..... 41
3D0D..... 42
3FDA..... 43
3FDB..... 44

0003

Diagnostic information - memory seat adjustment control unit

Control unit, **coding**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- No/incorrect coding

Fault effects

♦ Restricted function of **memory seat adjustment control unit**

0214

Diagnosis information - Seat adjustment memory control module

Supply voltage

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Supply voltage** Terminal 30 < 9 V

Fault effects

♦ **Memory seat adjustment** No function

0412

Diagnostic information - memory seat adjustment control unit

Control unit, **coding**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- No/incorrect coding

Fault effects

♦ Restricted function of **memory seat adjustment control unit**

Diagnosis information - Seat adjustment memory control module

Lumbar support switch

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Limited function **Lumbar support adjustment**

Diagnosis information - Seat adjustment memory control module

Lumbar support switch

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Limited function **Lumbar support adjustment**

075A

Diagnosis information - Seat adjustment memory control module

Lumbar support switch

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Limited function **Lumbar support adjustment**

075B

Diagnosis information - Seat adjustment memory control module

Lumbar support switch

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Limited function **Lumbar support adjustment**

076D

Diagnosis information - Seat adjustment memory control module

Engine Lumbar height adjustment, vertical

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

076E

Diagnosis information - Seat adjustment memory control module

Lumbar curvature motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, Engine Lumbar height adjustment, vertical

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, Lumbar curvature motor

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Seat depth adjustment motor**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Coding pin (Fault code 07D5)

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Seat adjustment memory control module** adapted to wrong seat (Driver's side or Passenger's side)
- Line from coding pin to ground pin in plug Faulty (connector B)

Fault effects

- No seat function restriction
- CAN bus function restriction

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Seat fore-and-aft adjustment motor**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Motor for backrest adjustment**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Seat height adjustment motor**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Hall-effect sensor, **Seat angle adjustment motor**

INFORMATION

From model year 2012 onwards, the seat positions are no longer detected by a hall sender in the electric motor. The control unit detects the fluctuations in current in the supply lines that occur when the motor is running and converts these to revolutions.

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Hall sensor signal does not change at Activation **Adjusting motor**
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Affected axis limp-home mode
♦ The memory seat adjustment control unit cannot store the position of the affected axis or cannot move to the stored position.

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

0CF8

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

0D02

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

0D03

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

0D04

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

0D05

Diagnosis information - Seat adjustment memory control module

Seat adjustment motor

Diagnostic conditions

- Ignition on
- ► Activation of the affected axle in both directions

Fault setting condition(s)

- Overtemperature **Seat adjustment motor**

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

3D01

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

3D03

Diagnosis information - Seat adjustment memory control module

Switch, memory seat adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Button** stuck outside **neutral** position
- Short circuit between the lines

Fault effects

♦ Affected axis does not function

Diagnosis information - Seat adjustment memory control module

Pump Lumbar support adjustment

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground/between lines or open circuit in the lines
- **Pump** Seat contour Faulty

Fault effects

♦ **Lumbar support adjustment** No function

3D05

Diagnosis information - Seat adjustment memory control module

Pump valve unit Seat contour

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground or open circuit in the line
- **Pump valve unit** Faulty

Fault effects

♦ Adjustment Seat contour Faulty

Diagnosis information - Seat adjustment memory control module

Activation Ventil unit **Lumbar support adjustment**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground or open circuit in the line
- Ventil unit **Lumbar support adjustment** Faulty

Fault effects

♦ **Lumbar support adjustment** No function

Diagnosis information - Seat adjustment memory control module

Ventil unit **Lumbar support adjustment**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Drive link is electrically actuated without detectable mechanical reaction.

Fault effects

♦ **Lumbar support adjustment** up or down No function

Diagnosis information - Seat adjustment memory control module

Ventil unit **Lumbar support adjustment**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Drive link is electrically actuated without detectable mechanical reaction.

Fault effects

♦ **Lumbar support adjustment** up or down No function

Diagnosis information - Seat adjustment memory control module

Supply voltage Ventil unit **Lumbar support adjustment**

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- **Supply voltage** Terminal 30 < 9 V

Fault effects

♦ **Lumbar support adjustment** No function

Diagnosis information - Seat adjustment memory control module

Seat adjustment memory control module

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ Limited function **Seat adjustment memory control module**

Diagnosis information - Seat adjustment memory control module

Seat adjustment memory control module

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ Limited function **Seat adjustment memory control module**

Cayenne , MY 2011 =>

Diagnosis information - Auxiliary heater

0003..... 1
01BE..... 2
01BF..... 3
0214..... 4
0298..... 5
0412..... 6
04C9..... 7
04D1..... 8
057E..... 9
057F..... 10
0581..... 11
0582..... 12
0583..... 14
0585..... 15
0586..... 17
0587..... 19
05A4..... 21
05D2..... 22
05D3..... 24
0817..... 26
0824..... 27
0825..... 28
082F..... 29
08C5..... 30
08CB..... 31
0998..... 32
0A64..... 33
0BE1..... 34
0C67..... 35
0C68..... 36
0CBF..... 38
0EA8..... 39

Diagnosis information - Auxiliary heater control unit

Control unit faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Auxiliary heater control unit ON**
- CAN Active

Possible fault causes

♦ Internal control unit fault

Fault effects

♦ No function **Auxiliary heater control unit**

Diagnosis information - Auxiliary heater control unit

Function restriction Undervoltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Auxiliary heater control unit** Active

Possible fault causes

♦ none Display
♦ lower limit value below limit

Fault setting condition(s)

- none Display : Voltage drop
- lower limit value below limit : Voltage Heater < 10 V +/- 0.2 V to > 25 Second(s)

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

Function restriction Overvoltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Auxiliary heater control unit** Active

Possible fault causes

♦ upper limit value exceeded

Fault setting condition(s)

- upper limit value exceeded : Voltage Heater > 15.5 V

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

Power supply

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Auxiliary heater control unit** Active

Possible fault causes

♦ Limit exceeded
♦ Below limit

Fault setting condition(s)

- Limit exceeded : Voltage > 16 V
- Below limit : Voltage < 9 V

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

Fuel level display

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **Fuel level display** Reserve (via CAN)

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

Control module not coded

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ **Coding** - does not match vehicle

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

Receiver Auxiliary heater

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- No signal/communication : Communication Active
- Implausible signal : Message at Communication Active
- Faulty : **Auxiliary heater control unit** Active

Possible fault causes

- No signal/communication : Short circuit to B+/ground/between lines or open circuit in the lines
- Implausible signal : Deviation Signal
- Faulty : Receiver Faulty via LIN bus

Fault effects

- start **Auxiliary heater control unit** with **Remote control not** possible

Diagnosis information - Auxiliary heater control unit

3/2-way directional-control valve Short circuit to B+/ground/between lines or open circuit in the lines

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Short circuit to ground : **3/2-way directional-control valve** Active
- Short circuit to B+ : **3/2-way directional-control valve** not active
- Open circuit : **3/2-way directional-control valve** Active

Possible fault causes

- Short circuit to ground
- Short circuit to B+
- Open circuit

Fault setting condition(s)

- Short circuit to ground : U < 2.3 V
- Short circuit to B+ : U > 5.3 V
- Open circuit : I < 52 - 235 mA

Fault effects

- Short circuit to B+ : No malfunction
- **Auxiliary heater control unit** No function

057E

Diagnosis information - Auxiliary heater control unit

No flame formation

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● during Starting process Auxiliary heater

Possible fault causes

♦ Open circuit Fuel line forward / to **Metering pump**
♦ No flame formation
♦ Air throughput disrupted, Intake air or exhaust gas flow
♦ Auxiliary heater extended period switched off

Fault effects

♦ **Auxiliary heater control unit** No function
♦ **Auxiliary heater control unit** locked

to 5 x Fault code 057E successively

057F

Diagnosis information - Auxiliary heater control unit

Flame interruption

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● during 10 Minute(s) Auxiliary heater

Possible fault causes

♦ Open circuit Fuel line forward / to **Metering pump**
♦ No flame formation

Fault effects

♦ **Auxiliary heater control unit** No function

0581

Diagnosis information - Auxiliary heater control unit

Repeated flame interruption

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● during Full load Auxiliary heater

Possible fault causes

♦ Open circuit Fuel line forward / to **Metering pump**
♦ No flame formation during Full load Auxiliary heater

Fault effects

♦ **Auxiliary heater control unit** No function

0582

Diagnosis information - Auxiliary heater control unit

Heater overheated

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● no Display : **Metering pump** Active
● Limit exceeded : **Metering pump** Active
● Implausible signal : Heating Open circuit

Possible fault causes

♦ **Temperature** Too high
♦ **Temperature** increase Too high
♦ Time exceeded

Fault setting condition(s)

● no Display: **Coolant temperature** > 120 °C (248 °F), **Temperature sensor** Surface > 120 °C (248 °F) or **Metering pump** is switched off
● Limit exceeded : **Temperature Coolant** > 25° **Temperature** Surface at **Coolant temperature** > 70 °C (158 °F)
or **Temperature** Surface > 30° **Temperature Coolant** at **Coolant temperature** > 70 °C (158 °F)
● Implausible signal : Time exceeded < 900 Second(s)

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

Temperature sensor Coolant ,Short circuit to ground or open circuit in lines

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Short circuit to ground : **Auxiliary heater control unit** Active
- Open circuit : **Auxiliary heater control unit** Active

Possible fault causes

♦ Short circuit to ground
♦ Open circuit

Fault setting condition(s)

- Short circuit to ground : **Coolant temperature** calculated > 200°C (392 °F)

- Open circuit : **Coolant temperature** calculated < - 45°C (-49 °F)

Fault effects

♦ **Auxiliary heater control unit** No function
♦ **Auxiliary heater control unit** locked

0585

Diagnosis information - Auxiliary heater control unit

Metering pump Short circuit to B+/ground/between lines or open circuit in the lines

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Short circuit to ground : **Metering pump** Active
- Short circuit to B+ : **Metering pump** not active
- Open circuit : **Metering pump** Active

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit

Fault setting condition(s)

- Short circuit to ground : U < 1,5V
- Short circuit to B+ : U > 3.5 V
- Open circuit : I < 50 - 120 mA

Fault effects

♦ **Auxiliary heater control unit** No function

0586

Diagnosis information - Auxiliary heater control unit

Fresh-air blower Short circuit to B+/ground/between lines or open circuit in the lines , Mechanical fault

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Short circuit to ground : **Fresh-air blower** Active
- Short circuit to B+ : **Fresh-air blower** not active
- Open circuit : **Fresh-air blower** Active
- Mechanical fault : **Fresh-air blower** Active

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Mechanical fault

Fault setting condition(s)

- Short circuit to ground : U < 3 V at Operating voltage > 8.5 V
- Short circuit to B+ : U > 8,5 V
- Open circuit : U < Operating voltage - 2 V
- Mechanical fault : ---

Fault effects

♦ **Auxiliary heater control unit** No function

0587

Diagnosis information - Auxiliary heater control unit

Coolant pump Short circuit to B+/ground/between lines or open circuit in the lines

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Short circuit to ground : **Coolant pump** Active
- Short circuit to B+ : **Coolant pump** not active and Engine off
- Open circuit : **Coolant pump** Active and Engine off

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit

Fault setting condition(s)

- Short circuit to ground : U < 1,5V
- Short circuit to B+ : U > 3.5 V
- Open circuit : I < 50 - 120 mA

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

Undervoltage Cutout (CAN)

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Heater Active

Possible fault causes

♦ Undervoltage via CAN from **Gateway control module**

Fault effects

♦ Auxiliary heater off

Diagnosis information - Auxiliary heater control unit

Flame monitor

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Short circuit to ground : **Auxiliary heater control unit** Active
- Open circuit : **Auxiliary heater control unit** Active
- Implausible signal : Start Heater

Possible fault causes

♦ Short circuit to ground
♦ Open circuit
♦ Implausible signal

Fault setting condition(s)

- Short circuit to ground : **Temperature** calculated < -53°C (-63 °F)
- Open circuit : **Temperature** calculated > 560°C (1,040 °F)
- Implausible signal : Overtemperature despite Fan to

Fault effects

♦ **Auxiliary heater control unit** No function
♦ **Auxiliary heater control unit** locked

Diagnosis information - Auxiliary heater control unit

Glow plug Short circuit to B+/ground/between lines or open circuit in the lines Electrical fault

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Short circuit to ground : Glow plug Active
- Short circuit to B+ : Glow plug not active
- Open circuit : Glow plug Active
- Electrical fault : Glow plug Active

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Electrical fault

Fault setting condition(s)

- Short circuit to ground : U < 2,3 V
- Short circuit to B+ : U > 0.5 * Operating voltage
- Open circuit : I < 2 A
- Electrical fault : ----

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

LIN bus

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- no communication during **Remote control for auxiliary heater**

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ start **Auxiliary heater control unit** with **Remote control not** possible

Diagnosis information - Auxiliary heater control unit

Component protection

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Auxiliary heater control unit** Active

Possible fault causes

♦ no or incorrect basic setting/adaptation : teaching not performed

Fault effects

♦ start **Auxiliary heater control unit not** possible

Diagnosis information - Auxiliary heater control unit

incorrect Heater installed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Heater - does not match vehicle

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Auxiliary heater control unit

Component protection Active

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Auxiliary heater control unit** Active

Possible fault causes

♦ none Display : Identification Component **not** possible
♦ Implausible signal : Identification Vehicle **not** possible

Fault effects

♦ start **Auxiliary heater control unit not** possible

Diagnosis information - Auxiliary heater control unit

Closed circuit **Remote control**

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- No signal/communication : Active Communication
- Implausible signal : Message at Communication Active

Possible fault causes

♦ No signal/communication : Short circuit to B+/ground/between lines or open circuit in the lines
♦ Implausible signal : Deviation Signal

Fault effects

♦ start **Auxiliary heater control unit** with **Remote control not** possible

Diagnosis information - Auxiliary heater control unit

Control module locked

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Auxiliary heater control unit** Active

Possible fault causes

- Fault code 0003 or 0583 or 05D2 or 0C67
- Fault code 0582 or 0C67 Fault type(s) none Display
- Fault code 0C68 Fault type(s) Short circuit to B+ or Fault type(s) Open circuit
- 5 x equal Fault code 0446 or 01BE Fault type(s) none Display

Fault effects

- start **Auxiliary heater control unit not** possible

Diagnosis information - Auxiliary heater control unit

Line filling

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● **Auxiliary heater control unit** Active

Possible fault causes

♦ Line filling not completed

Fault effects

♦ start **Auxiliary heater control unit not** possible

Diagnosis information - Auxiliary heater control unit

Remote control not taught

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Auxiliary heater control unit** Active

Possible fault causes

♦ teaching not performed

Fault effects

♦ start **Auxiliary heater control unit not** possible

Diagnosis information - Auxiliary heater control unit

Energy management Active

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Heater Active

Possible fault causes

♦ Undervoltage (10.5 V) via CAN from **Gateway control module**

Fault effects

♦ Heater Active to END
♦ no new start Heater

Diagnosis information - Auxiliary heater control unit

Programming

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Auxiliary heater control unit ON**

Possible fault causes

♦ Incorrect data record

Fault effects

♦ No function **Auxiliary heater control unit**

Diagnosis information - Auxiliary heater control unit

Temperature sensor Surface Heater

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Short circuit to ground : **Auxiliary heater control unit** Active
- Open circuit : **Auxiliary heater control unit** Active
- Implausible signal : Start Heater

Possible fault causes

♦ Short circuit to ground
♦ Open circuit
♦ Implausible signal

Fault setting condition(s)

- Short circuit to ground : **Temperature** calculated > 166°C (331 °F)
- Open circuit : **Temperature** calculated < -53 °C (-63 °F)
- Implausible signal : Difference **Temperature** > 30° forward **Fuel supply**

Fault effects

♦ **Auxiliary heater control unit** No function
♦ **Auxiliary heater control unit** locked

Diagnosis information - Auxiliary heater control unit

Flame abort due to Fault in the **Control module**

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on
● **Auxiliary heater control unit ON**

Possible fault causes

♦ Incorrect data record

Fault effects

♦ No function **Auxiliary heater control unit**

Diagnosis information - Auxiliary heater control unit

Remote control Auxiliary heater

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Auxiliary heater control unit** Active

Possible fault causes

♦ **Remote control** Faulty from Receiver via LIN bus

Fault effects

♦ start **Auxiliary heater control unit** with **Remote control not** possible

Cayenne , MY 2011 =>

Diagnosis information - Air-conditioning system

008000..... 1
008001..... 2
008010..... 3
008011..... 4
008012..... 5
008013..... 6
008014..... 7
008015..... 8
008020..... 9
008021..... 10
008022..... 11
008023..... 12
008030..... 13
008031..... 14
008032..... 15
008033..... 16
008040..... 17
008041..... 18
008042..... 19
008043..... 20
008050..... 21
008051..... 22
008060..... 23
008061..... 24
008070..... 25
008071..... 26
008100..... 27
008101..... 28
008102..... 29
008103..... 30
008104..... 31
008105..... 32
008106..... 33
008107..... 34
008110..... 35
008111..... 37
008120..... 39
008121..... 40
008123..... 41

008130 42
008131 43
008132 44
008133 45
008140 46
008140 47
008141 48
008141 49
008142 50
008143 51
008145 52
008147 53
00814A 55
00814A 56
008150 57
008151 59
008152 60
008200 62
008201 64
008202 66
008203 68
008204 69
008205 71
008206 73
008207 75
008208 76
008209 78
008210 80
008211 82
008213 83
008214 85
008215 87
008216 88
008217 90
008218 92
008219 94
008220 95
008221 97
008222 99

008223 101
008224 102
008225 104
008226 106
008227 108
008228 109
008229 110
008230 111
008231 112
008232 113
008233 115
008234 117
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008240 120
008241 122
008242 124
008243 126
008244 127
008245 129
008246 131
008247 133
008248 134
008249 136
008250 138
008251 140
008252 141
008253 143
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008255 147
008256 148
008257 150
008258 152
008259 154
008260 155
008261 157
008262 159
008263 161
008264 162
008265 164

008266 166
008267 168
008268 169
008269 171
008270 173
008271 175
008272 176
008273 178
008274 180
008275 182
008276 183
008277 184
008278 185
008279 186
008280 187
008281 188
008282 189
008283 190
008284 191
008285 192
008300 193
008301 195
008302 197
008303 199
008304 201
008305 203
008306 205
008307 207
008308 209
008309 211
00830A 213
00830B 215
00830C 217
00830D 219
00830E 221
00830F 223
008320 225
008321 226
008322 227

008323..... 228
008400..... 229
008401..... 230
008420..... 231
008421..... 232
008422..... 233
008423..... 234
008424..... 235
008425..... 236
008426..... 237
008430..... 238
008431..... 239
008432..... 240
008450..... 241
008451..... 242
008452..... 243
008453..... 244
008454..... 245
008455..... 246
008466..... 247
8212..... 249
C11000..... 251
C11001..... 252
C11002..... 253
C11003..... 254
C11004..... 255
C11005..... 256
C11006..... 257
C11007..... 258

Diagnostic information - manual air conditioner

Power supply for the sensors (5 V)

NOTE
The fault is detected when a voltage of:
♦ greater than 5.5 V (upper limit exceeded)
or
♦ less than 4.5 V (below lower limit)
is present for longer than 15 seconds.
When the fault is detected, regulation is no longer possible and the temperature mixing flap, footwell/defroster flap and central flap are entered.

Diagnostic conditions:

- Ignition on
- 20 seconds diagnostic time
- No power supply fault stored

Possible fault causes:

♦ Short circuit to B+/ground or mutual short circuit in the lines
♦ Flap motor faulty
♦ Air conditioning regulator faulty

Diagnostic information - manual air conditioner

Power supply for the sensors (5 V)

NOTE
The fault is detected when a voltage of:
♦ greater than 5.5 V (upper limit exceeded)
or
♦ less than 4.5 V (below lower limit)
is present for longer than 15 seconds.
When the fault is detected, regulation is no longer possible and the temperature mixing flap, footwell/defroster flap and central flap are entered.

Diagnostic conditions:

- Ignition on
- 20 seconds diagnostic time
- No power supply fault stored

Possible fault causes:

♦ Short circuit to B+/ground or mutual short circuit in the lines
♦ Flap motor faulty
♦ Air conditioning regulator faulty

Diagnosis information - Air-conditioning system

Interior temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground or Open circuit
- Signal Voltage
  U < 0.1 V

Short circuit to B+
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

Interior temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground or Open circuit
- Signal Voltage
  U < 0.1 V

Short circuit to B+
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

Interior temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground or Open circuit
- Signal Voltage
  U < 0.1 V

Short circuit to B+
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

Interior temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground or Open circuit
- Signal Voltage
  U < 0.1 V

Short circuit to B+
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

Interior temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground or Open circuit
- Signal Voltage
  U < 0.1 V

Short circuit to B+
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

Interior temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground or Open circuit
- Signal Voltage
  U < 0.1 V

Short circuit to B+
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Blow-out temperature sensor front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Blow-out temperature sensor front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Blow-out temperature sensor front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Blow-out temperature sensor front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Footwell blow-out temperature sensor front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Footwell blow-out temperature sensor front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Footwell blow-out temperature sensor front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Footwell blow-out temperature sensor front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Blow-out temperature sensor rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Blow-out temperature sensor rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Blow-out temperature sensor rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Blow-out temperature sensor rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Intake air temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Intake air temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Evaporator temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Evaporator temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Outside temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Outside temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Seat temperature sensor front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Seat temperature sensor front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

Seat temperature sensor front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

Seat temperature sensor front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Seat temperature sensor rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Seat temperature sensor rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Seat temperature sensor rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Seat temperature sensor rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
  t > 1 < 11 s

Fan regulator Overtemperature
- Period of time
  t > 1 < 11 s
- Measuring temperature > 113 °C (235 °F)

Fan regulator - Overvoltage
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 30.5 A

- Signal Voltage
  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
  t > 1 < 11 s

Fan regulator Overtemperature
- Period of time
  t > 1 < 11 s
- Measuring temperature > 113 °C (235 °F)

Fan regulator - Overvoltage
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 30.5 A

- Signal Voltage
  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Pulse/duty factor = 0 %

Short circuit to B+ or Open circuit
- Pulse/duty factor = 100 %

Fault effects

- Limited function
- No refrigerating output

Diagnosis information **- Air-conditioning system**

Pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Pulse/duty factor = 0 %

Short circuit to B+ or Open circuit
- Pulse/duty factor = 100 %

Fault effects

- Limited function
- No refrigerating output

Diagnosis information **- Air-conditioning system**

Pressure sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Pulse/duty factor = 0 %

Short circuit to B+ or Open circuit
- Pulse/duty factor = 100 %

Fault effects

- Limited function
- No refrigerating output

Diagnosis information **- Air-conditioning system**

Potentiometer Centre vent front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Potentiometer Centre vent front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information **- Air-conditioning system**

Potentiometer Centre vent front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

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Diagnosis information **- Air-conditioning system**

Potentiometer Centre vent front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.1 V

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 4.9 V

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

Valve Air-conditioning compressor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Current
  I > 900mA
- Period of time
  t > 2 s

Short circuit to B+ or Open circuit
- Signal Current
  I < 200 mA
- Period of time
  t > 2 s

Fault effects

♦ No refrigerating output

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Before taking measurements, check that the affected connectors, plug connections, contacts, lines and components are seated securely, are connected and show no signs of damage, oxidation or corrosion.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Air-conditioning system

Valve Air-conditioning compressor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Current
  I > 900mA
- Period of time
  t > 2 s

Short circuit to B+ or Open circuit
- Signal Current
  I < 200 mA
- Period of time
  t > 2 s

Fault effects

♦ No refrigerating output

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Before taking measurements, check that the affected connectors, plug connections, contacts, lines and components are seated securely, are connected and show no signs of damage, oxidation or corrosion.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information **- Air-conditioning system**

Relay **Auxiliary water pump**

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- **Auxiliary water pump** off

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.85 V (**Auxiliary water pump** off)

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 1.25 V (**Auxiliary water pump** to)

Fault effects

Short circuit to B+
♦ **Auxiliary water pump** permanent to

Short circuit to ground
♦ Heating too low
♦ **Auxiliary water pump** permanent off

Diagnosis information **- Air-conditioning system**

Relay **Auxiliary water pump**

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- **Auxiliary water pump** off

Fault setting condition(s)

Short circuit to ground
- Signal Voltage
  U < 0.85 V (**Auxiliary water pump** off)

Short circuit to B+ or Open circuit
- Signal Voltage
  U > 1.25 V (**Auxiliary water pump** to)

Fault effects

Short circuit to B+
♦ **Auxiliary water pump** permanent to

Short circuit to ground
♦ Heating too low
♦ **Auxiliary water pump** permanent off

Diagnosis information - Air-conditioning system

Air quality sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Implausible signal, no communication
- Period of time
  t > 1 < 11 s

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

High-voltage interior heater - Power supply

⚠WARNING

High voltage on the high-voltage system of the hybrid vehicle.

- **Electric shock from touching live parts**
- **Severe burns or death**
- **Health risks for persons with life-assisting systems**

⇒ The system must be isolated from the power supply by a high-voltage technician before carrying out any work on the high-voltage vehicle electrical system and any repair work on the body.
⇒ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
⇒ Observe General **WARNING NOTES** for working on the high-voltage vehicle electrical system.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power supply **Air-conditioning system regulator** 9...16 V

Fault setting condition(s)

♦ Electric interior heater sends fault signal via LIN bus:
Power supply Below limit
Power supply Limit exceeded

Possible fault causes

♦ Loose contact or corrosion on connectors or lines

- **High-voltage interior heater** Faulty
- Power supply Faulty

Diagnosis information - Air-conditioning system

Valve Air-conditioning compressor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Signal Current
  I > 900mA
- Period of time
  t > 2 s

Short circuit to B+ or Open circuit
- Signal Current
  I < 200 mA
- Period of time
  t > 2 s

Fault effects

♦ No refrigerating output

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Before taking measurements, check that the affected connectors, plug connections, contacts, lines and components are seated securely, are connected and show no signs of damage, oxidation or corrosion.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Air-conditioning system

Electrical High-voltage interior heater - High voltage-Voltage

⚠WARNING

High voltage on the high-voltage system of the hybrid vehicle.

- **Electric shock from touching live parts**
- **Severe burns or death**
- **Health risks for persons with life-assisting systems**

⇒ The system must be isolated from the power supply by a high-voltage technician before carrying out any work on the high-voltage vehicle electrical system and any repair work on the body.
⇒ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
⇒ Observe General **WARNING NOTES** for working on the high-voltage vehicle electrical system.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power supply **Air-conditioning system regulator** 9... 16 V

Fault setting condition(s)

♦ Electric interior heater sends fault signal via LIN bus:
High voltage - Voltage Below limit
High voltage - Voltage Limit exceeded

Possible fault causes

♦ **High-voltage interior heater** Faulty

- **High-voltage power electronics control unit** Faulty
- High voltage - Power supply Faulty

Diagnosis information - Air-conditioning system

High-voltage interior heater - Faulty

⚠WARNING

High voltage on the high-voltage system of the hybrid vehicle.

- **Electric shock from touching live parts**
- **Severe burns or death**
- **Health risks for persons with life-assisting systems**

⇒ The system must be isolated from the power supply by a high-voltage technician before carrying out any work on the high-voltage vehicle electrical system and any repair work on the body.
⇒ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
⇒ Observe General **WARNING NOTES** for working on the high-voltage vehicle electrical system.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power supply **Air-conditioning system regulator** 9... 16 V

Fault setting condition(s)

♦ Electric interior heater sends fault signal via LIN bus

Possible fault causes

♦ **High-voltage interior heater** Faulty

Diagnosis information - Air-conditioning system

High-voltage interior heater - Communication

⚠WARNING

High voltage on the high-voltage system of the hybrid vehicle.

- **Electric shock from touching live parts**
- **Severe burns or death**
- **Health risks for persons with life-assisting systems**

⇒ The system must be isolated from the power supply by a high-voltage technician before carrying out any work on the high-voltage vehicle electrical system and any repair work on the body.
⇒ All work on vehicles equipped with a high-voltage vehicle electrical system must be performed only by persons with the proper electrical training. The work must be performed as instructed by a high-voltage technician.
⇒ Observe General **WARNING NOTES** for working on the high-voltage vehicle electrical system.

► Please read the following document in the PIWIS information system:

♦ **2X00IN** Isolating high-voltage electrical system from power supply/starting high-voltage electrical system

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power supply **Air-conditioning system regulator** 9...16 V

Fault setting condition(s)

♦ no communication with **High-voltage interior heater**

Possible fault causes

♦ Loose contact or corrosion on connectors or lines
♦ Power supply Short circuit to B+/ground/between lines or open circuit in the lines

♦ LIN bus: Short circuit to B+/ground or open circuit in the line
♦ **High-voltage interior heater** Faulty

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Power supply checked
- Internal function test **Servo motor**

Fault setting condition(s)

Servo motor Mechanical fault
- blocked
- Fault present for 1 ... 11 s

Servo motor Electrical fault
- Fault present for 1 ... 11 s

Servo motor not programmed
- Fault present for 1 ... 11 s

Servo motor Message missing
- Fault present for 1 ... 20 s

Possible fault causes

Servo motor Mechanical fault
- Flap or Engine blocked
- Axle or limit stop broken

Servo motor Electrical fault
- Short circuit to B+/ground or open circuit in the line

Servo motor not programmed
- Component Faulty
- no/incorrect coding/calibration

Servo motor Message missing
- Component Faulty
- Open circuit LIN line

Fault effects

- ♦ Limited function
- ♦ Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Power supply checked
- Internal function test **Servo motor**

Fault setting condition(s)

Servo motor Mechanical fault
- blocked
- Fault present for 1 ... 11 s

Servo motor Electrical fault
- Fault present for 1 ... 11 s

Servo motor not programmed
- Fault present for 1 ... 11 s

Servo motor Message missing
- Fault present for 1 ... 20 s

Possible fault causes

Servo motor Mechanical fault
- Flap or Engine blocked
- Axle or limit stop broken

Servo motor Electrical fault
- Short circuit to B+/ground or open circuit in the line

Servo motor not programmed
- Component Faulty
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Fault effects

- ♦ Limited function
- ♦ Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Diagnosis information - Air-conditioning system

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Diagnosis information - Air-conditioning system

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Fault effects

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Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

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- Ignition on

Fault setting condition(s)

- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Diagnosis information - Air-conditioning system

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Fault effects

- Limited function
- Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

Diagnostic conditions
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- Ignition on

Fault setting condition(s)

- ♦ no communication LIN bus 1
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Diagnosis information - Air-conditioning system

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Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

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- Ignition on

Fault setting condition(s)

- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Diagnosis information - Air-conditioning system

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- Ignition on

Fault setting condition(s)

- ♦ no communication LIN bus 1
- ♦ Short circuit to B+/ground/between lines or open circuit in the lines
- ♦ **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

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- Ignition on

Fault setting condition(s)

- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

LIN bus

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- Ignition on

Fault setting condition(s)

♦ no communication

Fault effects

No function

Diagnosis information - Air-conditioning system

LIN bus

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- Ignition on

Fault setting condition(s)

♦ no communication

Fault effects

No function

Diagnosis information - Air-conditioning system

LIN bus

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Fault setting condition(s)

♦ no communication

Fault effects

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Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

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Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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- Internal function test **Servo motor**

Fault setting condition(s)

Servo motor Mechanical fault
- blocked
- Fault present for 1 ... 11 s

Servo motor Electrical fault
- Fault present for 1 ... 11 s

Servo motor not programmed
- Fault present for 1 ... 11 s

Servo motor Message missing
- Fault present for 1 ... 20 s

Possible fault causes

Servo motor Mechanical fault
- Flap or Engine blocked
- Axle or limit stop broken

Servo motor Electrical fault
- Short circuit to B+/ground or open circuit in the line

Servo motor not programmed
- Component Faulty
- no/incorrect coding/calibration

Servo motor Message missing
- Component Faulty
- Open circuit LIN line

Fault effects

- Limited function
- Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Diagnosis information - Air-conditioning system

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- Ignition on

Fault setting condition(s)

- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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Fault setting condition(s)

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- Short circuit to B+/ground/between lines or open circuit in the lines
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Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

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Fault effects

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Diagnosis information - Air-conditioning system

Servo motor Flap control box

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Diagnosis information - Air-conditioning system

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- Ignition on

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- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
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Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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Diagnosis information - Air-conditioning system

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- Ignition on

Fault setting condition(s)

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Fault effects

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Diagnosis information - Air-conditioning system

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- Fault present for 1 ... 11 s

Servo motor not programmed
- Fault present for 1 ... 11 s

Servo motor Message missing
- Fault present for 1 ... 20 s

Possible fault causes

Servo motor Mechanical fault
- Flap or Engine blocked
- Axle or limit stop broken

Servo motor Electrical fault
- Short circuit to B+/ground or open circuit in the line

Servo motor not programmed
- Component Faulty
- no/incorrect coding/calibration

Servo motor Message missing
- Component Faulty
- Open circuit LIN line

Fault effects

- Limited function
- Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Power supply checked
- Internal function test **Servo motor**

Fault setting condition(s)

Servo motor Mechanical fault
- blocked
- Fault present for 1 ... 11 s

Servo motor Electrical fault
- Fault present for 1 ... 11 s

Servo motor not programmed
- Fault present for 1 ... 11 s

Servo motor Message missing
- Fault present for 1 ... 20 s

Possible fault causes

Servo motor Mechanical fault
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Servo motor Electrical fault
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Servo motor Message missing
- Component Faulty
- Open circuit LIN line

Fault effects

- Limited function
- Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- Ignition on
- Power supply checked
- Internal function test **Servo motor**

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- Component Faulty
- no/incorrect coding/calibration

Servo motor Message missing
- Component Faulty
- Open circuit LIN line

Fault effects

- ♦ Limited function
- ♦ Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Fault effects

- Limited function
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Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Fault effects

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- ♦ Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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- ♦ Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Servo motor Flap control box

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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Servo motor Message missing
- Component Faulty
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Fault effects

- ♦ Limited function
- ♦ Function **Servo motor** Faulty

Diagnosis information - Air-conditioning system

Communication **Servo motor** LIN bus 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- no communication LIN bus 1
- Short circuit to B+/ground/between lines or open circuit in the lines
- **Servo motor** Faulty

Fault effects

No function of the **Servo motor**

Diagnosis information **- Air-conditioning system**

Ventilation Front seat front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation Front seat** Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t > 2 s
- Signal Voltage
  U > 3.3 V

Open circuit
- Period of time t > 2 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t > 2 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation Front seat** Faulty

Diagnosis information **- Air-conditioning system**

Ventilation Front seat front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation Front seat** Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t > 2 s
- Signal Voltage
  U > 3.3 V

Open circuit
- Period of time t > 2 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t > 2 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation Front seat** Faulty

Diagnosis information **- Air-conditioning system**

Ventilation Front seat front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation Front seat** Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t > 2 s
- Signal Voltage
  U > 3.3 V

Open circuit
- Period of time t > 2 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t > 2 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation Front seat** Faulty

Diagnosis information **- Air-conditioning system**

Ventilation Front seat front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation Front seat** Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t > 2 s
- Signal Voltage
  U > 3.3 V

Open circuit
- Period of time t > 2 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t > 2 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation Front seat** Faulty

Diagnosis information **- Air-conditioning system**

Ventilation Front seat front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Short circuit to B+
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Open circuit
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  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t > 2 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation Front seat** Faulty

Diagnosis information **- Air-conditioning system**

Ventilation Front seat front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation Front seat** Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t > 2 s
- Signal Voltage
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Open circuit
- Period of time t > 2 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t > 2 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation Front seat** Faulty

Diagnosis information - Air-conditioning system

Seat heating front right

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to B+ or Open circuit
- Period of time
  t > 100 ms
- Signal Current
  I > 2A

Short circuit to ground
- Period of time
  t > 100 ms
- Signal Current
  I > 15 A

Fault effects

Short circuit to B+
♦ Seat heating front right permanent to

Short circuit to ground or Open circuit
♦ Seat heating front right permanent off

Diagnosis information - Air-conditioning system

Seat heating front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to B+ or Open circuit
- Period of time
  t > 100 ms
- Signal Current
  I > 2A

Short circuit to ground
- Period of time
  t > 100 ms
- Signal Current
  I > 15 A

Fault effects

Short circuit to B+
♦ Seat heating front right permanent to

Short circuit to ground or Open circuit
♦ Seat heating front right permanent off

Diagnosis information **- Air-conditioning system**

Seat heating front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to B+ or Open circuit
- Period of time
  t > 100 ms
- Signal Current
  I > 2 A

Short circuit to ground
- Period of time
  t > 100 ms
- Signal Current
  I > 15 A

Fault effects

Short circuit to B+
♦ Seat heating front left permanent to

Short circuit to ground or Open circuit
♦ Seat heating front left permanent off

Diagnosis information **- Air-conditioning system**

Seat heating front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to B+ or Open circuit
- Period of time
  t > 100 ms
- Signal Current
  I > 2 A

Short circuit to ground
- Period of time
  t > 100 ms
- Signal Current
  I > 15 A

Fault effects

Short circuit to B+
♦ Seat heating front left permanent to

Short circuit to ground or Open circuit
♦ Seat heating front left permanent off

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
  t > 1 < 11 s

Fan regulator Overtemperature
- Period of time
  t > 1 < 11 s
- Measuring temperature > 113 °C (235 °F)

Fan regulator - Overvoltage
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 30.5 A

- Signal Voltage
  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Fault effects

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Diagnosis information **- Air-conditioning system**

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  t > 1 < 11 s
- Signal Current
  I > 30.5 A

- Signal Voltage
  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
  t > 1 < 11 s

Fan regulator Overtemperature
- Period of time
  t > 1 < 11 s
- Measuring temperature > 113 °C (235 °F)

Fan regulator - Overvoltage
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 30.5 A

- Signal Voltage
  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
  t > 1 < 11 s

Fan regulator Overtemperature
- Period of time
  t > 1 < 11 s
- Measuring temperature > 113 °C (235 °F)

Fan regulator - Overvoltage
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 30.5 A

- Signal Voltage
  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

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  t > 1 < 11 s
- Signal Current
  I > 80 A

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- Signal Current
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Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
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- Period of time
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- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

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The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- Internal function test

Fault setting condition(s)

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  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
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- Signal Current
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Fan regulator no communication
- Period of time
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Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- Internal function test

Fault setting condition(s)

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- Signal Current
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Open circuit
- Period of time
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- Signal PWM < 10%

Fan regulator blocked
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Fan regulator Overtemperature
- Period of time
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- Measuring temperature > 113 °C (235 °F)

Fan regulator - Overvoltage
- Period of time
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- Signal Current
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Fan regulator - Undervoltage
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Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
- Period of time
  t > 1 < 11 s
- Signal Current
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Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
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Fan regulator Overtemperature
- Period of time
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Fan regulator - Overvoltage
- Period of time
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  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
- Period of time
  t > 1 < 11 s
- Signal Current
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Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
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Fan regulator Overtemperature
- Period of time
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Fan regulator - Overvoltage
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  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Fan regulator

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Short circuit to B+
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 80 A

Open circuit
- Period of time
  t > 1 < 11 s
- Signal PWM < 10%

Fan regulator blocked
- Period of time
  t > 1 < 11 s

Fan regulator Overtemperature
- Period of time
  t > 1 < 11 s
- Measuring temperature > 113 °C (235 °F)

Fan regulator - Overvoltage
- Period of time
  t > 1 < 11 s
- Signal Current
  I > 30.5 A

- Signal Voltage
  U > 16.5 V

Fan regulator - Undervoltage
- Signal Voltage
  U < 7.5 V

Fan regulator Faulty
- Period of time
  t > 1 < 11 s

Fan regulator no communication
- Period of time
  t > 1 < 15 s

Fault effects

♦ Fan Function Faulty

Diagnosis information **- Air-conditioning system**

Sun sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Sun sensor no communication
- Period of time
  t > 1 < 15 s

Sun sensor Implausible signal
- Period of time
  t > 1 < 11 s

Sun sensor Faulty
- Period of time
  t > 1 < 11 s

Fault effects

- Limited function
- **Sun sensor** Function Faulty

Diagnosis information **- Air-conditioning system**

Sun sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Sun sensor no communication
- Period of time
  t > 1 < 15 s

Sun sensor Implausible signal
- Period of time
  t > 1 < 11 s

Sun sensor Faulty
- Period of time
  t > 1 < 11 s

Fault effects

- Limited function
- **Sun sensor** Function Faulty

Diagnosis information **- Air-conditioning system**

Sun sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Sun sensor no communication
- Period of time
  t > 1 < 15 s

Sun sensor Implausible signal
- Period of time
  t > 1 < 11 s

Sun sensor Faulty
- Period of time
  t > 1 < 11 s

Fault effects

- Limited function
- **Sun sensor** Function Faulty

Diagnosis information **- Air-conditioning system**

Sun sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Sun sensor no communication
- Period of time
  t > 1 < 15 s

Sun sensor Implausible signal
- Period of time
  t > 1 < 11 s

Sun sensor Faulty
- Period of time
  t > 1 < 11 s

Fault effects

- Limited function
- **Sun sensor** Function Faulty

Diagnosis information - Air-conditioning system

Operating device Air-conditioning system rear

NOTE

► Ignore the fault memory entry when none **4-zone air conditioning system** (**Operating device Air-conditioning system** rear) installed .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Air-conditioning system** Active

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ start **Air-conditioning system** rear **not** possible

Diagnosis information - Air-conditioning system

Operating device Air-conditioning system rear

NOTE

► Ignore the fault memory entry when none **4-zone air conditioning system** (**Operating device Air-conditioning system** rear) installed .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Air-conditioning system** Active

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ start **Air-conditioning system** rear
not possible

Diagnosis information - Air-conditioning system

Seat heating rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to B+ or Open circuit
- Period of time
  1 ... 11 s
- Signal Current
  I < 2 A

Short circuit to ground
- Period of time
  1 ... 11 s
- Signal Current
  I > 15 A

Fault effects

♦ Seat heating rear left permanent off

Diagnosis information - Air-conditioning system

Seat heating rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to B+ or Open circuit
- Period of time
  1 ... 11 s
- Signal Current
  I < 2 A

Short circuit to ground
- Period of time
  1 ... 11 s
- Signal Current
  I > 15 A

Fault effects

♦ Seat heating rear left permanent off

Diagnosis information - Air-conditioning system

Seat heating rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to B+ or Open circuit
- Period of time
  1 ... 11 s
- Signal Current
  I < 2 A

Short circuit to ground
- Period of time
  1 ... 11 s
- Signal Current
  I > 15 A

Fault effects

♦ Seat heating rear right permanent off

Diagnosis information - Air-conditioning system

Seat heating rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to B+ or Open circuit
- Period of time
  1 ... 11 s
- Signal Current
  I < 2 A

Short circuit to ground
- Period of time
  1 ... 11 s
- Signal Current
  I > 15 A

Fault effects

♦ Seat heating rear right permanent off

Diagnosis information **- Air-conditioning system**

Ventilation Rear seat rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation** Rear seat Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t >1 <11 s
- Signal Voltage
  U > 3.3 V

Open circuit
- Period of time t >1 <11 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t >1 <11 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation** Rear seat Function Faulty

Diagnosis information **- Air-conditioning system**

Ventilation Rear seat rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation** Rear seat Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t >1 <11 s
- Signal Voltage
  U > 3.3 V

Open circuit
- Period of time t >1 <11 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t >1 <11 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation** Rear seat Function Faulty

Diagnosis information **- Air-conditioning system**

Ventilation Rear seat rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation** Rear seat Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t >1 <11 s
- Signal Voltage
  U > 3.3 V

Open circuit
- Period of time t >1 <11 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5 V (Battery Voltage 12 V)
  U > 1.8 V (Battery Voltage 15 V)

Short circuit to ground
- Period of time t >1 <11 s
- Signal Voltage
  U < 0.1 V

Fault effects

♦ **Ventilation** Rear seat Function Faulty

Diagnosis information - Air-conditioning system

Ventilation Rear seat rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation** Rear seat Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t >1 <11 s
- Signal Voltage
  U > 3.3V

Open circuit
- Period of time t >1 <11 s
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  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5V (Battery Voltage 12V)
  U > 1.8V (Battery Voltage 15V)

Short circuit to ground
- Period of time t >1 <11 s
- Signal Voltage
  U < 0.1V

Fault effects

♦ **Ventilation** Rear seat Function Faulty

Diagnosis information - Air-conditioning system

Ventilation Rear seat rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation** Rear seat Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t >1 <11 s
- Signal Voltage
  U > 3.3V

Open circuit
- Period of time t >1 <11 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5V (Battery Voltage 12V)
  U > 1.8V (Battery Voltage 15V)

Short circuit to ground
- Period of time t >1 <11 s
- Signal Voltage
  U < 0.1V

Fault effects

♦ **Ventilation** Rear seat Function Faulty

Diagnosis information - Air-conditioning system

Ventilation Rear seat rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test
- Power **Ventilation** Rear seat Open 100%

Fault setting condition(s)

Short circuit to B+
- Period of time t >1 <11 s
- Signal Voltage
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Open circuit
- Period of time t >1 <11 s
- Signal Voltage
  U > 1.2 V (Battery Voltage 9 V)
  U > 1.5V (Battery Voltage 12V)
  U > 1.8V (Battery Voltage 15V)

Short circuit to ground
- Period of time t >1 <11 s
- Signal Voltage
  U < 0.1V

Fault effects

♦ **Ventilation** Rear seat Function Faulty

Diagnosis information - Air-conditioning system

LIN bus Data line

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

LIN bus Data line

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

♦ Limited function

Diagnosis information - Air-conditioning system

LIN bus Data line

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

♦ Limited function

008453

Diagnosis information **- Air-conditioning system**

Lights **Air-conditioning system regulator**

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 2 s

Short circuit to B+
- Period of time
  t > 2 s

Fault effects

♦ Switch **Air-conditioning system regulator** Function Faulty

008454

Diagnosis information **- Air-conditioning system**

Lights **Air-conditioning system regulator**

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 2 s

Short circuit to B+
- Period of time
  t > 2 s

Fault effects

♦ Switch **Air-conditioning system regulator** Function Faulty

Diagnosis information - Air-conditioning system

LIN bus Data line

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

♦ Limited function

008466

Diagnosis information - Auxiliary heater control unit

Heater overheated

⚠WARNING

Explosive, toxic gasoline!
Severe burns to the body!
Harm to the respiratory tract, eyes and skin!

♦ Take work-related fire-protection measures.
♦ Ensure good ventilation.
♦ **DO NOT** permit ignition sources in the area.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● no Display : **Metering pump** Active
● Limit exceeded : **Metering pump** Active
● Implausible signal : Heating Open circuit

Possible fault causes

♦ **Temperature** Too high
♦ **Temperature** increase Too high
♦ Time exceeded

Fault setting condition(s)

● no Display: **Coolant temperature** > 120 °C (248 °F), **Temperature sensor** Surface > 120 °C (248 °F) or **Metering pump** is switched off
● Limit exceeded : **Temperature Coolant** > 25° **Temperature** Surface at **Coolant temperature** > 70 °C (158 °F)
or **Temperature** Surface > 30° **Temperature Coolant** at **Coolant temperature** > 70 °C (158 °F)
● Implausible signal : Time exceeded < 900 Second(s)

Fault effects

♦ **Auxiliary heater control unit** No function

Diagnosis information - Air-conditioning system

Servo motor Flap control box

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Power supply checked
- Internal function test **Servo motor**

Fault setting condition(s)

Servo motor Mechanical fault
- blocked
- Fault present for 1 ... 11 s

Servo motor Electrical fault
- Fault present for 1 ... 11 s

Servo motor not programmed
- Fault present for 1 ... 11 s

Servo motor Message missing
- Fault present for 1 ... 20 s

Possible fault causes

Servo motor Mechanical fault
- Flap or Engine blocked
- Axle or limit stop broken

Servo motor Electrical fault
- Short circuit to B+/ground or open circuit in the line

Servo motor not programmed
- Component Faulty
- no/incorrect coding/calibration

Servo motor Message missing
- Component Faulty
- Open circuit LIN line

Fault effects

- Limited function
- Function **Servo motor** Faulty

Diagnosis information **- Air-conditioning system**

Vehicle voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Voltage too low
- Signal Voltage
  U < 9 V
  U > 6 V

Voltage Too high
- Signal Voltage
  U > 16 V

Fault effects

♦ Limited function

C11001

Diagnosis information **- Air-conditioning system**

Vehicle voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Voltage too low
- Signal Voltage
  U < 9 V
  U > 6 V

Voltage Too high
- Signal Voltage
  U > 16 V

Fault effects

♦ Limited function

C11002

Diagnosis information **- Air-conditioning system**

Lights **Air-conditioning system regulator**

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 2 s

Short circuit to B+
- Period of time
  t > 2 s

Fault effects

♦ Switch **Air-conditioning system regulator** Function Faulty

C11003

Diagnosis information **- Air-conditioning system**

Lights **Air-conditioning system regulator**

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 2 s

Short circuit to B+
- Period of time
  t > 2 s

Fault effects

♦ Switch **Air-conditioning system regulator** Function Faulty

C11004

Diagnosis information

Air-conditioning system regulator coding

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test completed on air-conditioning system regulator control unit

Possible fault causes

- No coding of air-conditioning system regulator

C11005

Diagnosis information **- Air-conditioning system**

Lights **Air-conditioning system regulator**

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test

Fault setting condition(s)

Short circuit to ground
- Period of time
  t > 2 s

Short circuit to B+
- Period of time
  t > 2 s

Fault effects

♦ Switch **Air-conditioning system regulator** Function Faulty

C11006

Diagnosis information

Air-conditioning system regulator coding

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test completed on air-conditioning system regulator control unit

Possible fault causes

- No coding of air-conditioning system regulator

C11007

Diagnosis information

Air-conditioning system regulator coding

Diagnostic conditions

- Ignition on
- Battery positive voltage OK (11.4 to 14.5 V)
- Internal function test completed on air-conditioning system regulator control unit

Possible fault causes

- No coding of air-conditioning system regulator

Cayenne , MY 2011 =>

Diagnosis information - Instrument cluster

000003..... 1
000006..... 2
000007..... 3
000009..... 4
00000A..... 5
000013..... 6
000014..... 7
000015..... 8
000016..... 9
000017..... 10
C11004..... 11

000003

Diagnosis information - Instrument cluster

Warning light failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Warning light No function

Diagnosis information - Instrument cluster

Warning light failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Warning light No function

Diagnosis information - Instrument cluster

Warning light failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Warning light No function

Diagnosis information - Instrument cluster

Lights TFT screen failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Lights TFT screen No function

Diagnosis information - Instrument cluster

Warning light failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Warning light No function

Diagnosis information - Instrument cluster

Loudspeaker

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Short circuit to B+/ground or open circuit in the line

Fault effects

Loudspeaker Limited function

Diagnosis information - Instrument cluster

Loudspeaker

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Short circuit to B+/ground or open circuit in the line

Fault effects

Loudspeaker Limited function

Diagnosis information - Instrument cluster

Fuel level sensor

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Fuel level sensor** Faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

► **Fuel level sensor** No function
► **Fuel consumption display** Limited function

Diagnosis information - Instrument cluster

Fuel level sensor

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Fuel level sensor** Faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

► **Fuel level sensor** No function
► **Fuel consumption display** Limited function

Diagnosis information - Instrument cluster

Fuel level sensor

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Fuel level sensor** Faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

► **Fuel level sensor** No function
► **Fuel consumption display** Limited function

Diagnostic information - Tire pressure monitoring system control module

Calibration instruction

NOTE

Pollution of the environment if wheel electronics are not disposed of correctly.

♦ Wheel electronics contain batteries with lithium thionyl chloride.
♦ Do not disposed of these batteries in normal trash (see Environment Manual).
♦ Used or faulty wheel electronics must be brought to the specified return centers for batteries.

Diagnostic conditions

- **Control module** Tire Pressure Monitoring (TPM): internal function test
- Ignition on
- Approx. 1 minute of driving

Fault setting condition(s)

- Control unit **Instrument cluster** : incorrect parameters assigned
- Tire pressure not displayed on the instrument cluster
- Data record with setpoint pressure values for **Tire Pressure Monitoring (TPM)** outside the permissible range (1.7.....5.2 bar/24.7.....75.4 psi)
- Tire Pressure Monitoring (TPM) control unit faulty.

Fault effects

♦ System does not function
♦ Display on instrument cluster

Cayenne , MY 2011 =>

Diagnosis information - Additional compass instrument

C11005..... 1

C11005

Diagnosis information - magnetic-field sensor

Control unit faulty

Diagnostic conditions
The magnetic-field sensor control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on

Possible fault causes

♦ Magnetic field sensor (compass control unit) faulty

Fault effects

♦ System not active

Cayenne , MY 2011 =>

Diagnosis information - Additional compass instrument

C11005..... 1

C11005

Diagnosis information - magnetic-field sensor

Control unit faulty

Diagnostic conditions
The magnetic-field sensor control unit initially tests internal function sequences when the ignition is switched on (terminal 15).
All diagnosable connections are checked and any faults are stored.

- Ignition on

Possible fault causes

♦ Magnetic field sensor (compass control unit) faulty

Fault effects

♦ System not active

Cayenne , MY 2011 =>

Diagnosis information - Gateway

000405..... 1
000600..... 2
000601..... 3
000604..... 4
000605..... 5
000606..... 6
000607..... 7
B20050..... 8
C11004..... 9
C11005..... 10
C11006..... 11
C11008..... 12
EA6200..... 13
EA6300..... 14
EA6400..... 15

Diagnosis information - Gateway control module

Current distributor

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● The voltage returned from the **current distributor** via the **terminal 15 diagnostic line** does not agree with the activation of the **terminal 15 relay** by the **front-end electronics**.
● Further fault entries are possible in other control units, depending on the equipment of the vehicle.

Fault effects

Engine start **not** possible

Diagnosis information - Gateway control module

Alternator, Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Gateway control module

Alternator, Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects
Function not available or available only to a limited extent

000604

Diagnosis information - Rear-end electronics

Voltage converter, Output implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Supply line** for the **Rear-end electronics** to the **Voltage converter**: Open circuit/short circuit to ground
♦ **Voltage converter** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

000605

Diagnosis information - Rear-end electronics

Voltage converter, Output implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Supply line** for the **Rear-end electronics** to the **Voltage converter**: Open circuit/short circuit to ground
♦ **Voltage converter** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Rear-end electronics

Voltage converter, Output implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Supply line** for the **Rear-end electronics** to the **Voltage converter**: Open circuit/short circuit to ground
♦ **Voltage converter** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

000607

Diagnosis information - Rear-end electronics

Voltage converter, Output implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Supply line** for the **Rear-end electronics** to the **Voltage converter**: Open circuit/short circuit to ground
♦ **Voltage converter** Faulty

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V** ⇒ **+ 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

Diagnosis information - Gateway control module

Programming

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Incorrect data record
♦ Faulty data record

Fault setting condition(s)
The data record is checked after every programming operation.

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Gateway control module

Programming

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Incorrect data record
♦ Faulty data record

Fault setting condition(s)
The data record is checked after every programming operation.

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Gateway control module

Gateway control module, Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects
Function not available or available only to a limited extent

C11006

Diagnosis information - Gateway control module

Coding

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Gateway control module

Gateway control module, Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Gateway control module

Gateway control module, Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Gateway control module

Gateway control module, Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects
Function not available or available only to a limited extent

Diagnosis information - Gateway control module

Gateway control module, Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects
Function not available or available only to a limited extent

Cayenne , MY 2011 =>

Diagnosis information - PCM / CDR

0303..... 1
0302..... 2
8005..... 3
8006..... 4
8007..... 5
8008..... 6
8009..... 7
800D..... 8
8E04..... 9
D219..... 10
D220..... 11
D221..... 12
D500..... 13
D501..... 14
D502..... 15

0303

Diagnosis information - PCM

GPS antenna

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Location determination not possible

Diagnosis information - PCM

GPS antenna

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Location determination not possible

Diagnosis information - PCM

Satellite antenna

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ No satellite radio reception

Diagnosis information - PCM

Satellite antenna

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ No satellite radio reception

ⓘ Diagnosis information - PCM

Wake-up line

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit

Fault effects

♦ Function is only operational with restrictions

ⓘ Diagnosis information - PCM

Wake-up line

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit

Fault effects

♦ Function is only operational with restrictions

ⓘ Diagnosis information - PCM

Wake-up line

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit

Fault effects

♦ Function is only operational with restrictions

ⓘ Diagnosis information - PCM

No video signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit

Fault effects

♦ Function is only operational with restrictions

ⓘDiagnosis information - PCM / CDR

Programming

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on / CDR on

Fault setting condition(s)

- incorrectly programmed
- not programmed

Fault effects

♦ Function is only operational with restrictions

Diagnosis information - PCM

Antenna amplifier

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects

♦ Function is only operational with restrictions

Diagnosis information - PCM

Antenna amplifier control unit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Faulty

Fault effects

♦ Function is only operational with restrictions

Diagnosis information - PCM

Antenna amplifier

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Open circuit
- Faulty

Fault effects

♦ Function is only operational with restrictions

Diagnosis information - PCM

Microphone 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Function is only operational with restrictions

Diagnosis information - PCM

Microphone 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Function is only operational with restrictions

D502

Diagnosis information - PCM

Microphone 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- PCM on

Fault setting condition(s)

- Short circuit to ground
- Short circuit to B+
- Open circuit
- Short circuit between the lines
- Faulty

Fault effects

♦ Function is only operational with restrictions

Cayenne , MY 2011 =>

Diagnosis information - TV tuner

8E01..... 1
8E02..... 2
8E03..... 3
8F01..... 4
9499..... 5
949A..... 6
949B..... 7
949C..... 8
949D..... 9
949E..... 10
949F..... 11
94A0..... 12
94A3..... 13
94A4..... 14

Diagnosis information - TV tuner

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to ground
- Short circuit to B+
- Short circuit between the lines
- Open circuit

Affected contacts on the control unit connector

Plug [A]

- Contact 1 (Terminal 31)
- Contact 2 (Terminal 30)

Fault setting condition(s)

- **Supply voltage** > 16 V (Time > 10 s)
- **Supply voltage** < 9 V (Time > 10 s)

Fault effects

- Function not available or available only to a limited extent

Diagnosis information - TV tuner

Control unit faulty

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

♦ Internal control unit fault

Fault setting condition(s)

- Internal control unit fault

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - TV tuner

Device temperature

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

♦ **Device temperature**, Limit exceeded

Fault setting condition(s)

- **Device temperature** > 85 °C (185 °F)

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - TV tuner

Programming

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

♦ Incorrect data record
♦ Faulty data record

Fault setting condition(s)

- The data record is checked after every programming operation.

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - TV tuner

Antenna 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit

Affected contacts on the control unit connector TV tuner

Plug [C]

- Contact 1 (Signal)
- Contact 2 (Ground)

Fault setting condition(s)

- This fault is set if the **>antenna wiring<** procedure determines a limit-value violation (internal resistance measurement).

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - TV tuner

Antenna 1

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit

Affected contacts on the control unit connector TV tuner

Plug [C]

- Contact 1 (Signal)
- Contact 2 (Ground)

Fault setting condition(s)

- This fault is set if the **>antenna wiring<** procedure determines a limit-value violation (internal resistance measurement).

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - TV tuner

Antenna 2

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit

Affected contacts on the control unit connector TV tuner

Plug [C]

- Contact 3 (Signal)
- Contact 4 (Ground)

Fault setting condition(s)

- This fault is set if the **>antenna wiring<** procedure determines a limit-value violation (internal resistance measurement).

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - TV tuner

Antenna 2

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit

Affected contacts on the control unit connector TV tuner

Plug [C]

- Contact 3 (Signal)
- Contact 4 (Ground)

Fault setting condition(s)

- This fault is set if the **>antenna wiring<** procedure determines a limit-value violation (internal resistance measurement).

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - TV tuner

Antenna 3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit

Affected contacts on the control unit connector TV tuner

Plug [C]

- Contact 5 (Signal)
- Contact 6 (Ground)

Fault setting condition(s)

- This fault is set if the **>antenna wiring<** procedure determines a limit-value violation (internal resistance measurement).

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - TV tuner

Antenna 3

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit

Affected contacts on the control unit connector TV tuner

Plug [C]

- Contact 5 (Signal)
- Contact 6 (Ground)

Fault setting condition(s)

- This fault is set if the **>antenna wiring<** procedure determines a limit-value violation (internal resistance measurement).

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - TV tuner

Antenna 4

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit

Affected contacts on the control unit connector TV tuner

Plug [C]

- Contact 7 (Signal)
- Contact 8 (Ground)

Fault setting condition(s)

- This fault is set if the **>antenna wiring<** procedure determines a limit-value violation (internal resistance measurement).

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - TV tuner

Antenna 4

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- Short circuit to B+
- Short circuit to ground
- Open circuit

Affected contacts on the control unit connector TV tuner

Plug [C]

- Contact 7 (Signal)
- Contact 8 (Ground)

Fault setting condition(s)

- This fault is set if the **>antenna wiring<** procedure determines a limit-value violation (internal resistance measurement).

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - TV tuner

Video signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- ♦ loose, oxidized, corroded, interrupted
- ♦ Short circuit to ground
- ♦ Short circuit to B+
- ♦ Short circuit between the lines

Affected contacts on the control unit connector

Plug [A]

- ♦ Contact 4 (Terminal 31)
- ♦ Contact 5 (Video signal)

Fault setting condition(s)

- This fault is set when the >Audio and video Rear Seat Entertainment< sequence determines a limit-value violation (internal resistance measurement).

Fault effects

- ♦ Function not available or available only to a limited extent

Diagnosis information - TV tuner

Video signal

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

- loose, oxidized, corroded, interrupted
- Short circuit to ground
- Short circuit to B+
- Short circuit between the lines

Affected contacts on the control unit connector

Plug [A]

- Contact 4 (Terminal 31)
- Contact 5 (Video signal)

Fault setting condition(s)

- This fault is set when the >Audio and video Rear Seat Entertainment< sequence determines a limit-value violation (internal resistance measurement).

Fault effects

- Function not available or available only to a limited extent

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Diagnosis information - External amplifier

800A..... 1
8011..... 2
8012..... 3
8013..... 4
8014..... 5
8015..... 6
8016..... 7
8017..... 8
8018..... 9
8019..... 10
801A..... 11
801B..... 12
801C..... 13
801D..... 14
801E..... 15
8023..... 16
8024..... 17
8025..... 18
8026..... 19
8027..... 20
8E01..... 21
8E02..... 22
8E03..... 23
8E04..... 24

Diagnosis information - BOSE amplifier, external

Microphone

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Microphone faulty
- **BOSE amplifier, external** faulty

Fault effects

- Audio pilot failure
- Hands-free not possible (telephone)

Diagnosis information - BOSE amplifier, external

Bass front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Bass front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker High-pitch rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker High-pitch rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker Middle-pitch and High-pitch front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker Middle-pitch and High-pitch front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker Instrument panel middle

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Subwoofer front and rear

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- **Subwoofer** faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker Middle-pitch and High-pitch rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker Middle-pitch and High-pitch rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker Middle-pitch and High-pitch rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker Middle-pitch and High-pitch rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Bass front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Bass front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on
- PCM switched on and loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker High-pitch rear left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker High-pitch rear right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker High-pitch front left

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Loudspeaker High-pitch front right

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Loudspeaker self-test performed

Fault setting condition(s)

- Line short circuit
- Open circuit in lines
- Loudspeaker faulty
- **BOSE amplifier, external** faulty

Fault effects

- Changed sound

Diagnosis information - BOSE amplifier, external

Control module BOSE amplifier, external

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on

Fault setting condition(s)

- Internal malfunction **BOSE amplifier, external**
- Mechanical fan blockage

Fault effects

- External BOSE amplifier switch-off

Diagnosis information - BOSE amplifier, external

Power supply

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on

Fault setting condition(s)

- Voltage supply > 18 V
- Voltage supply < 9 V

Fault effects

- External BOSE amplifier switch-off

Diagnosis information - BOSE amplifier, external

Control module BOSE amplifier, external

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on

Fault setting condition(s)

- Internal malfunction **BOSE amplifier, external**
- Mechanical fan blockage

Fault effects

- External BOSE amplifier switch-off

Diagnosis information - BOSE amplifier, external

Overtemperature or Undertemperature

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on

Fault setting condition(s)

- Overtemperature **BOSE amplifier, external**
- Undertemperature **BOSE amplifier, external**

Fault effects

- Volume reduction
- PCM muting
- External BOSE amplifier switch-off

Diagnosis information - BOSE amplifier, external

Configuration

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM switched on

Fault setting condition(s)

- Wrong vehicle coding in **BOSE amplifier, external**
- Incorrect programming **BOSE amplifier, external**

Fault effects

- External BOSE amplifier malfunction

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Diagnosis information - Steering wheel electronics

801004 1
801101 2
801102 3
801103 4
801203 5
801207 6
801301 7
801303 8
801304 9
801305 10
801401 11
801402 12
801403 13
801501 14
801601 15
801603 16
801605 17
801701 18
801703 19
801706 20
801710 21
801711 22
801712 23
801713 24
801901 25
802001 26
802100 27
802110 28
802201 29
802202 30
802203 31
802204 32
802210 33
802230 34
802231 35
802232 36
802304 37
802400 38
802401 39

802404..... 40
802410..... 41
802411..... 42
802414..... 43
802420..... 44
802421..... 45
802424..... 46
803001..... 47
803002..... 48
805001..... 49
805002..... 50
805003..... 51
805004..... 52
C11000..... 53
C11001..... 54
C11004..... 55
C11005..... 56
C11006..... 57
C11007..... 58

Diagnosis information - Steering wheel electronics control module

Steering-wheel lighting

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Short circuit to ground

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty
- Mechanical fault

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty
- Mechanical fault

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty
- Mechanical fault

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

High-beam/direction-indicator light switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, high-beam/direction-indicator light switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

High-beam/direction-indicator light switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, high-beam/direction-indicator light switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Wiper/washer system switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, wiper/washer system switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Wiper/washer system switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, wiper/washer system switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Wiper/washer system switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, wiper/washer system switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Wiper/washer system switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, wiper/washer system switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Front-wiper interval switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, front-wiper interval switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Front-wiper interval switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, front-wiper interval switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Front-wiper interval switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, front-wiper interval switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Windshield washer system (SRA) switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, headlight washer system button**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Switch, on-board computer

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, on-board computer switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Switch, on-board computer

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, on-board computer switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Switch, on-board computer

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, on-board computer switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Cruise-control/ACC ON/OFF button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, cruise-control/ACC ON/OFF button** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Cruise-control/ACC ON/OFF button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, cruise-control/ACC ON/OFF button** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Cruise-control/ACC ON/OFF button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, cruise-control/ACC ON/OFF button** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Cruise control/adaptive cruise control (ACC) switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, cruise-control/ACC switch** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Cruise control/adaptive cruise control (ACC) switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, cruise-control/ACC switch** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Cruise control/adaptive cruise control (ACC) switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, cruise-control/ACC switch** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Cruise control/adaptive cruise control (ACC) switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, cruise-control/ACC switch** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Horn button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Button is stuck or permanently actuated.
- **Voltage value, horn button**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Voice-control button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, Voice-control button**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Rocker switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, rocker switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Rocker switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, rocker switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-wheel heater

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Current consumption Too high
- Current consumption too low

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-wheel heater

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Current consumption Too high
- Current consumption too low

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-wheel heater

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Current consumption Too high
- Current consumption too low

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-wheel heater

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Short circuit to ground
- Open circuit
- Current consumption Too high
- Current consumption too low

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-wheel heating switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Button is stuck or permanently actuated.
- **Voltage value, steering-wheel heating switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-wheel heating switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Button is stuck or permanently actuated.
- **Voltage value, steering-wheel heating switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-wheel temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Open circuit
- Signal implausible

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering-wheel temperature sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Open circuit
- Signal implausible

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Windshield washer system (SRA) switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, headlight washer system button**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Remote control

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Signal implausible
- Short circuit to ground
- no communication

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Remote control

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Signal implausible
- Short circuit to ground
- no communication

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Remote control

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Signal implausible
- Short circuit to ground
- no communication

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Remote control

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Signal implausible
- Short circuit to ground
- no communication

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Remote control

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Signal implausible
- Short circuit to ground
- no communication

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Remote control

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Signal implausible
- Short circuit to ground
- no communication

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Multi-function control unit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Supply voltage**
- no communication

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Multi-function control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Multi-function control unit

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Cruise-control/ACC ON/OFF button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, cruise-control/ACC ON/OFF button** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Rear-wiper switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, rear-wiper switch**, not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

ACC rocker switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, ACC rocker switch** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

ACC rocker switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, ACC rocker switch** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

ACC rocker switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, ACC rocker switch** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

ACC rocker switch

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- **Voltage value, ACC rocker switch** , Signal not OK

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Limit exceeded
- Below limit

Fault effects

♦ Function not available or available only to a limited extent

C11001

Diagnosis information - Steering wheel electronics control module

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Limit exceeded
- Below limit

Fault effects

♦ Function not available or available only to a limited extent

C11004

Diagnosis information - Steering wheel electronics control module

Coding

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- - The data record does not match the vehicle.

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Steering wheel electronics control module

Steering wheel electronics control module

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Faulty

Fault effects

♦ Function not available or available only to a limited extent

C11006

Diagnosis information - Steering wheel electronics control module

Coding

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Coding incorrect or not carried out

Fault effects

♦ Only functions that are coded and are supported by the control unit are active.

Diagnosis information - Steering wheel electronics control module

Steering-angle sensor

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- **Supply voltage** 8 ... 16 V
- Terminal 15 (via CAN) Active

Fault setting condition(s)

- Calibration

Fault effects

♦ Function not available or available only to a limited extent

Cayenne , MY 2015 =>

Diagnosis information - Lane Change Assist

041200..... 1
041300..... 2
041400..... 3
041500..... 4
041600..... 5
041700..... 6
0B2105..... 7
0B210E..... 8
0B2205..... 9
0B220E..... 10
0B2305..... 11
0B2307..... 12
0B2405..... 13
0B2407..... 14
0B240A..... 15
3FD80E..... 16
3FD90E..... 17
3FDA0E..... 18
3FDB0E..... 19
3FDC0E..... 20
3FDD0E..... 21
3FE20E..... 22
3FE30E..... 23
3FE40E..... 24
3FE50E..... 25
3FE60E..... 26
3FE70E..... 27
3FE80E..... 28
3FEA0E..... 29
3FEB0E..... 30
3FEC0E..... 31
3FED0E..... 32
3FEE0E..... 33
3FEF0E..... 34
3FF00E..... 35
3FF10E..... 36
3FF20E..... 37
3FF30E..... 38
3FF40E..... 39

3FF50E..... 40
3FF60E..... 41
3FF70E..... 42
3FF80E..... 43
3FF90E..... 44
3FFA0E..... 45
3FFB0E..... 46
3FFC0E..... 47
3FFD0E..... 48
3FFE0E..... 49
3FFF0E..... 50

041200

Diagnosis information - Lane Change Assist control unit Master

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit Slave

Programming

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Programming incorrect or not carried out

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit Master

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit Master

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit Master

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit Master

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Coding incorrect or not carried out

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Calibration incorrect or not carried out

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Calibration incorrect or not carried out

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Calibration incorrect or not carried out

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Lane Change Assist control unit Master

Lane Change Assist button

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Button is stuck or permanently actuated.
- Short circuit to ground

Affected contacts on the control unit connector

- Contact 3

Fault effects

- No function

Diagnosis information - Lane Change Assist control unit

Calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Calibration incorrect or not carried out

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Lane Change Assist control unit Master

Lane Change Assist indicator light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Short circuit to ground
- Short circuit to B+
- Open circuit

Affected contacts on the control unit connector

- Contact 3

Fault effects

- No function

Diagnosis information - Lane Change Assist control unit Master

Lane Change Assist indicator light

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Short circuit to ground
- Short circuit to B+
- Open circuit

Affected contacts on the control unit connector

- Contact 3

Fault effects

- No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Diagnosis information - Lane Change Assist control unit

Function restriction

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Function restriction

Fault effects

♦ No function

Cayenne , MY 2011 =>

Diagnosis information - Reversing camera

01BE..... 1
0214..... 2
0412..... 3

Diagnosis information - Reversing camera control unit

Supply voltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Battery
- **Alternator**
- Fuse
- Wiring harness **Passenger compartment**
- **Reversing camera control unit**

Affected contacts on the control unit connector

Plug [A]

- Contact 43 (Terminal 30)
- Contact 44 (Terminal 31)

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

- Function not available or available only to a limited extent

Diagnosis information - Reversing camera control unit

Supply voltage

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Battery
- **Alternator**
- Fuse
- Wiring harness **Passenger compartment**
- **Reversing camera control unit**

Affected contacts on the control unit connector

Plug [A]

- Contact 43 (Terminal 30)
- Contact 44 (Terminal 31)

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

- Function not available or available only to a limited extent

Diagnosis information - Reversing camera control unit

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- PCM on

Possible fault causes

♦ Coding incorrect or not carried out

Fault effects

♦ Function temporarily unavailable or available only to a limited extent

Cayenne , MY 2011 =>

Diagnosis information - ParkAssist

107612..... 1
107614..... 2
107629..... 3
107631..... 4
107712..... 5
107714..... 6
107729..... 7
107731..... 8
107812..... 9
107814..... 10
107829..... 11
107831..... 12
107912..... 13
107914..... 14
107929..... 15
107931..... 16
107A14..... 17
107A16..... 18
107B13..... 19
108D12..... 20
108D14..... 21
108D29..... 22
108D31..... 23
10F712..... 24
10F714..... 25
10F729..... 26
10F731..... 27
10F812..... 28
10F814..... 29
10F829..... 30
10F831..... 31
10F912..... 32
10F914..... 33
10F929..... 34
10F931..... 35
10FA12..... 36
10FA14..... 37
10FA29..... 38
10FA31..... 39

10FB12..... 40
10FB14..... 41
10FB29..... 42
10FB31..... 43
10FC13..... 44
164000..... 45
60400..... 46
60500..... 47
C058..... 48
D01100..... 49
D01200..... 51
D01300..... 53
D40000..... 54
D40100..... 56

107612

Diagnostic information - ParkAssist

ParkAssist ultrasound sensor

DANGER

Increased risk of accidents due to movement of the vehicle!

♦ Never step in front of or behind a vehicle unless it has been secured against rolling by the parking brake and transmission.
♦ The ParkAssist is subject to physical detection limits and does not free the driver from his/her responsibility to be careful.
♦ The system cannot detect short, thin and small obstacles and persons who are lying on the ground. It also cannot detect surfaces with unfavourable reflective characteristics, e.g. snow or glass.

Diagnostic conditions

- Internal function test on ParkAssist control unit
- Ignition on
- Reverse gear or transmission range R selected
- Vehicle speed briefly higher than 14 km/h (9 mph)

Fault setting condition(s)

INFORMATION

Fault entry due to ambient conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause interference.

- Signal lead Short circuit to B+/ground or open circuit in the line
- **Supply line**
- **Ground line**
- **ParkAssist ultrasound sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - ParkAssist

ParkAssist ultrasound sensor

DANGER

Increased risk of accidents due to movement of the vehicle!

♦ Never step in front of or behind a vehicle unless it has been secured against rolling by the parking brake and transmission.
♦ The ParkAssist is subject to physical detection limits and does not free the driver from his/her responsibility to be careful.
♦ The system cannot detect short, thin and small obstacles and persons who are lying on the ground. It also cannot detect surfaces with unfavourable reflective characteristics, e.g. snow or glass.

Diagnostic conditions

- Internal function test on ParkAssist control unit
- Ignition on
- Reverse gear or transmission range R selected
- Vehicle speed briefly higher than 14 km/h (9 mph)

Fault setting condition(s)

INFORMATION

Fault entry due to ambient conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause interference.

- Signal lead Short circuit to B+/ground or open circuit in the line
- **Supply line**
- **Ground line**
- **ParkAssist ultrasound sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - ParkAssist

ParkAssist ultrasound sensor

DANGER

Increased risk of accidents due to movement of the vehicle!

♦ Never step in front of or behind a vehicle unless it has been secured against rolling by the parking brake and transmission.
♦ The ParkAssist is subject to physical detection limits and does not free the driver from his/her responsibility to be careful.
♦ The system cannot detect short, thin and small obstacles and persons who are lying on the ground. It also cannot detect surfaces with unfavourable reflective characteristics, e.g. snow or glass.

Diagnostic conditions

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- Ignition on
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- Vehicle speed briefly higher than 14 km/h (9 mph)

Fault setting condition(s)

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Fault entry due to ambient conditions: this fault can also occur if the sensors are heavily soiled, iced-up or have been painted. In addition, intense sound sources such as pneumatic hammers can cause interference.

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- **Supply line**
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Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - ParkAssist

ParkAssist ultrasound sensor

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Diagnostic information - ParkAssist

Supply voltage Sensors below limit

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ⓘ INFORMATION

● The sensors are supplied with power only when the ignition is switched on and with the Shift lever or selector lever in position R.
● A voltage which is below the required supply voltage may be caused if the resistance of the loads (sensors) is too low

Diagnostic conditions

● Internal function test on ParkAssist control unit
● Ignition on
● Reverse gear or transmission range R selected
● Vehicle speed briefly higher than 14 km/h (9 mph)

Fault setting condition(s)

● Wiring connection between control unit and sensor faulty
(open circuit, short circuit to ground or B+)
● Sensors faulty
● ParkAssist control unit faulty

Fault effects

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Diagnostic information - ParkAssist

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- Signal lead Short circuit to B+/ground or open circuit in the line
- **Supply line**
- **Ground line**
- **ParkAssist ultrasound sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - ParkAssist

ParkAssist ultrasound sensor

DANGER

Increased risk of accidents due to movement of the vehicle!

♦ Never step in front of or behind a vehicle unless it has been secured against rolling by the parking brake and transmission.
♦ The ParkAssist is subject to physical detection limits and does not free the driver from his/her responsibility to be careful.
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Diagnostic conditions

- Internal function test on ParkAssist control unit
- Ignition on
- Reverse gear or transmission range R selected
- Vehicle speed briefly higher than 14 km/h (9 mph)

Fault setting condition(s)

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Diagnostic information - ParkAssist

ParkAssist ultrasound sensor

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ParkAssist ultrasound sensor

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Fault effects

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♦ Display in instrument cluster

Diagnostic information - ParkAssist

ParkAssist control module

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Fault setting condition(s)

INFORMATION

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- ParkAssist control unit faulty

Fault effects

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♦ Display in instrument cluster

Diagnostic information - ParkAssist

ParkAssist control module

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INFORMATION

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- ParkAssist control unit faulty

Fault effects

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Diagnostic information - ParkAssist

No/incorrect coding

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ⓘ INFORMATION

● The sensors are supplied with power only when the ignition is switched on and with the Shift lever or selector lever in position R.

Diagnostic conditions

● Internal function test on ParkAssist control unit
● Ignition on
● Reverse gear or transmission range R selected
● Vehicle speed briefly higher than 14 km/h (9 mph)

Fault setting condition(s)

● ParkAssist control unit not coded or incorrect coding/parameters set
● Control unit is in wrong mode (Production) --> Perform coding
● ParkAssist control unit faulty

Fault effects

♦ System does not function
♦ Display in instrument cluster

Diagnostic information - ParkAssist

ParkAssist control unit, supply voltage

⚠DANGER
Increased risk of accidents due to movement of the vehicle!

♦ Never stand in front of or behind a vehicle that has not been secured against rolling away by the parking brake and transmission.
♦ The **ParkAssist** system has physical detection limits. The driver is ultimately responsible for taking utmost care while driving.
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ⓘ INFORMATION

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Diagnostic conditions

● Internal function test on **ParkAssist control unit**
● Ignition on
● Reverse gear or transmission range R selected
● Vehicle speed briefly higher than 14 km/h (9 mph)

Fault setting condition(s)

● Supply voltage, overvoltage or undervoltage
● Supply voltage, below limit value
● Supply voltage, above limit value

Possible fault causes

● Fuse (terminal 15) in fuse box faulty
● Faulty line connection between fuse box and **ParkAssist control unit** (open circuit, short circuit to ground)
● Relay (terminal 15) faulty
● Relay (terminal 15) activation faulty
● Main fuse in main fuse box faulty
● Line connection between fuse box and main fuse faulty
● **ParkAssist control unit** faulty

Fault effects

- System switches off
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Diagnostic information - ParkAssist

ParkAssist control unit, supply voltage

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Diagnostic information - ParkAssist

ParkAssist control unit, supply voltage

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Diagnostic information - ParkAssist

ParkAssist control unit, supply voltage

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Diagnosis information - Front-end electronics

00C058..... 1
802002..... 2
802108..... 3
80230E..... 4
80240E..... 5
80250E..... 6
80260E..... 7
80300B..... 8
80310E..... 9
80320E..... 10
80400E..... 11
80410F..... 12
804208..... 13
804308..... 14
80440C..... 15
804509..... 16
804606..... 17
80470B..... 18
805008..... 19
805108..... 20
805208..... 21
805308..... 22
80530F..... 23
805404..... 24
805408..... 25
806005..... 26
81020E..... 27
820101..... 28
820102..... 29
82020E..... 30
82030E..... 31
820508..... 32
820608..... 33
83010E..... 34
83020C..... 35
83030C..... 36
830404..... 37
830504..... 38
830601..... 39

830708 40
840101 41
840202 42
840301 43
840504 44
84070E 46
84090E 47
840A04 48
850102 49
85030C 50
850402 51
850408 52
850507 53
85060C 54
850708 55
850808 56
85090E 57
850A06 58
850A07 59
850B0C 60
850C01 61
850C02 62
850D08 63
850E0E 64
850F06 65
850F07 66
85100C 67
860103 68
860108 69
86010B 70
860303 71
860308 72
86030B 73
860408 74
860508 75
860602 76
86060B 77
860702 78
86070B 79

860802..... 80
86080B..... 81
860902..... 82
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Diagnostic information - Front-end electronics

Production mode active

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- One or more production modes or production interventions are activated.
- **Front-end electronics** control unit faulty

Fault effects

♦ Comfort functions: Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

no Engine oil pressure

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Front-end electronics No function

Diagnosis information - Front-end electronics

Rpm signal PSM control module, implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Vehicle speed** v > 10 **km/h**
- **Supply voltage** 7 < u < 18 V

Fault setting condition(s)

- **Wheel speed**: Implausible signal from **PSM control module** for t > 10 s

Fault effects

- **Electronic steering column lock (ELV)** No function

INFORMATION

► **Electronic steering column lock (ELV)** does not lock if Fault is entered passively

Diagnosis information - Front-end electronics

Power supply KESSY control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Power or ground supply faulty

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

KESSY control unit No function

Diagnosis information - Front-end electronics

Power supply KESSY control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Power or ground supply faulty

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

KESSY control unit No function

Diagnosis information - Front-end electronics

Power supply KESSY control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Power or ground supply faulty

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

KESSY control unit No function

Diagnosis information - Front-end electronics

Power supply KESSY control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Power or ground supply faulty

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

KESSY control unit No function

Diagnosis information - Front-end electronics

Ignition lock Open circuit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Front-end electronics No function

Diagnosis information - Front-end electronics

Filler flap Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit/short circuit to ground
- **Filler-flap servo motor** blocked

Fault effects

♦ **Filler flap** No function

Diagnosis information - Front-end electronics

Horn Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Open circuit/short circuit to ground
- **Horn** Faulty

Fault effects

♦ **Horn** No function

Diagnosis information - Front-end electronics

Front-end electronics Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects

- **Front-end electronics** No function

Diagnosis information - Front-end electronics

Steering Limp-home

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

♦ Steering Limp-home

Diagnosis information - Front-end electronics

Front-end electronics Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects

- **Front-end electronics** No function

Diagnosis information - Front-end electronics

Steering Limp-home

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

♦ Steering Limp-home

Diagnosis information - Front-end electronics

Steering Valve

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Steering Limited function

Diagnosis information - Front-end electronics

Steering Limp-home

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

♦ Steering Limp-home

Diagnosis information - Front-end electronics

Steering Valve

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Steering Limited function

Diagnosis information - Front-end electronics

Steering Valve

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

♦ Steering Limited function

Diagnosis information - Front-end electronics

DME control module Confirmation failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Different data **DME control module** <-> **Front-end electronics** during teaching
- **Front-end electronics** incomplete taught

► Teach >component protection< using >PIWIS Tester II< ⇒ >Diagnostics< ⇒ >Online teaching functions<.

Fault effects

♦ no Engine running

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Confirmation failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Implausible signal during **Electronic steering column lock (ELV)** locked

/ unlocked

Fault effects

♦ **Electronic steering column lock (ELV)** locked

/ unlocked not

Possible fault causes

♦ **Electronic steering column lock (ELV)** not to Immobilizer taught

Diagnosis information - Front-end electronics

Rear-end electronics Confirmation failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Different data **DME control module** <-> **Rear-end electronics** during teaching
- **Front-end electronics** incomplete taught

Fault effects

♦ Alarm system triggers

Diagnosis information - Front-end electronics

High-voltage power electronics control unit Confirmation failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

● Different data **High-voltage power electronics control unit** <-> **Front-end electronics** during teaching
● **Front-end electronics** incomplete taught

Fault effects

♦ no Engine start

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Rear-end electronics

NOTE

For vehicles with **Porsche Vehicle Tracking System (PVTS)**, see **Tequipment (TEQ) instructions,** main group **9063**!

►This fault code relates to the **Porsche Vehicle Tracking System (PVTS**).
More information is available in attached documents or from the respective service provider.

Diagnosis information - Front-end electronics

DME control module Confirmation failed

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Different data **DME control module** <-> **Front-end electronics** during teaching
- **Front-end electronics** incomplete taught

► Teach >component protection< using >PIWIS Tester II< ⇒ >Diagnostics< ⇒ >Online teaching functions<.

Fault effects

♦ no Engine running

Diagnosis information - Front-end electronics

Immobilizer not taught

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Immobilizer not taught

Fault effects

♦ Engine start **not** possible

Diagnosis information - Front-end electronics

Garage door opener Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Garage door opener** in the **Control module Front-end electronics** coded

Fault setting condition(s)

- **Garage door opener** sends fault signal to **Control module Front-end electronics**

Fault effects

♦ **Garage door opener** No function

Diagnostic information - front-end electronics

Rain/light sensor, voltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Above limit value
- Below limit value

Fault effects

Rain/light sensor, no function

Diagnostic information - front-end electronics

Rain/light sensor, voltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Above limit value
- Below limit value

Fault effects

Rain/light sensor, no function

Diagnostic information - front-end electronics

Rain/light sensor faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ **Rain/light sensor** faulty

Fault effects

Rain/light sensor, no function

Diagnostic information - front-end electronics

Rain/light sensor faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

♦ **Rain/light sensor** faulty

Fault effects

Rain/light sensor, no function

Diagnosis information - Front-end electronics

Rain sensor no/incorrect coding/calibration

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Rain sensor** coded

Fault effects

Rain sensor No function

Diagnosis information - Front-end electronics

Rain sensor Implausible signal

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Rain sensor** coded

Fault effects

Rain sensor No function

Diagnosis information - Front-end electronics

Electrically adjustable steering column (EVLS)

⚠CAUTION
Adjustment of the **Electrically adjustable steering column (EVLS)** !
Intervention during the adjustment can cause injuries to the hands or fingers.

♦ Switch the ignition off or disconnect the power supply for the **Electrically adjustable steering column (EVLS)** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Electrically adjustable steering column (EVLS) No function

Diagnosis information - Front-end electronics

Electrically adjustable steering column (EVLS)

⚠CAUTION
Adjustment of the **Electrically adjustable steering column (EVLS)** !
Intervention during the adjustment can cause injuries to the hands or fingers.

♦ Switch the ignition off or disconnect the power supply for the **Electrically adjustable steering column (EVLS)** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Electrically adjustable steering column (EVLS) No function

Diagnosis information - Front-end electronics

Electrically adjustable steering column (EVLS)

⚠CAUTION
Adjustment of the **Electrically adjustable steering column (EVLS)** !
Intervention during the adjustment can cause injuries to the hands or fingers.

♦ Switch the ignition off or disconnect the power supply for the **Electrically adjustable steering column (EVLS)** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Electrically adjustable steering column (EVLS) No function

Diagnosis information - Front-end electronics

Electrically adjustable steering column (EVLS)

⚠CAUTION
Adjustment of the **Electrically adjustable steering column (EVLS)** !
Intervention during the adjustment can cause injuries to the hands or fingers.

♦ Switch the ignition off or disconnect the power supply for the **Electrically adjustable steering column (EVLS)** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Electrically adjustable steering column (EVLS) No function

Diagnosis information - Front-end electronics

Electrically adjustable steering column (EVLS)

⚠CAUTION
Adjustment of the **Electrically adjustable steering column (EVLS)** !
Intervention during the adjustment can cause injuries to the hands or fingers.

♦ Switch the ignition off or disconnect the power supply for the **Electrically adjustable steering column (EVLS)** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Electrically adjustable steering column (EVLS) No function

Diagnosis information - Front-end electronics

Switch Electrically adjustable steering column (EVLS)

⚠CAUTION
Adjustment of the **Electrically adjustable steering column (EVLS)** !
Intervention during the adjustment can cause injuries to the hands or fingers.

♦ Switch the ignition off or disconnect the power supply for the **Electrically adjustable steering column (EVLS)** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Electrically adjustable steering column (EVLS) No function

Diagnosis information - Front-end electronics

Electrically adjustable steering column (EVLS) no/incorrect coding/calibration

⚠CAUTION
Adjustment of the **Electrically adjustable steering column (EVLS)** !
Intervention during the adjustment can cause injuries to the hands or fingers.

♦ Switch the ignition off or disconnect the power supply for the **Electrically adjustable steering column (EVLS)** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Electrically adjustable steering column (EVLS)** not coded
♦ **Electrically adjustable steering column (EVLS)** not calibrated

Fault effects

Electrically adjustable steering column (EVLS) No function

Diagnosis information - Front-end electronics

Wiper Voltage

⚠CAUTION
Wiper motor start-up!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to components!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms may touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Limit exceeded
- Below limit

Fault effects

♦ **Wiper** No function

Diagnosis information - Front-end electronics

Wiper Voltage

⚠CAUTION
Wiper motor start-up!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to components!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms may touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Limit exceeded
- Below limit

Fault effects

♦ **Wiper** No function

Diagnosis information - Front-end electronics

Wiper overload

⚠CAUTION
Wiper motor start-up!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to components!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms may touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Fault setting condition(s)

● Overload protection: Permanently above limit value (> 4 seconds)

Possible fault causes

♦ **Wiper motor** blocked / Faulty
♦ **Wiper linkage** blocked / mechanically sluggish
♦ **Wiper arm** blocked / mechanically sluggish

Diagnosis information - Front-end electronics

Wiper no communication

⚠CAUTION
Wiper motor can come on!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to parts!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms can touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ No power supply for the **Wiper** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Wiper**
♦ **Wiper** faulty

Fault setting condition(s)

● No communication with the **Wiper** for t > 4 s

Fault effects

● **Wiper**: Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Wiper Faulty

⚠CAUTION
Wiper motor can come on!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to parts!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms can touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ **Wiper** Faulty

Fault setting condition(s)

● **Wiper** reports fault for t > 4 s

Fault effects

Wiper No function

Diagnosis information - Front-end electronics

Window washer system pump Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Window washer system pump No function

Diagnosis information - Front-end electronics

Rain sensor no communication

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rain sensor** coded

Possible fault causes

♦ No power supply for the **Rain sensor** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Rain sensor**
♦ **Rain sensor** faulty

Fault setting condition(s)

- No communication with the **Rain sensor** for t > 4 s

Fault effects

- **Rain sensor** No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV), Supply voltage (Terminal 30) Below limit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Open circuit/short circuit to ground
♦ Fuse Faulty

Fault setting condition(s)

- **Supply voltage** Below limit

Fault effects

- **Electronic steering column lock (ELV)** Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Terminal 15

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Below limit

- The measured value does **not** correspond to setpoint specification

Fault effects

Electronic steering column lock (ELV) not locked

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Engine Voltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line (supply line) between **Front-end electronics** <-> Engine **Electronic steering column lock (ELV)**

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Engine Position/s implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Engine Voltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to ground in the Power supply

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Locking motor

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Communication **Electronic steering column lock (ELV)** with **Front-end electronics**

Fault effects

Electronic steering column lock (ELV) No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Switch implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Electronic steering column lock (ELV)** Switch Position/s implausible

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Switch implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Electronic steering column lock (ELV)** Switch Position/s implausible

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Engine Electronic steering column lock (ELV) Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Engine **Electronic steering column lock (ELV)** Faulty

Fault effects

Engine **Electronic steering column lock (ELV)** No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Engine Short circuit Terminal 30

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Electronic steering column lock (ELV)** Engine Power or ground supply faulty

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Engine Short circuit Terminal 30

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- **Electronic steering column lock (ELV)** Engine Power or ground supply faulty

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Electronic steering column lock (ELV)** Faulty

Fault effects

Electronic steering column lock (ELV) No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Motor current Limit exceeded

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Current , - The measured value does **not** correspond to setpoint specification

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Motor current Limit exceeded

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Current , - The measured value does **not** correspond to setpoint specification

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Electronic steering column lock (ELV)** Faulty

Fault effects

Electronic steering column lock (ELV) No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Electronic steering column lock (ELV)** Faulty

Fault effects

Electronic steering column lock (ELV) No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Enabling line, Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground

Fault setting condition(s)

- **Electronic steering column lock (ELV)** Enabling line Faulty

Fault effects

Electronic steering column lock (ELV) No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Enabling line, Electrical fault

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+
♦ Short circuit to ground

Fault setting condition(s)

- **Electronic steering column lock (ELV)** Enabling line Faulty

Fault effects

Electronic steering column lock (ELV) No function

Diagnosis information - Front-end electronics

Electronic steering column lock (ELV) Motor current Limit exceeded

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Current , - The measured value does **not** correspond to setpoint specification

Fault effects

Electronic steering column lock (ELV) Engine No function

Diagnosis information - Front-end electronics

Relay stuck

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition off
- Feedback activated but Relay **not** activated

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Relay stuck

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition off
- Feedback activated but Relay **not** activated

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Relay stuck

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition off
- Feedback activated but Relay **not** activated

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Relay stuck

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition off
- Feedback activated but Relay **not** activated

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Relay stuck

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition off
- Feedback activated but Relay **not** activated

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Relay stuck

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition off
- Feedback activated but Relay **not** activated

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Output Terminal 15 SV implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on
- Current **Control module** Output Too high

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Keys Position/s implausible

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Keys in the **Ignition lock**
- Switch **Ignition lock** internal , Position implausible

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- ♦ Switch in the **Ignition lock** faulty
- ♦ Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Electronic ignition starting switch Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Keys in the **Ignition lock**

Possible fault causes

- Switch in the **Ignition lock** faulty
- Short circuit to B+/ground or open circuit in the line

Fault effects

Engine start **not** possible

Diagnosis information - Front-end electronics

Heating Windscreen washer system spray nozzle Short circuit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Supply line Front-end electronics** <-> **Windscreen washer system spray nozzle**: Short circuit to ground

Fault effects

Heating **Windscreen washer system spray nozzle** No function

Diagnosis information - Front-end electronics

Direction indicator light Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Direction indicator light No function

Diagnosis information - Front-end electronics

Direction indicator light Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Direction indicator light No function

Diagnosis information - Front-end electronics

Direction indicator light Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Direction indicator light No function

Diagnosis information - Front-end electronics

Direction indicator light Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Direction indicator light No function

Diagnosis information - Front-end electronics

Side direction indicator Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Side direction indicator No function

Diagnosis information - Front-end electronics

Side direction indicator Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Side direction indicator No function

Diagnosis information - Front-end electronics

Side light Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Side light No function

Diagnosis information - Front-end electronics

Side light Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Side light No function

Diagnosis information - Front-end electronics

Dipped beam headlight Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Dipped beam headlight No function

Diagnosis information - Front-end electronics

Dipped beam headlight Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Dipped beam headlight No function

Diagnosis information - Front-end electronics

High beam Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

High beam No function

Diagnosis information - Front-end electronics

High beam Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

High beam No function

Diagnosis information - Front-end electronics

Auxiliary high beam headlight Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Auxiliary high beam headlight No function

Diagnosis information - Front-end electronics

Auxiliary high beam headlight Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Auxiliary high beam headlight No function

Diagnosis information - Front-end electronics

Side direction indicator Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Side direction indicator No function

Diagnosis information - Front-end electronics

Side direction indicator Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Side direction indicator No function

Diagnosis information - Front-end electronics

Dipped-beam screen Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Headlight cover No function

Diagnosis information - Front-end electronics

Dipped-beam screen Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Headlight cover No function

Diagnosis information - Front-end electronics

Servo motor for headlight beam adjustment Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line
♦ **Servo motor for headlight beam adjustment** Faulty

Fault effects

Servo motor for headlight beam adjustment No function

Diagnosis information - Front-end electronics

Servo motor for headlight beam adjustment Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line
♦ **Servo motor for headlight beam adjustment** Faulty

Fault effects

Servo motor for headlight beam adjustment No function

Diagnosis information - Front-end electronics

Angle sensor Headlight beam adjustment not calibrated

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- **Angle sensor Headlight beam adjustment** not calibrated

Fault effects

Headlight beam adjustment No function

Diagnostic information - front-end electronics

Headlight beam adjustment angle sensor - short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground or open circuit in the line

Fault finding notes

- Separate lines for power supply and signal transmission between the sensor and control unit

Fault effects

♦ Headlight beam adjustment does not function

Diagnostic information - front-end electronics

Headlight beam adjustment angle sensor - short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, clear the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Short circuit to B+/ground or open circuit in the line

Fault finding notes

- Separate lines for power supply and signal transmission between the sensor and control unit

Fault effects

♦ Headlight beam adjustment does not function

Diagnosis information - Front-end electronics

Headlight washer system pump Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground/between lines or open circuit in the lines

Fault effects

Headlight washer system pump No function

Diagnosis information - Front-end electronics

Antenna Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

- Vehicle access system (KESSY): Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Antenna Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

- Vehicle access system (KESSY): Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Antenna Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

- Vehicle access system (KESSY): Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Antenna Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

- Vehicle access system (KESSY): Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Antenna Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

- Vehicle access system (KESSY): Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Antenna Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

- Vehicle access system (KESSY): Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Antenna Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

- Vehicle access system (KESSY): Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Front-end electronics Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects

- **Front-end electronics** No function

Diagnosis information - Front-end electronics

Power supply KESSY control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Power or ground supply faulty

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

KESSY control unit No function

Diagnosis information - Front-end electronics

Antenna Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

- Vehicle access system (KESSY): Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Proximity sensor Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

Vehicle access system (KESSY) via **Proximity sensor** No function

Diagnosis information - Front-end electronics

Proximity sensor Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

Vehicle access system (KESSY) via **Proximity sensor** No function

Diagnosis information - Front-end electronics

Proximity sensor Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

Vehicle access system (KESSY) via **Proximity sensor** No function

Diagnosis information - Front-end electronics

Proximity sensor Short circuit to B+/ground or open circuit in the line

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to B+/ground or open circuit in the line

Fault effects

Vehicle access system (KESSY) via **Proximity sensor** No function

Diagnosis information - Front-end electronics

Door handle too often actuated

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Door handle** > 30 actuated

without **Door** open

Fault effects

Door open individual Vehicle access system (KESSY) **not** possible

Diagnosis information - Front-end electronics

Button Door exterior permanent actuated

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Door exterior** The button is stuck or permanently actuated. > 30 Second(s)

Fault effects

Door close individual with **Button not** possible

Diagnosis information - Front-end electronics

Button Door exterior permanent actuated

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Door exterior** The button is stuck or permanently actuated. > 30 Second(s)

Fault effects

Door close individual with **Button not** possible

Diagnosis information - Front-end electronics

Button Door exterior permanent actuated

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Door exterior** The button is stuck or permanently actuated. > 30 Second(s)

Fault effects

Door close individual with **Button not** possible

Diagnosis information - Front-end electronics

Button Door exterior permanent actuated

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- **Door exterior** The button is stuck or permanently actuated. > 30 Second(s)

Fault effects

Door close individual with **Button not** possible

Diagnosis information - Front-end electronics

Ignition key Battery empty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Vehicle open with **Remote control**

Fault effects

Vehicle open / close with **Remote control**
not possible

Diagnosis information - Front-end electronics

Ignition key not synchronized

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Vehicle open with **Remote control**
- "Open" button on key pressed too often outside range actuated

(see operating instructions "Emergency key")

Fault effects

Vehicle open with **Remote control**
not possible

Diagnosis information - Front-end electronics

Floor light(s) Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Floor light(s)** Faulty

Fault effects

Floor light(s) No function

Diagnosis information - Front-end electronics

Lamp Front lid Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

Fault setting condition(s)

- Ignition on

Fault effects

Lamp Front lid No function

Diagnosis information - Front-end electronics

Power supply KESSY control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Power or ground supply faulty

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

KESSY control unit No function

Diagnosis information - Front-end electronics

Power supply KESSY control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Power or ground supply faulty

Fault setting condition(s)

- **Supply voltage** < 9 V
- **Supply voltage** > 15 V

Fault effects

KESSY control unit No function

C11004

Diagnosis information - Control module Front-end electronics

Front-end electronics, Programming

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- Programming in the **Control module** Faulty

Fault effects

♦ **Control module Front-end electronics** Limited function

C11005

Diagnosis information - Front-end electronics

Front-end electronics Faulty

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault effects

- **Front-end electronics** No function

C11006

Diagnosis information - Control module Front-end electronics

Front-end electronics, Coding

Diagnostic conditions

- Ignition on

Fault setting condition(s)

- No/incorrect coding

Fault effects

♦ **Control module Front-end electronics** Limited function

Diagnosis information - Front-end electronics

Electrically adjustable steering column (EVLS) no/incorrect coding/calibration

⚠CAUTION
Adjustment of the **Electrically adjustable steering column (EVLS)** !
Intervention during the adjustment can cause injuries to the hands or fingers.

♦ Switch the ignition off or disconnect the power supply for the **Electrically adjustable steering column (EVLS)** .

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ **Electrically adjustable steering column (EVLS)** not coded
♦ **Electrically adjustable steering column (EVLS)** not calibrated

Fault effects

Electrically adjustable steering column (EVLS) No function

C13001

Diagnosis information - Front-end electronics

Wiper no communication

⚠CAUTION
Wiper motor can come on!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to parts!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms can touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ No power supply for the **Wiper** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Wiper**
♦ **Wiper** faulty

Fault setting condition(s)

● No communication with the **Wiper** for t > 4 s

Fault effects

● **Wiper**: Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Rain sensor no communication

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rain sensor** coded

Possible fault causes

♦ No power supply for the **Rain sensor** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Rain sensor**
♦ **Rain sensor** faulty

Fault setting condition(s)

- No communication with the **Rain sensor** for t > 4 s

Fault effects

- **Rain sensor** No function

C13101

Diagnosis information - Front-end electronics

Wiper no communication

⚠CAUTION
Wiper motor can come on!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to parts!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms can touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ No power supply for the **Wiper** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Wiper**
♦ **Wiper** faulty

Fault setting condition(s)

● No communication with the **Wiper** for t > 4 s

Fault effects

● **Wiper**: Function not available or available only to a limited extent

C13201

Diagnosis information - Front-end electronics

Wiper no communication

⚠CAUTION
Wiper motor can come on!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to parts!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms can touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ No power supply for the **Wiper** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Wiper**
♦ **Wiper** faulty

Fault setting condition(s)

● No communication with the **Wiper** for t > 4 s

Fault effects

● **Wiper**: Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Rain sensor no communication

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rain sensor** coded

Possible fault causes

♦ No power supply for the **Rain sensor** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Rain sensor**
♦ **Rain sensor** faulty

Fault setting condition(s)

- No communication with the **Rain sensor** for t > 4 s

Fault effects

- **Rain sensor** No function

C13301

Diagnosis information - Front-end electronics

Wiper no communication

⚠CAUTION
Wiper motor can come on!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to parts!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms can touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ No power supply for the **Wiper** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Wiper**
♦ **Wiper** faulty

Fault setting condition(s)

● No communication with the **Wiper** for t > 4 s

Fault effects

● **Wiper**: Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Rain sensor no communication

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rain sensor** coded

Possible fault causes

- ♦ No power supply for the **Rain sensor** or only limited power supply available.
- ♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Rain sensor**
- ♦ **Rain sensor** faulty

Fault setting condition(s)

- No communication with the **Rain sensor** for t > 4 s

Fault effects

- **Rain sensor** No function

C13401

Diagnosis information - Front-end electronics

Wiper no communication

⚠CAUTION
Wiper motor can come on!
Danger of injury to hands and fingers when working on the wiper mechanism when the engine is running!

♦ Switch ignition off and/or disconnect the power supply for the wiper motor.

NOTE
Risk of damage to parts!
Risk of damage to paintwork on the hood and wiper arms.

♦ The wiper arms can touch the hood if the hood is open and the wiper motor is running.
♦ Do not open the hood/engine compartment lid when the wiper arms are raised - risk of damage to paintwork and mechanism.

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on

Possible fault causes

♦ No power supply for the **Wiper** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Wiper**
♦ **Wiper** faulty

Fault setting condition(s)

● No communication with the **Wiper** for t > 4 s

Fault effects

● **Wiper**: Function not available or available only to a limited extent

Diagnosis information - Front-end electronics

Rain sensor no communication

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- **Rain sensor** coded

Possible fault causes

♦ No power supply for the **Rain sensor** or only limited power supply available.
♦ Open circuit in LIN line between the **Front-end electronics** control unit and the **Rain sensor**
♦ **Rain sensor** faulty

Fault setting condition(s)

- No communication with the **Rain sensor** for t > 4 s

Fault effects

- **Rain sensor** No function

Cayenne , MY 2011 =>

Diagnosis information - Headlights left side

80110E..... 1
801208..... 2
801308..... 3
80140E..... 4
80150E..... 5
80160E..... 6
802102..... 7
802108..... 8
802208..... 9
80310C..... 10
80320E..... 11
804106..... 12
804107..... 13
804205..... 14
804208..... 15
80420C..... 16
804305..... 17
804308..... 18
80430C..... 19
805104..... 20
80510E..... 21
805200..... 22
805301..... 23
805301..... 24
805301..... 25
805408..... 26
805408..... 27
805408..... 28
80540E..... 29
80540E..... 30
80540E..... 31
805500..... 32
805500..... 33
805500..... 34
805601..... 35
805601..... 36
805601..... 37
805605..... 38
805605..... 39

805605..... 40
80570E..... 41
80570E..... 42
80570E..... 43
805807..... 44
80580B..... 45
805904..... 46
805904..... 47
805904..... 48
80590E..... 49
805A00..... 50
805B01..... 51
805B05..... 52
805C0E..... 53
80610E..... 54
806205..... 55
806301..... 56
806301..... 57
806301..... 58
80630B..... 59
80630B..... 60
80630B..... 61
80630C..... 62
80630C..... 63
80630C..... 64
808105..... 65
808205..... 66
808308..... 67
C058..... 69

Diagnostic information - Headlights

Control module Programming

⚠WARNING
HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights incorrectly programmed
- **Control module** Headlights not programmed
- Incorrect software version left right
- incorrect hardware version left right
- **Control module** not in operating mode

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Headlight control unit

Control unit, coded incorrectly

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight control unit coded incorrectly
- Ignition on

Possible fault causes

♦ Line connection from **headlight** control unit to headlight housing connector faulty
♦ Wiring at headlight control unit connector Pin 5 and Pin 6 interchanged
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Control unit, coded incorrectly

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight control unit coded incorrectly
- Ignition on

Possible fault causes

♦ Line connection from **headlight** control unit to headlight housing connector faulty
♦ Wiring at headlight control unit connector Pin 5 and Pin 6 interchanged
♦ Headlight control unit faulty

80140E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

80150E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

80160E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnosis information - headlight control unit

Gas discharge lamp, xenon, power supply

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

- ♦ Wait an appropriate amount of time for cooling
- ♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

- ♦ The light must always be switched off when removing and installing the headlights.
- ♦ The gas discharge lamp may only be operated when installed in the headlight.
- ♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

- ♦ Wiring harness in headlight faulty (headlight housing)
- ♦ Headlight control unit faulty

802108

Diagnostic information - Headlights

Control module Power supply

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights **Power supply**
- Signal Terminal 15
- Signal Terminal 56b

Fault effects

♦ System switches off, Headlights **OFF**
♦ Display in instrument cluster

802208

Diagnostic information - Headlights

Control module Power supply

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights **Power supply**
- Signal Terminal 15
- Signal Terminal 56b

Fault effects

♦ System switches off, Headlights **OFF**
♦ Display in instrument cluster

80310C

Diagnostic information - Headlights

Coding plug Wrong connector assignment

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

Incorrect coding (pin assignment/contacts) of the headlight control unit connector could be the cause.

- **Control module** Headlights **Pin assignment** incorrect
- **Control module** Headlights **Pin assignment** interchanged

Fault effects

♦ System switches off
♦ Display in instrument cluster

80320E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Headlight control unit

Power supply to HBA angle sensor (not leveling system)

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
♦ The angle sensor (compression) is also referred to as the vehicle level sensor.
♦ The power supply (5 V) for the angle sensors is supplied via the **left headlight control unit**.
♦ HBA (headlight beam adjustment) is also referred to as AHBA (automatic headlight beam adjustment)
♦ In the case of the leveling system, the signal comes from the leveling system control unit via CAN

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Supply voltage line connection faulty, contacts faulty
♦ Ground supply line connection faulty, contacts faulty
♦ **Headlight** control unit coded incorrectly
♦ Line connection in headlight housing
♦ Headlight control unit (Xenon)

Diagnostic information - Headlight control unit

Power supply to HBA angle sensor (not leveling system)

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
♦ The angle sensor (compression) is also referred to as the vehicle level sensor.
♦ The power supply (5 V) for the angle sensors is supplied via the **left headlight control unit**.
♦ HBA (headlight beam adjustment) is also referred to as AHBA (automatic headlight beam adjustment)
♦ In the case of the leveling system, the signal comes from the leveling system control unit via CAN

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Supply voltage line connection faulty, contacts faulty
♦ Ground supply line connection faulty, contacts faulty
♦ **Headlight** control unit coded incorrectly
♦ Line connection in headlight housing
♦ Headlight control unit (Xenon)

Diagnostic information - Xenon headlights

Front compression angle sensor (only for Xenon without **leveling system control unit (PASM)**)

NOTE

♦ On vehicles with level control/PASM, the signal for the vehicle position is generated via the leveling system/PASM control unit. This has four angle sensors for compression.
♦ The signal values are then sent to the headlights via CAN
♦ Calibration takes place in the **leveling system control unit (PASM)**
♦ Calibration takes place in the left Xenon headlight only on vehicles without a **leveling system control unit (PASM)**

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Angle sensor** calibration incorrect or not carried out
- >**Commissioning**< function under Maintenance/repairs not performed
- **Angle sensor power supply**
- **Angle sensor** signal line faulty
- **Angle sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

804208

Diagnostic information - Xenon headlights

Front compression angle sensor (only for Xenon without **leveling system control unit (PASM)**)

NOTE

♦ On vehicles with level control/PASM, the signal for the vehicle position is generated via the leveling system/PASM control unit. This has four angle sensors for compression.
♦ The signal values are then sent to the headlights via CAN
♦ Calibration takes place in the **leveling system control unit (PASM)**
♦ Calibration takes place in the left Xenon headlight only on vehicles without a **leveling system control unit (PASM)**

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Angle sensor** calibration incorrect or not carried out
- >**Commissioning**< function under Maintenance/repairs not performed
- **Angle sensor power supply**
- **Angle sensor** signal line faulty
- **Angle sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Xenon headlights

Front compression angle sensor (only for Xenon without **leveling system control unit (PASM)**)

NOTE

♦ On vehicles with level control/PASM, the signal for the vehicle position is generated via the leveling system/PASM control unit. This has four angle sensors for compression.
♦ The signal values are then sent to the headlights via CAN
♦ Calibration takes place in the **leveling system control unit (PASM)**
♦ Calibration takes place in the left Xenon headlight only on vehicles without a **leveling system control unit (PASM)**

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Angle sensor** calibration incorrect or not carried out
- >**Commissioning**< function under Maintenance/repairs not performed
- **Angle sensor power supply**
- **Angle sensor** signal line faulty
- **Angle sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

804305

Diagnostic information - Xenon headlights

Rear compression angle sensor (only for Xenon without **leveling system control unit (PASM)**)

ⓘ INFORMATION

♦ On vehicles with level control/PASM, the signal for the vehicle position is generated via the leveling system/PASM control unit. This has four angle sensors for compression.
♦ The signal values are then sent to the headlights via CAN
♦ Calibration takes place in the **leveling system control unit (PASM)**
♦ Calibration takes place in the left Xenon headlight only on vehicles without a **leveling system control unit (PASM)**

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Angle sensor** calibration incorrect or not carried out
- >**Commissioning**< function under Maintenance/repairs not performed
- **Angle sensor power supply**
- **Angle sensor** signal line faulty
- **Angle sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Xenon headlights

Rear compression angle sensor (only for Xenon without **leveling system control unit (PASM)**)

ⓘ INFORMATION

♦ On vehicles with level control/PASM, the signal for the vehicle position is generated via the leveling system/PASM control unit. This has four angle sensors for compression.
♦ The signal values are then sent to the headlights via CAN
♦ Calibration takes place in the **leveling system control unit (PASM)**
♦ Calibration takes place in the left Xenon headlight only on vehicles without a **leveling system control unit (PASM)**

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Angle sensor** calibration incorrect or not carried out
- >**Commissioning**< function under Maintenance/repairs not performed
- **Angle sensor power supply**
- **Angle sensor** signal line faulty
- **Angle sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Xenon headlights

Rear compression angle sensor (only for Xenon without **leveling system control unit (PASM)**)

ⓘ INFORMATION

♦ On vehicles with level control/PASM, the signal for the vehicle position is generated via the leveling system/PASM control unit. This has four angle sensors for compression.
♦ The signal values are then sent to the headlights via CAN
♦ Calibration takes place in the **leveling system control unit (PASM)**
♦ Calibration takes place in the left Xenon headlight only on vehicles without a **leveling system control unit (PASM)**

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Angle sensor** calibration incorrect or not carried out
- >**Commissioning**< function under Maintenance/repairs not performed
- **Angle sensor power supply**
- **Angle sensor** signal line faulty
- **Angle sensor** faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

Diagnosis information - headlight control unit

HBA stepper motor

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection or contacts to HBA servo motor faulty
♦ HBA stepper motor overheated
♦ HBA stepper motor mechanically blocked
♦ HBA stepper motor faulty
♦ **Headlight** control unit coded incorrectly

Diagnosis information - headlight control unit

Stepper motor HBA version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Software version of HBA stepper motor is not supported by control unit
♦ HBA stepper motor faulty
♦ Headlight control unit wrong software version
♦ Headlight control unit faulty

Diagnosis information - headlight control unit

HBA stepper motor

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection or contacts to HBA servo motor faulty
♦ HBA stepper motor overheated
♦ HBA stepper motor mechanically blocked
♦ HBA stepper motor faulty
♦ **Headlight** control unit coded incorrectly

805301

Diagnosis information - headlight control unit

Stepper motor HBA version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Software version of HBA stepper motor is not supported by control unit
♦ HBA stepper motor faulty
♦ Headlight control unit wrong software version
♦ Headlight control unit faulty

805301

Diagnosis information - headlight control unit

Stepper motor HBA switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ HBA stepper motor version is not supported by control unit
♦ HBA stepper motor switched off due to overtemperature
♦ Supply voltage too low
♦ Headlight control unit wrong software version

Diagnosis information - headlight control unit

HBA stepper motor

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection or contacts to HBA servo motor faulty
♦ HBA stepper motor overheated
♦ HBA stepper motor mechanically blocked
♦ HBA stepper motor faulty
♦ **Headlight** control unit coded incorrectly

Diagnosis information - headlight control unit

Stepper motor HBA version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Software version of HBA stepper motor is not supported by control unit
♦ HBA stepper motor faulty
♦ Headlight control unit wrong software version
♦ Headlight control unit faulty

805408

Diagnosis information - headlight control unit

Stepper motor HBA switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ HBA stepper motor version is not supported by control unit
♦ HBA stepper motor switched off due to overtemperature
♦ Supply voltage too low
♦ Headlight control unit wrong software version

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ INFORMATION

♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ INFORMATION

♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

805807

Diagnostic information - Headlights

Bulb stat. Cornering light

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- Bulb Cornering light
- Lines/connections

Fault effects

♦ System switches off
♦ Display in instrument cluster

80580B

Diagnostic information - Headlights

Bulb stat. Cornering light

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- Bulb Cornering light
- Lines/connections

Fault effects

♦ System switches off
♦ Display in instrument cluster

805904

Diagnosis information - headlight control unit

HBA stepper motor

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection or contacts to HBA servo motor faulty
♦ HBA stepper motor overheated
♦ HBA stepper motor mechanically blocked
♦ HBA stepper motor faulty
♦ **Headlight** control unit coded incorrectly

805904

Diagnosis information - headlight control unit

Stepper motor HBA version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Software version of HBA stepper motor is not supported by control unit
♦ HBA stepper motor faulty
♦ Headlight control unit wrong software version
♦ Headlight control unit faulty

805904

Diagnosis information - headlight control unit

Stepper motor HBA switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ HBA stepper motor version is not supported by control unit
♦ HBA stepper motor switched off due to overtemperature
♦ Supply voltage too low
♦ Headlight control unit wrong software version

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

80610E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

806205

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnosis information - headlight control unit

Gas discharge lamp, xenon, power supply

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Wiring harness in headlight faulty (headlight housing)
♦ Headlight control unit faulty

806301

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

806301

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

Diagnosis information - headlight control unit

Gas discharge lamp, xenon, power supply

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Wiring harness in headlight faulty (headlight housing)
♦ Headlight control unit faulty

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

● **Headlight** (xenon) control unit internal function test
● Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

Diagnosis information - headlight control unit

Gas discharge lamp, xenon, power supply

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Wiring harness in headlight faulty (headlight housing)
♦ Headlight control unit faulty

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

808105

Diagnostic information - Headlights

Control module Programming

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights incorrectly programmed
- **Control module** Headlights not programmed
- Incorrect software version left right
- incorrect hardware version left right
- **Control module** not in operating mode

Fault effects

♦ System switches off
♦ Display in instrument cluster

808205

Diagnostic information - Headlights

Control module Programming

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights incorrectly programmed
- **Control module** Headlights not programmed
- Incorrect software version left right
- incorrect hardware version left right
- **Control module** not in operating mode

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Control module Headlights

Vehicle identification, different Vehicle Identification Number (VIN)
Vehicle Identification Number (VIN) , implausible

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ INFORMATION

♦ Calibration is not possible with different/implausible **Vehicle Identification Number (VIN)** .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on
- Internal function test on headlight (Xenon) control unit

ⓘ NOTE

This fault is set when the Vehicle Identification Number (VIN) entered in the control unit is not the same as the one reported via CAN.
A new control unit receives the Vehicle Identification Number (VIN) when it is connected for the first time.

Fault setting condition(s)

- Coded Vehicle Identification Number (VIN) in the control unit is not the same as the vehicle's VIN sent via CAN.
- Control unit is new, used for the first time or vehicle handover not yet performed.
- Control unit comes from another vehicle.
- Vehicle Identification Number (VIN) not entered correctly in the **Control module** Headlights .

► Check and correct the Vehicle Identification Number (VIN) of the **Control module** Headlights (in the PIWIS Tester ⇒ **Control module** Headlights ⇒ Extended identification ⇒ Chassis number)

Fault effects

♦ System does not function
♦ Display in instrument cluster

C058

Diagnostic information - Headlight control unit

Control unit, coded incorrectly

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight control unit coded incorrectly
- Ignition on

Possible fault causes

♦ Line connection from **headlight** control unit to headlight housing connector faulty
♦ Wiring at headlight control unit connector Pin 5 and Pin 6 interchanged
♦ Headlight control unit faulty

Cayenne , MY 2011 =>

Diagnosis information - Headlights right side

80110E..... 1
801208..... 2
801308..... 3
80140E..... 4
80150E..... 5
80160E..... 6
802102..... 7
802108..... 8
802208..... 9
80310C..... 10
80320E..... 11
805104..... 12
80510E..... 13
805200..... 14
805301..... 15
805301..... 16
805301..... 17
805408..... 18
805408..... 19
805408..... 20
80540E..... 21
80540E..... 22
80540E..... 23
805500..... 24
805500..... 25
805500..... 26
805601..... 27
805601..... 28
805601..... 29
805605..... 30
805605..... 31
805605..... 32
80570E..... 33
80570E..... 34
80570E..... 35
805807..... 36
80580B..... 37
805904..... 38
805904..... 39

805904..... 40
80590E..... 41
805A00..... 42
805B01..... 43
805B05..... 44
805C0E..... 45
80610E..... 46
806205..... 47
806301..... 48
806301..... 49
806301..... 50
80630B..... 51
80630B..... 52
80630B..... 53
80630C..... 54
80630C..... 55
80630C..... 56
808105..... 57
808205..... 58
808308..... 59
C058..... 61

Diagnostic information - Headlights

Control module Programming

⚠WARNING
HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights incorrectly programmed
- **Control module** Headlights not programmed
- Incorrect software version left right
- incorrect hardware version left right
- **Control module** not in operating mode

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Headlight control unit

Control unit, coded incorrectly

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight control unit coded incorrectly
- Ignition on

Possible fault causes

♦ Line connection from **headlight** control unit to headlight housing connector faulty
♦ Wiring at headlight control unit connector Pin 5 and Pin 6 interchanged
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Control unit, coded incorrectly

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight control unit coded incorrectly
- Ignition on

Possible fault causes

♦ Line connection from **headlight** control unit to headlight housing connector faulty
♦ Wiring at headlight control unit connector Pin 5 and Pin 6 interchanged
♦ Headlight control unit faulty

80140E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

80150E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

80160E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

802102

Diagnostic information - Headlights

Control module Power supply

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights **Power supply**
- Signal Terminal 15
- Signal Terminal 56b

Fault effects

♦ System switches off, Headlights **OFF**
♦ Display in instrument cluster

802108

Diagnostic information - Headlights

Control module Power supply

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights **Power supply**
- Signal Terminal 15
- Signal Terminal 56b

Fault effects

♦ System switches off, Headlights **OFF**
♦ Display in instrument cluster

802208

Diagnostic information - Headlights

Control module Power supply

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights **Power supply**
- Signal Terminal 15
- Signal Terminal 56b

Fault effects

♦ System switches off, Headlights **OFF**
♦ Display in instrument cluster

80310C

Diagnostic information - Headlights

Coding plug Wrong connector assignment

⚠WARNING
HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

Incorrect coding (pin assignment/contacts) of the headlight control unit connector could be the cause.

- **Control module** Headlights **Pin assignment** incorrect
- **Control module** Headlights **Pin assignment** interchanged

Fault effects

♦ System switches off
♦ Display in instrument cluster

80320E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

80510E

Diagnosis information - headlight control unit

HBA stepper motor

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection or contacts to HBA servo motor faulty
♦ HBA stepper motor overheated
♦ HBA stepper motor mechanically blocked
♦ HBA stepper motor faulty
♦ **Headlight** control unit coded incorrectly

805200

Diagnosis information - headlight control unit

Stepper motor HBA version conflict

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Software version of HBA stepper motor is not supported by control unit
♦ HBA stepper motor faulty
♦ Headlight control unit wrong software version
♦ Headlight control unit faulty

805301

Diagnosis information - headlight control unit

HBA stepper motor

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection or contacts to HBA servo motor faulty
♦ HBA stepper motor overheated
♦ HBA stepper motor mechanically blocked
♦ HBA stepper motor faulty
♦ **Headlight** control unit coded incorrectly

805301

Diagnosis information - headlight control unit

Stepper motor HBA version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Software version of HBA stepper motor is not supported by control unit
♦ HBA stepper motor faulty
♦ Headlight control unit wrong software version
♦ Headlight control unit faulty

805301

Diagnosis information - headlight control unit

Stepper motor HBA switched off

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ HBA stepper motor version is not supported by control unit
♦ HBA stepper motor switched off due to overtemperature
♦ Supply voltage too low
♦ Headlight control unit wrong software version

805408

Diagnosis information - headlight control unit

HBA stepper motor

⚠ **CAUTION**
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection or contacts to HBA servo motor faulty
♦ HBA stepper motor overheated
♦ HBA stepper motor mechanically blocked
♦ HBA stepper motor faulty
♦ **Headlight** control unit coded incorrectly

805408

Diagnosis information - headlight control unit

Stepper motor HBA version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Software version of HBA stepper motor is not supported by control unit
♦ HBA stepper motor faulty
♦ Headlight control unit wrong software version
♦ Headlight control unit faulty

805408

Diagnosis information - headlight control unit

Stepper motor HBA switched off

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ HBA stepper motor version is not supported by control unit
♦ HBA stepper motor switched off due to overtemperature
♦ Supply voltage too low
♦ Headlight control unit wrong software version

80540E

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ **CAUTION**
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ **INFORMATION**
♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

80540E

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

80540E

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

805500

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ **CAUTION**
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ **INFORMATION**
♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

805500

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

805500

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

🛈 INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

805605

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ **CAUTION**
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ **INFORMATION**
♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

805605

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

805605

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

80570E

Diagnostic information - Headlight control unit

Stepper motor, dyn. cornering light, version conflict

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ INFORMATION

♦ Software for the stepper motor does not match software for the control unit; software versions are not compatible.
♦ The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Software version of stepper motor is not supported by control unit
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit has wrong software version
♦ Headlight control unit faulty

80570E

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light switched off

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

80570E

Diagnostic information - Headlight control unit

Stepper motor for dyn. cornering light, position sensor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

INFORMATION
The stepper motor/servo motor for the dynamic cornering light and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

Diagnostic conditions

- Internal function test on headlight (Xenon) control unit
- Ignition on

Possible fault causes

♦ Mechanism of stepper motor for dyn. cornering light sluggish or blocked
♦ Dynamic cornering light wiring faulty
♦ Stepper motor for dynamic cornering light faulty
♦ Headlight control unit faulty

805807

Diagnostic information - Headlights

Bulb stat. Cornering light

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- Bulb Cornering light
- Lines/connections

Fault effects

♦ System switches off
♦ Display in instrument cluster

80580B

Diagnostic information - Headlights

Bulb stat. Cornering light

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- Bulb Cornering light
- Lines/connections

Fault effects

♦ System switches off
♦ Display in instrument cluster

805904

Diagnosis information - headlight control unit

HBA stepper motor

⚠ CAUTION
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection or contacts to HBA servo motor faulty
♦ HBA stepper motor overheated
♦ HBA stepper motor mechanically blocked
♦ HBA stepper motor faulty
♦ **Headlight** control unit coded incorrectly

805904

Diagnosis information - headlight control unit

Stepper motor HBA version conflict

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Software version of HBA stepper motor is not supported by control unit
♦ HBA stepper motor faulty
♦ Headlight control unit wrong software version
♦ Headlight control unit faulty

805904

Diagnosis information - headlight control unit

Stepper motor HBA switched off

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ HBA stepper motor version is not supported by control unit
♦ HBA stepper motor switched off due to overtemperature
♦ Supply voltage too low
♦ Headlight control unit wrong software version

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

Among other things, the **Adaptive Frontlighting System** (AFS) is a dynamic light distribution and is produced by a cylinder that can rotate. It possesses three different positions/contours to change the light/dark limit for ideal highway, motorway and poor-weather lighting.

Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

NOTE

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Diagnostic conditions

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- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

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Diagnostic information - Headlights

Adaptive Frontlighting System

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Fault setting condition(s)

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The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

Diagnostic information - Headlights

Adaptive Frontlighting System

⚠WARNING

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Diagnostic conditions

- Internal function test on Headlights control unit
- Ignition on
- Driving lights switched on

Fault setting condition(s)

ⓘ INFORMATION

♦ The stepper motor/servo motor for the adaptive frontlighting system (AFS) and its mechanical components and wiring cannot be replaced individually.
The headlight housing must be replaced if repairs are needed.

- Leads Contacts
- **Servo motor Adaptive Frontlighting System** (**Headlight housing**)

Fault effects

♦ **Adaptive Frontlighting System** Function not available or available only to a limited extent

80610E

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

806205

Diagnostic information - Headlights

Control module faulty

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights faulty

Fault effects

♦ System switches off
♦ Display in instrument cluster

806301

Diagnosis information - headlight control unit

Gas discharge lamp, xenon, power supply

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Wiring harness in headlight faulty (headlight housing)
♦ Headlight control unit faulty

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

806301

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

80630B

Diagnosis information - headlight control unit

Gas discharge lamp, xenon, power supply

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Wiring harness in headlight faulty (headlight housing)
♦ Headlight control unit faulty

80630B

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

80630B

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

80630C

Diagnosis information - headlight control unit

Gas discharge lamp, xenon, power supply

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Wiring harness in headlight faulty (headlight housing)
♦ Headlight control unit faulty

80630C

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

80630C

Diagnosis information - headlight control unit

Gas discharge lamp (xenon)

⚠ WARNING

HBA Xenon: Electric shock and burns from high voltage!

♦ Wait an appropriate amount of time for cooling
♦ Wear suitable protective gloves to protect your hands.

⚠ CAUTION

Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or the wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- **Headlight** (xenon) control unit internal function test
- Ignition on

Possible fault causes

♦ Line connection from headlight control unit to gas discharge lamp (xenon) faulty
♦ Gas discharge lamp (Xenon) faulty
♦ Headlight control unit faulty

808105

Diagnostic information - Headlights

Control module Programming

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights incorrectly programmed
- **Control module** Headlights not programmed
- Incorrect software version left right
- incorrect hardware version left right
- **Control module** not in operating mode

Fault effects

♦ System switches off
♦ Display in instrument cluster

808205

Diagnostic information - Headlights

Control module Programming

⚠WARNING

HBA Xenon: Electric shock and burns from high voltage.

♦ The lights should always be switched off before removing and installing the headlights.
♦ Only operate the gas-discharge lamp when installed in the headlight.
♦ Carry out repair work on the headlight or wiring only with the component removed and separated from the voltage supply.

Diagnostic conditions

- Headlights switched on
- Ignition on

Fault setting condition(s)

- **Control module** Headlights incorrectly programmed
- **Control module** Headlights not programmed
- Incorrect software version left right
- incorrect hardware version left right
- **Control module** not in operating mode

Fault effects

♦ System switches off
♦ Display in instrument cluster

808308

Diagnostic information - Control module Headlights

Vehicle identification, different Vehicle Identification Number (VIN)
Vehicle Identification Number (VIN) , implausible

⚠ **CAUTION**
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

ⓘ **INFORMATION**

♦ Calibration is not possible with different/implausible **Vehicle Identification Number (VIN)** .

Diagnostic conditions
The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

● Ignition on
● Internal function test on headlight (Xenon) control unit

ⓘ **NOTE**
This fault is set when the Vehicle Identification Number (VIN) entered in the control unit is not the same as the one reported via CAN.
A new control unit receives the Vehicle Identification Number (VIN) when it is connected for the first time.

Fault setting condition(s)

● Coded Vehicle Identification Number (VIN) in the control unit is not the same as the vehicle's VIN sent via CAN.
● Control unit is new, used for the first time or vehicle handover not yet performed.
● Control unit comes from another vehicle.
● Vehicle Identification Number (VIN) not entered correctly in the **Control module** Headlights .

► Check and correct the Vehicle Identification Number (VIN) of the **Control module** Headlights (in the PIWIS Tester ⇒ **Control module** Headlights ⇒ Extended identification ⇒ Chassis number)

Fault effects

♦ System does not function
♦ Display in instrument cluster

C058

Diagnostic information - Headlight control unit

Control unit, coded incorrectly

⚠ **CAUTION**
Danger of injury from high voltage!

♦ The light must always be switched off when removing and installing the headlights.
♦ The gas-discharge lamp may only be operated when installed in the headlight.
♦ Only carry out repairs to the headlight or wiring when the part is removed and disconnected from the power supply.

Diagnostic conditions

- Headlight control unit coded incorrectly
- Ignition on

Possible fault causes

♦ Line connection from **headlight** control unit to headlight housing connector faulty
♦ Wiring at headlight control unit connector Pin 5 and Pin 6 interchanged
♦ Headlight control unit faulty

Cayenne , MY 2014 =>

Diagnosis information - Front camera

000124..... 1
000125..... 2
000126..... 3
000128..... 4
000129..... 5
00012A..... 6
00012B..... 7
000130..... 8
000131..... 9
000136..... 10
000137..... 11
000138..... 12
000139..... 13
00013A..... 14
000140..... 15
000141..... 16
000142..... 17
000143..... 18
000146..... 19
000147..... 20
000148..... 21
00014C..... 22
000150..... 23
000151..... 24
000152..... 25
000153..... 26
000154..... 27
000155..... 28
000156..... 29
000157..... 30
000158..... 31
000159..... 32
000160..... 33
000161..... 34
000162..... 35
000163..... 36
000173..... 37
000174..... 38
000175..... 39

000176..... 40
00017A..... 41
00017B..... 42
00017C..... 43
00017E..... 44
00018A..... 45
000202..... 46
000204..... 47
000205..... 48
000206..... 49
000208..... 50
000209..... 51
00020E..... 52
00020F..... 53
000210..... 54
00021A..... 55
00021B..... 56
000232..... 57
000234..... 58
000235..... 59
000236..... 60
000258..... 61
000259..... 62
000260..... 63
000262..... 64
000263..... 65
000264..... 66
000265..... 67
000266..... 68
000267..... 69
000268..... 70
000269..... 71
000270..... 72
000271..... 73
000272..... 74
000273..... 75
000284..... 76
000285..... 78
000286..... 80

000287..... 81
000289..... 82
000291..... 83
000293..... 84
000294..... 85
000296..... 86
000297..... 87
000300..... 88
000301..... 89
000302..... 90
000324..... 91
010000..... 92
020000..... 93

000124

Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Function restriction

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

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Fault setting condition(s)

- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

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Fault setting condition(s)

- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

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Fault setting condition(s)

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Front camera control unit

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Front camera control unit

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Diagnosis information - Front camera control unit

Front camera control unit

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Fault effects

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Front camera control unit

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Fault setting condition(s)

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Diagnosis information - Front camera control unit

Front camera control unit

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Fault setting condition(s)

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Diagnosis information - Front camera control unit

Front camera control unit

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Fault setting condition(s)

- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Coding incorrect or not carried out
- Faulty data record
- Incorrect data record
- Vehicle Identification Number (VIN) incorrect

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Fault setting condition(s)

- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

Front camera control unit

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Diagnosis information - Front camera control unit

Front camera control unit

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Diagnosis information - Front camera control unit

Front camera control unit

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- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

Front camera control unit

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Fault setting condition(s)

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Fault effects

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Diagnosis information - Front camera control unit

Front camera control unit

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Front camera control unit

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Fault setting condition(s)

- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

Front camera control unit

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Fault setting condition(s)

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Diagnosis information - Front camera control unit

Front camera control unit

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Fault setting condition(s)

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Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Fault effects

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Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Function restriction

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- Ignition on

Fault setting condition(s)

- Function restriction

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Front camera control unit

Front camera control unit

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Fault setting condition(s)

- Function restriction

Fault effects

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Fault setting condition(s)

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Fault setting condition(s)

- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Coding incorrect or not carried out
- Faulty data record
- Incorrect data record
- Vehicle Identification Number (VIN) incorrect

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

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Fault setting condition(s)

- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

Supply voltage

Diagnostic conditions

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- Ignition on

Possible fault causes

- Battery
- **Alternator**
- Fuse
- Wiring harness

Fault setting condition(s)

- Limit exceeded
- Below limit

Fault effects

- Function not available or available only to a limited extent

Diagnosis information - Front camera control unit

Front camera control unit

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Fault setting condition(s)

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Fault effects

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- Ignition on

Fault setting condition(s)

- Function restriction

Fault effects

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Diagnosis information - Front camera control unit

Front camera glass heating

Diagnostic conditions

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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Short circuit between the lines

Fault effects

♦ Function not available or available only to a limited extent

Setpoint definitions

NOTE
The specified values and value ranges correspond to the OK state in each case.

Line test

Short circuit to B+:
♦ Setpoint voltage **- 0.5 V ⇒ + 0.5 V**

Short circuit to ground:
♦ Setpoint resistance **> 0.9 MOhm**

Open circuit:
♦ Setpoint resistance **< 2 Ohm**

Short circuit between lines:
♦ Setpoint resistance **> 0.9 MOhm**

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Diagnosis information - Front camera control unit

Front camera glass heating

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
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- Ignition on

Possible fault causes

♦ Short circuit to ground
♦ Short circuit to B+
♦ Open circuit
♦ Short circuit between the lines

Fault effects

♦ Function not available or available only to a limited extent

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Open circuit:
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Short circuit between lines:
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Diagnosis information - Front camera control unit

Coding

Diagnostic conditions

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- Ignition on

Possible fault causes

- Coding incorrect or not carried out
- Faulty data record
- Incorrect data record
- Vehicle Identification Number (VIN) incorrect

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - Front camera control unit

Coding

Diagnostic conditions

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Possible fault causes

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Fault effects

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Diagnosis information - Front camera control unit

Programming

Diagnostic conditions

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In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Programming incorrect or not carried out
- Faulty data record
- Incorrect data record

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - Front camera control unit

Programming

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Programming incorrect or not carried out
- Faulty data record
- Incorrect data record

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - Front camera control unit

Coding

Diagnostic conditions

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Possible fault causes

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- Faulty data record
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- Vehicle Identification Number (VIN) incorrect

Fault effects

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Diagnosis information - Front camera control unit

Calibration

Diagnostic conditions

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- Ignition on

Fault setting condition(s)

- Calibration incorrect or not carried out
- Calibration failed

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Front camera control unit

Calibration

Diagnostic conditions

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- Ignition on

Fault setting condition(s)

- Calibration incorrect or not carried out
- Calibration failed

Fault effects

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Diagnosis information - Front camera control unit

Calibration

Diagnostic conditions

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- Ignition on

Fault setting condition(s)

- Calibration incorrect or not carried out
- Calibration failed

Fault effects

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Diagnosis information - Front camera control unit

Coding

Diagnostic conditions

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- Ignition on

Possible fault causes

- Coding incorrect or not carried out
- Faulty data record
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- Vehicle Identification Number (VIN) incorrect

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - Front camera control unit

Coding

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Coding incorrect or not carried out
- Faulty data record
- Incorrect data record
- Vehicle Identification Number (VIN) incorrect

Fault effects

- Function temporarily unavailable or available only to a limited extent

Diagnosis information - Front camera control unit

Coding

Diagnostic conditions

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Possible fault causes

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Diagnosis information - Front camera control unit

Front camera control unit

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Fault setting condition(s)

- Function restriction

Fault effects

♦ Function not available or available only to a limited extent

Diagnosis information - Front camera control unit

Supply voltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Battery
- **Alternator**
- Fuse
- Wiring harness

Fault setting condition(s)

- Limit exceeded
- Below limit

Fault effects

- Function not available or available only to a limited extent

Diagnosis information - Front camera control unit

Supply voltage

Diagnostic conditions

The control unit must be active in order to test internal function sequences and diagnosable inputs/outputs.
In the event of a fault, check whether the fault is permanently >present<. To perform the check, erase the fault memory, meet the diagnostic conditions and read out the fault memory again.

- Ignition on

Possible fault causes

- Battery
- **Alternator**
- Fuse
- Wiring harness

Fault setting condition(s)

- Limit exceeded
- Below limit

Fault effects

- Function not available or available only to a limited extent

All Models , MY 2010 =>

Diagnosis information - CAN communication

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C120B2 105
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C120B4 107
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C120B6 109
C12207 110
C20000 111
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C20003 114
C20004 115

C12002

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C12003

Diagnostic information - valid for all control units

Communication with control unit

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Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
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C12004

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
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C12005

Diagnostic information - valid for all control units

Communication with control unit

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Possible fault causes

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Fault effects

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C12006

Diagnostic information - valid for all control units

Communication with control unit

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♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
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Diagnostic information - valid for all control units

Communication with control unit

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Possible fault causes

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Fault effects

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♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C12036

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

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Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12083

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12085

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12090

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12091

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12092

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12093

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12094

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12095

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12096

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12097

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12098

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

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Possible fault causes

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Diagnostic information - valid for all control units

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Diagnostic information - valid for all control units

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Fault effects

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Diagnostic information - valid for all control units

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Possible fault causes

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- Note in the designated control unit

Fault effects

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Diagnostic information - valid for all control units

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Existing faults/notes in the designated control unit must be processed first.

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Possible fault causes

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- Note in the designated control unit

Fault effects

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Diagnostic information - valid for all control units

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Possible fault causes

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- Note in the designated control unit

Fault effects

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Diagnostic information - valid for all control units

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NOTE
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Possible fault causes

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- Note in the designated control unit

Fault effects

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- Functions in the control unit are not available

Diagnostic information - valid for all control units

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INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

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Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
This fault code indicates one or more faults/notes in the fault memory of the designated control unit.
Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

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- Note in the designated control unit

Fault effects

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Diagnostic information - valid for all control units

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Existing faults/notes in the designated control unit must be processed first.

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Possible fault causes

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- Note in the designated control unit

Fault effects

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- Functions in the control unit are not available

C120B1

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
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Existing faults/notes in the designated control unit must be processed first.

NOTE
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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

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- Functions in the control unit are not available

Diagnostic information - valid for all control units

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- Note in the designated control unit

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- Note in the designated control unit

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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

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Diagnostic information - valid for all control units

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Existing faults/notes in the designated control unit must be processed first.

NOTE
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Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

Diagnostic information - valid for all control units

Read out control unit fault memory content

INFORMATION
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Existing faults/notes in the designated control unit must be processed first.

NOTE
Use the [F7] button to show/hide notes in the fault memory.

Possible fault causes

- Fault in the designated control unit
- Note in the designated control unit

Fault effects

- Functions in the control unit are available only with restrictions
- Functions in the control unit are not available

C12207

Diagnostic information - valid for all control units

Communication with control unit

INFORMATION
Communication with the control unit designated in the fault text is/was not possible.

Possible fault causes

♦ The power supply for the designated control unit is not present or is present only to a limited extent.
♦ The CAN line CAN-High and/or CAN-Low is interrupted between the control unit connector of the designated control unit and the first splice behind the control unit.
♦ Control unit faulty

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions of the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C20000

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C20001

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C20002

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C20003

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

C20004

Diagnostic information - valid for all control units

Communication with CAN bus

INFORMATION
Communication with the CAN bus designated in the fault text is/was not possible.

Possible fault causes

♦ Short circuit of the CAN-High line to ground
♦ Short circuit of the CAN-High line to B+
♦ Short circuit of the CAN-High line to interference signal
♦ Open circuit in the CAN-High line

♦ Short circuit of the CAN-Low line to ground
♦ Short circuit of the CAN-Low line to B+
♦ Short circuit of the CAN-Low line to interference signal
♦ Open circuit in the CAN-Low line

♦ Defective control unit in combination with the designated CAN bus

Fault effects

♦ Cross-vehicle functions are not available
♦ Existing substitute/emergency functions in the control units are active
♦ Functions in the control units are available only with restrictions
♦ Functions in the control units are not available

Porsche Connect – FAQ (Frequently Asked Questions)



Services: Porsche Connect App, Google Earth®, Google Street View®, Realtime Traffic Information, Apple CarPlay®

Status: November 2015

1. Which SIM card do I need for the connectivity required to use Porsche Connect services?

You can use any standard SIM card that has a data option enabled. To use the LTE (4G) mobile network you also need a suitable 4G/LTE tariff option if you don't already have one. Further information is available from your mobile network provider.

Some SIM cards (especially from Pay As You Go providers) need to be registered/activated before using them for the first time.
Also, if your mobile contract has a data cap you may find that services are restricted or even suspended depending on how much data you've used.

Avoid using a SIM card adapter (e.g. for micro or nano SIMs): vibrations can shake the SIM card out of the adapter and the parts can get jammed in the PCM module.

2. Is there a way to permanently disable the data connection in PCM?

To disable the data connection in PCM:
1. Press the **PHONE** button > press the **OPT** button > select **SET PHONE** > and then **Data connection**.
2. Select **Off** to disable the data connection.

3. How do I know if the data connection is active?

› If the PCM SIM card data connection is active, you will see arrows above the 2G (EDGE)/3G/4G (LTE) display in the status line (bottom left of PCM display).
If the PCM WiFi hotspot data connection is active, you will see the WiFi symbol in the status line (bottom left of PCM display).

4. How much does it cost to use the services after the first 12 months?

› For information on the services, visit www.porsche.com/connect.

5. Is it possible to use a data connection and make a call at the same time?

› If you use the SIM card for a data connection and phone call at the same time, you may temporarily experience restricted service if network quality is poor.
Ideally you should use a SIM card for a data connection and pair your phone with PCM using Bluetooth®.

6. Services (e.g. Realtime Traffic Information) are currently unavailable. What should I do?

› Poor local network quality can result in temporary service loss or restriction.
Make sure there is a data connection by checking that the SIM card is inserted or that the WiFi hotspot is active. If necessary, restart PCM.

7. A service is taking a very long time to update. What might be the reason for this, and what should I do?

› Poor local network quality can result in temporary service loss or restriction.
To get the best from your services we recommend 3G or 4G (LTE) data speeds.

8. If I change my car, will the services I ordered be transferred to the new one?

› Service orders are tied to a specific vehicle. If a car changes ownership, the new owner can use the services until the subscription period expires. You will need to reorder the services for your new vehicle.

9. I'd like to connect my mobile phone to the vehicle to use telephony, but without allowing active services to use the data included in my mobile contract. How can I do this?

Ideally you should use a SIM card for a data connection and pair your phone to PCM via Bluetooth®.
To pair your mobile phone with PCM:

1. Make sure the Bluetooth® function is activated on your mobile phone and in PCM (in PCM, press the **PHONE** button > press the **OPT** button > and select **SET PHONE** > to find Bluetooth).
2. Press the **PHONE** button > and select **Connect phone** > **Search for new phone** in PCM.
PCM generates and displays a six-digit Bluetooth® code which will also be displayed on your mobile phone.
3. Check that the Bluetooth® code displayed on PCM and the phone match, and confirm.

If the phone has paired successfully, PCM displays the number entered (**Keypad** menu).
If you have a Bluetooth® connection with a SIM Access Profile (SAP) your mobile contract may be used for data transfers, so we recommend that you use a separate SIM card in PCM (preferably 4G (LTE) enabled, with a flat-rate data plan).

10. Which services are available in my country?

Service availability and functionality may vary in individual countries.
Information on the availability of the services by country is available from your Porsche Partner.

11. What do I need to be aware of if I go to another country?

To use services in another country or in areas close to the border, you need to activate (and deactivate as necessary) PCM Roaming as follows:
1. Press the **PHONE** button > press the **OPT** button > and select **SET PHONE** > **Data connections**.
2. Check the box to activate roaming (and uncheck the box to deactivate it).

If you receive internet packet data you may incur additional costs depending on your mobile service tariff or how long you stay abroad.
We recommend that you use a flat-rate data plan.

12. How do I set up PCM so that I don’t need to enter my SIM card PIN every time PCM starts?

To deactivate the PCM SIM card PIN request:
1. Press the **PHONE** button > press the **OPT** button > and select **SET PHONE** > **Phone** > **SIM card**.
2. To deactivate the PIN request, check the **Note PIN** box.

13. Where can I find information on which mobile phones are compatible with PCM?

There is a list of selected compatible mobile phones online at www.porsche.com.

14. I can’t pair my mobile phone with PCM. What is the problem?

Make sure the following conditions are met before starting the pairing process:
- Your mobile phone is compatible with PCM. There is a list of selected compatible mobile phones online at www.porsche.com.
- The Bluetooth® function has been activated on both your mobile phone and PCM.

If your mobile phone operating system is Windows® or iOS®, we recommend initiating the connection from the phone:
To do this, search for available devices in your phone’s Bluetooth® menu. To make PCM discoverable, press the **PHONE** button.

In order to start the pairing process, the **Search for phone** display must be visible.
Select PCM from the list of available devices shown on your mobile phone.
(To display the PCM Bluetooth® device name, press the **PHONE** button > press the **OPT** button >
and select **SET PHONE** > **Bluetooth** > **Bluetooth name**.)

15. I'd like to use Apple CarPlay® but the function isn't listed in PCM. What should I do?

1. Make sure the iPhone® you are using has the latest iOS® software installed and that Siri® and Apple CarPlay® have been activated in the settings (we recommend iOS® 8.4 or higher).
2. Disconnect your iPhone® from the USB interface in the centre console and then reconnect it.
Confirm the message asking if you want to use Apple CarPlay®.

If Apple CarPlay® still doesn't work, try changing your USB cable.
Some functions may not always be available in all countries or regions.
For information on availability by country, visit http://www.apple.com/ios/feature-availability/#applecarplay-applecarplay.

16. I'd like to use one of my iPhone® apps in PCM using Apple CarPlay® but the app isn't displayed in PCM. What should I do?

Apps on the iPhone® you are using can only be displayed if they are supported by Apple CarPlay®.
For information on supported apps, visit www.apple.com/ios/carplay.
Some functions may not always be available in all countries or regions.
For information on availability by country, visit http://www.apple.com/ios/feature-availability/#applecarplay-applecarplay.

17. The Porsche Connect app will not start or the app content is not displayed in PCM. What should I do?

❯ Make sure the following conditions are met:

- The Porsche Car Connect app is installed on your mobile phone (you can download it from the Apple® App Store or Google Play®).
- The Porsche Connect app has been started.
- WiFi is activated on your mobile phone.
- WiFi is activated on PCM. Press the **PHONE** button >press the **OPT** button > and select **SET PHONE** > **WiFi settings** > **Activate WiFi**.
- The PCM WiFi access data (**hotspot name** and **hotspot password**) have been correctly entered in your mobile phone's WiFi settings.

1. Press the **HOME** button > and select **Apps**. Available Porsche Connect app content will be displayed.
2. Restart the Porsche Connect app if necessary.

18. How can I check if the Realtime Traffic Information service is activated?

❯ Press the PCM **MAP** button and activate the **Traffic flow** map content using the side menu at the top right-hand edge of the screen. Active map content is shown in red and inactive content in white.
Make sure there is a data connection by checking that the SIM card is inserted or that the WiFi hotspot is active.

19. How do I activate Google Street View®?

❯ Press the PCM **MAP** button and activate the **Google Earth** map content using the side menu at the top right-hand edge of the screen. Active map content is shown in red and inactive content in white. Set the map scale to 100 m and select the Google Street View® symbol to explore the area. Note: This function is not available while driving.

20. Fault diagnosis has reported a fault in PCM.
Can I see which of the components (the central computer and the display control panel) is faulty?

❯ To see whether the display control panel or central computer is faulty you need to run a check with the PIWIS Tester. Error codes, measured values and routines help to determine which component is faulty.

21. Can the PIWIS Tester diagnose vehicle-specific Porsche Connect errors (e.g. the USB interface or WiFi, etc.)?

❯ The PIWIS Tester detects electrical hardware faults originating in PCM.
It cannot identify faults originating from an inserted or connected component such as a faulty SIM card or a component connected via USB.
So use the PIWIS tester to check if a component is detected by the system when you connect or insert it.

22. I checked the available documentation for a solution to a Porsche Connect issue but there wasn't one.
What should I do next?

❯ 1. Go through all the steps in the Porsche Connect check list. This is available in the PIWIS Information System under Standard Documents (tile **WM – Workshop Manual** in area 99 under Porsche Connect – 9940).
2. Check that the ticket documentation is complete (see additional check list). This is available in the PIWIS Information System under Standard Documents.
3. Attach the completed checklist in the PRMS or SRM (depending on the type of fault).
4. The importer allocates the ticket as per the standard process, according to the type of error (IT support → SRM or TCC → PRMS)

23. Which fault finding steps should I go through if the customer identifies a suspected malfunction in Porsche Connect online services?

❯ In such cases please use the Porsche Connect troubleshooting process model. This is available in the PIWIS Information System under Standard Documents (tile **WM – Workshop Manual** in area 99 under Porsche Connect – 9940).

24. I'd like to use one of my iPhone® apps in PCM using Apple CarPlay® but the app isn't displayed in PCM. What should I do?

❯ Apps on the iPhone® you are using can only be displayed if they are supported by Apple CarPlay®.
For information on supported apps, visit www.apple.com/ios/carplay.
Please also use the Support Guideline for Apple CarPlay provided by PAG.
This is available in the PIWIS Information System under Standard Documents (tile **WM – Workshop Manual** in area 99 under Porsche Connect – 9940).

25. Porsche Connect services are currently unavailable to the customer. What should I do?

❯ Please use the Support Guideline for backend-based (e.g. Realtime Traffic Information) or app-based (e.g. Porsche Connect app) services.
This is available in the PIWIS Information System under Standard Documents.
Please refer to the service-specific fault finding guidelines for more information. This is available in the PIWIS Information System under Standard Documents (tile **WM – Workshop Manual** in area 99 under Porsche Connect – 9940).

26. What's the difference between the Porsche Car Connect app and the Porsche Connect app?

The Porsche Car Connect app:
Among other things, the app allows you to call up vehicle information remotely and control selected vehicle functions.

The Porsche Connect app:
The app connects the smartphone with PCM and allows it to use functions such as streaming music or transferring a calendar or address book destinations from the smartphone to PCM.

27. When connecting using the SIM card, PCM requests APN (access point) settings. What should I do?

If there are several access points available, the message **Multiple access points (APNs) available** appears on PCM.
A list of the available access points is displayed. In PCM, choose the access point you want to use.

If the SIM card has no access point configured, the system needs to discover the APN settings via your mobile network provider.
Then to configure the APN settings in PCM, select **Configure access point**.
To reset the settings, select the **Reset APN configuration menu**.

Porsche Connect - Fault Finding Guide



Service: “Real Time Traffic Information” (RTTI)

Date: July 2015

General information and initial questions

- Fault Finding Guides help you to locate the causes of faults step by step.
- Before you discuss the Fault Finding Guide with your customers, the following questions help you to carry out fault finding efficiently:

When did the service stop working?	Ambient conditions have a huge influence on the functionality of services. The use of services requires good reception (e.g. reception can be very limited in underground car parks).
How was the online connection established? Via the SIM card in the PCM or via the device (Bluetooth/Wi-Fi)?	Depending on how the online connection was establshed, you will find different test steps that you can use.
Are all services not working or are only individual services affected?	If individual services are not working, please concentrate initially on questions relating to “Checking service-specific or general causes of faults”.

- For correcting faults, please also use the FAQs (Frequently Asked Questions) about Porsche Connect that are provided in the PPN.

- **Checking the online connection when using a SIM card in the vehicle slot**
- **Checking the online connection when using a device via Bluetooth or Wi-Fi**
- **Checking service-specific or general causes of faults**

Checking the online connection when using a SIM card in the vehicle slot

- Check whether there is a SIM card in the vehicle slot
- Check whether the SIM card is defective

Checking the online connection when using a device via Bluetooth or WiFi

Checking service-specific or general causes of faults

Checking the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Test step

"Check whether there is a SIM card in the vehicle slot. To do this, lift up the cover flap with the Porsche logo at the centre under your PCM display. Underneath, you will find the SD card slots and the SIM card slot for your Porsche."

Note

This can also be checked on the PCM head unit:
a) status bar, left margin, connection icon, data connection.
b) Connections menu: possible displays: "SIM inserted", "PIN required", "Connect", hotspot name, device name)

Result check

"Is there a SIM card in the vehicle slot in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Insert a suitable SIM card in the vehicle slot of your Porsche and check whether a connection can be established."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the SIM card is defective

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Illustrations: SIM card in vehicle slot

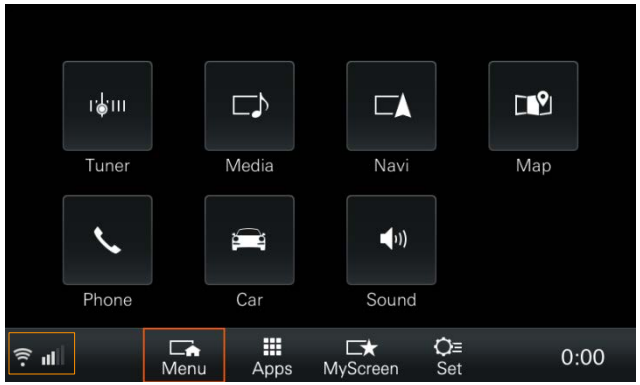


Fig. 1: Home screen on PCM head unit

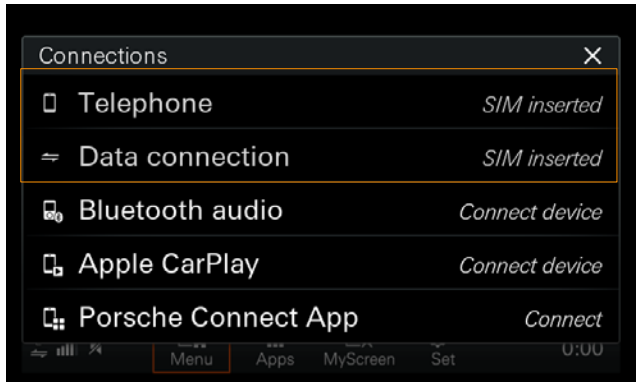


Fig. 2: “Connections” menu, variant 1

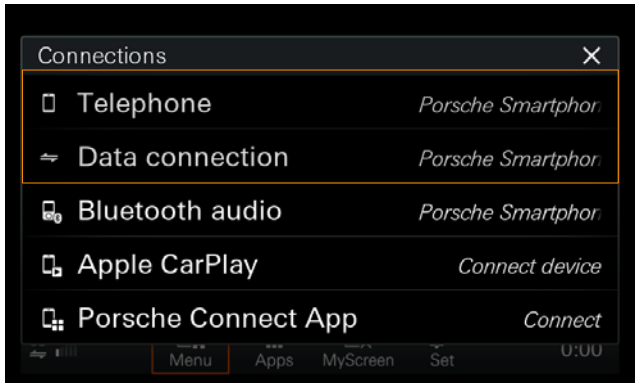


Fig. 3: “Connections” menu, variant 2

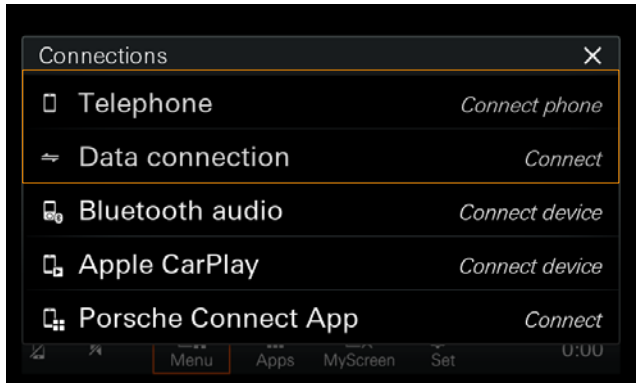


Fig. 4: “Connections” menu, variant 3

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check whether there is a SIM card in the vehicle slot

Check whether the SIM card is defective

Test step

"Insert a different SIM card that you know is working perfectly in the vehicle slot of your Porsche."

Result check

"Is your original SIM card working?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone service provider and request a new SIM card."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or Wi-Fi**
  - Check whether Bluetooth is activated on your device
  - Check whether Bluetooth is activated on the PCM
  - Check whether Wi-Fi hotspot/mobile internet is activated on your device
  - Check whether Wi-Fi is activated on the PCM
  - Check whether the device is supported
- **Check service-specific or general causes of faults**

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check whether Bluetooth is activated on your device

Test step

"Check whether Bluetooth is activated in your device settings."

Note

If you are connecting for the first time, make sure that the device is visible for other Bluetooth equipment. Please check this in your device settings as well.

Result check

"Is Bluetooth activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate Bluetooth on your device. If you are trying to connect your device to your Porsche for the first time, switch on Bluetooth and activate your device's visibility option before starting the connection process."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Bluetooth is activated on the PCM

Check whether Wi-Fi hotspot/mobile internet is activated on your device

Check whether Wi-Fi is activated on the PCM

Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: Bluetooth on device

Illustrations show menus on the iPhone 6 as an example

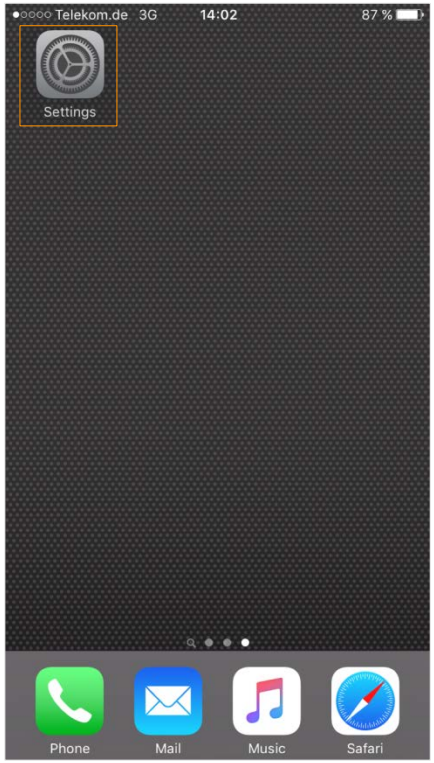


Fig. 5: iOS Home screen



Fig. 6: iOS “Settings” menu

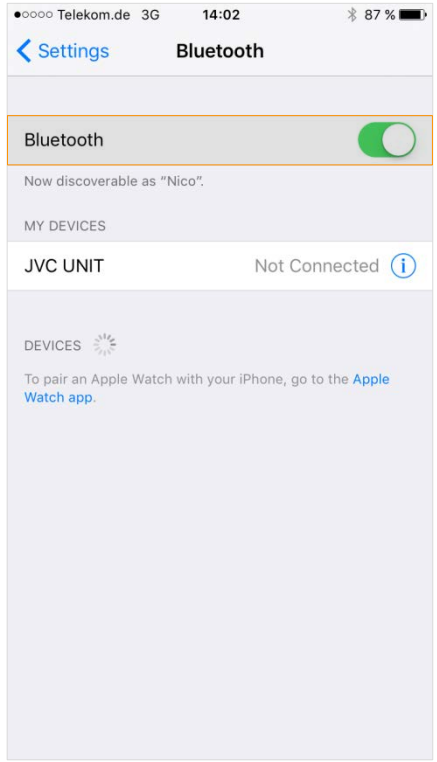


Fig. 7: iOS “Bluetooth” menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check whether Bluetooth is activated on your device

Check whether Bluetooth is activated on the PCM

Test step

"Check whether Bluetooth is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> Bluetooth -> Disable/enable Bluetooth."

Result check

"Is Bluetooth activated on PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "Bluetooth" option on PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether Wi-Fi hotspot/mobile internet is activated on your device

Check whether Wi-Fi is activated on the PCM

Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: Bluetooth on PCM



Fig. 8: “Set Phone” menu on PCM head unit



Fig. 9: “Bluetooth” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

- Check whether Bluetooth is activated on your device
- Check whether Bluetooth is activated on the PCM
- Check whether Wi-Fi hotspot/mobile internet is activated on your device

Test step

"Check whether the options "WLAN hotspot" (or "Hotspot") and "mobile Internet" (or "mobile data") are activated in your device settings."

Result check

"Is Wi-Fi hotspot/mobile internet activated on your device?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the options "WLAN hotspot"/"Hotspot" and "mobile internet"/"mobile data" on your device."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

- Check whether Wi-Fi is activated on the PCM
- Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: WLAN hotspot/mobile internet deactivated on device

Illustrations show menus on the iPhone 6 as an example

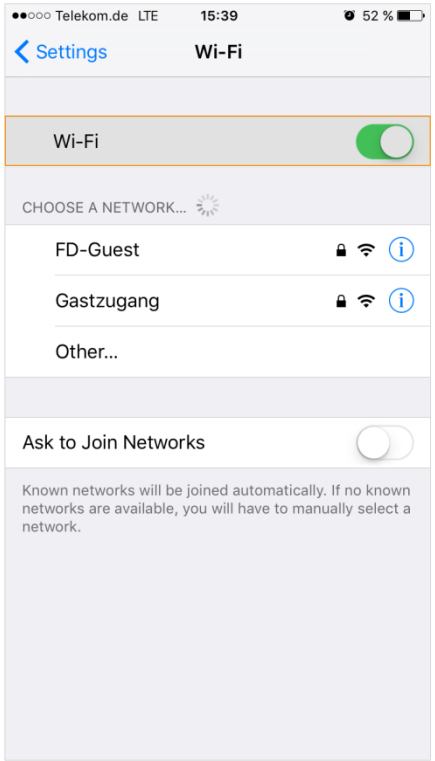


Fig. 10: iOS “WLAN” menu



Fig. 11: iOS “Personal Hotspot” menu

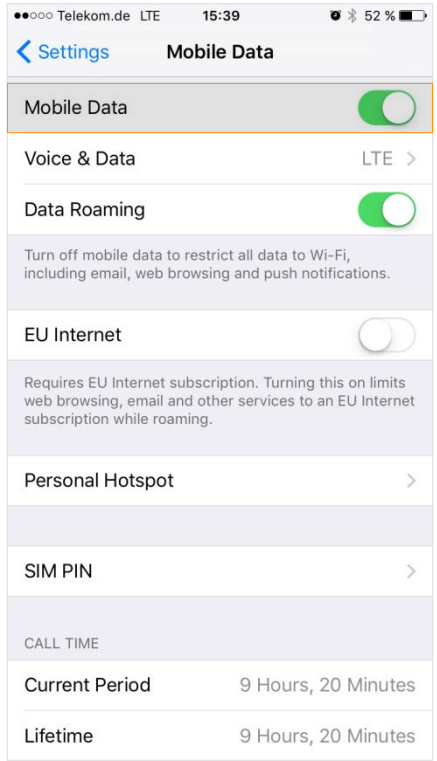


Fig. 12: iOS “Mobile Data” menu

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

- Check whether Bluetooth is activated on your device
- Check whether Bluetooth is activated on the PCM
- Check whether Wi-Fi Hotspot/Mobile Internet is activated on your device
- Check whether WLAN is activated on the PCM

Test step

"Check whether the WLAN option is activated in your PCM settings. You will find the option under:
PHONE -> OPT -> SET PHONE -> WLAN settings -> Disable/enable WLAN."

Result check

"Is WLAN activated on the PCM in your Porsche?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the "WLAN" option on PCM in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

- Check whether the device is supported

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Illustrations: WLAN on PCM



Fig. 13: “Set Phone” menu on PCM head unit



Fig. 14: “WLAN settings” menu on PCM head unit

Check service-specific or general causes of faults

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

- Check whether Bluetooth is activated on your device
- Check whether Bluetooth is activated on the PCM
- Check whether Wi-Fi Hotspot/Mobile Internet is activated on your device
- Check whether WLAN is activated on the PCM
- Check whether the device is supported

Test step

"Please specify the model designation of the device you want to use with your Porsche."

Note

The available documents must be used to check whether and to what extent the customer's device is supported.

Result check

Is the customer's device compatible?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Your device is not compatible/not fully compatible with all the functions of your Porsche. For the full range of functions, please use a compatible device in your Porsche."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check service-specific or general causes of faults

- **Check the online connection when using a SIM card in the vehicle slot**
- **Check the online connection when using a device via Bluetooth or Wi-Fi**
- **Check service-specific or general causes of faults**
  - Check whether the correct vehicle equipment is installed (Connect package)
  - Check whether the RTTI service is activated in the vehicle
  - Check for simultaneous use of service and phone
  - Check whether the mobile data allowance has been used up
  - Check whether the network quality is poor (tunnel, weather, etc.)
  - Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check whether the correct vehicle equipment is installed (Connect package)

Test step

"Please specify the 17-character chassis number (VIN) of your Porsche. You will find this combination of digits and letters under the heading "E" (Germany) in your registration document or at the bottom of the windscreen."

Note

The VIN provided by the customer must be used to check whether the correct equipment is installed in the customer's vehicle.

Result check

Does the customer vehicle have the Connect package installed?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Unfortunately, the RTTI service is not available for your Porsche. The service can only be used in vehicles with the Porsche Connect package."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the RTTI service is activated in the vehicle

Check for simultaneous use of service and phone

Check whether the mobile data allowance has been used up

Check whether the network quality is poor (tunnel, weather, etc.)

Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check whether the correct vehicle equipment is installed (Connect package)

Check whether the RTTI service is activated in the vehicle

Test step

"Check whether you have activated the option for displaying RTTI data. To do this, proceed as follows: Touch "MAP" on your PCM start screen to go to the map display. Touch the white icon (3 layers) at the top right of the screen. A menu bar containing several icons appears. The "Traffic flow" icon shows the traffic flow data of the RTTI service."

Note

If the icon cannot be found at the described position, the customer did not purchase the RTTI service.

Result check

"Is the "Traffic flow" icon orange?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Activate the RTTI service by touching the Traffic flow icon. The RTTI service is activated if the icon is orange."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check for simultaneous use of service and phone

Check whether the mobile data allowance has been used up

Check whether the network quality is poor (tunnel, weather, etc.)

Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: RTTI service activation

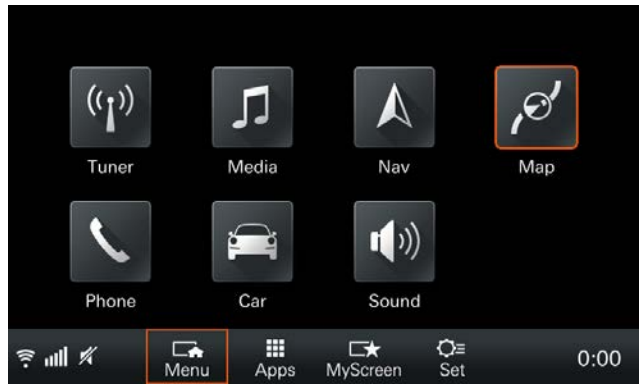


Fig. 15: Home screen of the PCM head unit



Fig. 16: Map view and menu on PCM head unit

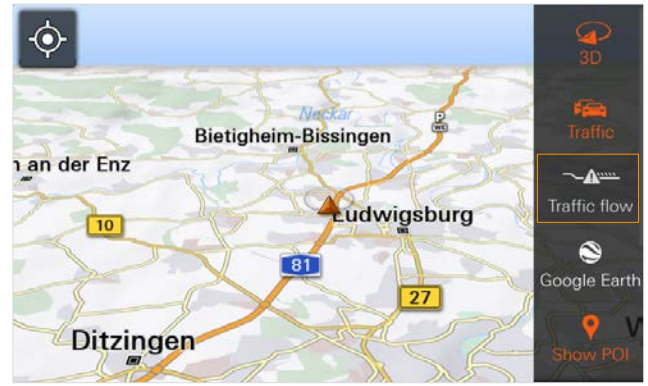


Fig. 17: Map view and menu on PCM head unit

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Check whether the correct vehicle equipment is installed (Connect package)

Check whether the RTTI service is activated in the vehicle

Check for simultaneous use of service and phone

Test step

"Did you make a phone call while using the RTTI service or are you using your data services (e.g. the RTTI service) and the phone with the same SIM card?"

Result check

Were both applications used separately or are both applications used with different SIM cards?

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Availability of the service can sometimes be limited while you are using the phone. Particularly when using the RTTI service and telephone function with one SIM card and if network coverage is bad, the service can be limited temporarily in rare cases."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

Check whether the mobile data allowance has been used up

Check whether the network quality is poor (tunnel, weather, etc.)

Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

- Check whether the correct vehicle equipment is installed (Connect package)
- Check whether the RTTI service is activated in the vehicle
- Check for simultaneous use of service and phone
- Check whether the mobile data allowance has been used up

Test step

"Please check the status of your monthly data allowance."

Note

If data services (e.g. RTTI) and the telephone are used with the same SIM card, any text message sent by the mobile phone provider concerning the critical status of the monthly data volume will be displayed in the customer's PCM system.
Menu item in PCM for recording usage (PHONE -> OPT -> SET PHONE -> Data connections -> Data usage limit)

Result check

"Is there any data remaining from the monthly data allowance?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please contact your mobile phone provider in order to increase your data allowance."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

- Check whether the network quality is poor (tunnel, weather, etc.)
- Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Mobile data allowance



Fig. 18: “Set Phone” menu on PCM head unit

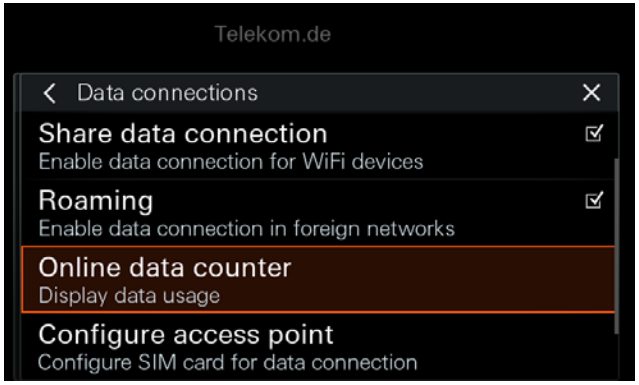


Fig. 19: “Data connections” menu on PCM head unit

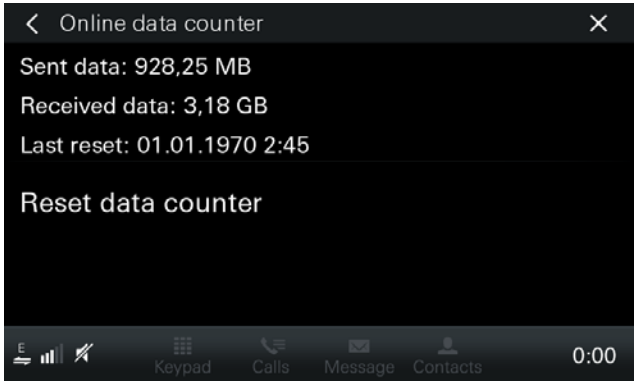


Fig. 20: “Online data counter” menu on PCM head unit

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

- Check whether the correct vehicle equipment is installed (Connect package)
- Check whether the RTTI service is activated in the vehicle
- Check for simultaneous use of service and phone
- Check whether the mobile data allowance has been used up
- Check whether the network quality is poor (tunnel, weather, etc.)

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."
"At least 2 bars should be displayed here."

Result check

"Is there sufficient reception (at least 2 bars or at least mobile phone standard 3G or E)?"

Yes	The cause was not identified. Continue fault finding with the next test step.
No	"Please move to an area with better reception."

Does the problem persist?

Yes (Next test step) **No** (End fault finding)

- Check whether the mobile phone network is down

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

Illustrations: Poor network quality (tunnel, weather, etc.)

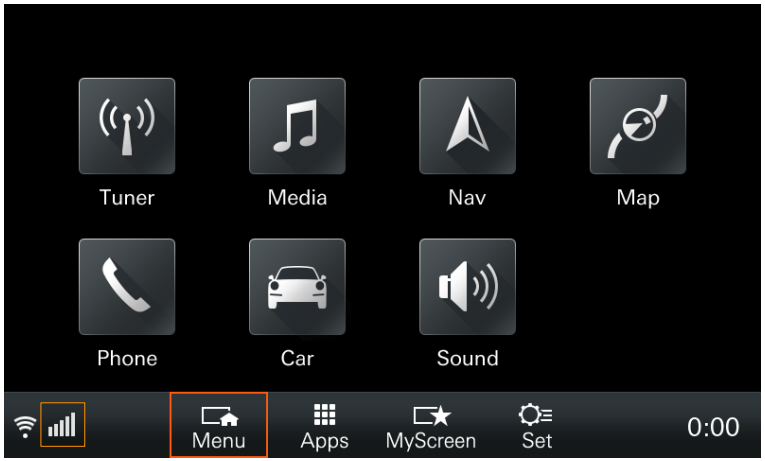


Fig. 21: Home screen of the PCM head unit

Illustration shows iPhone 6 menu as an example

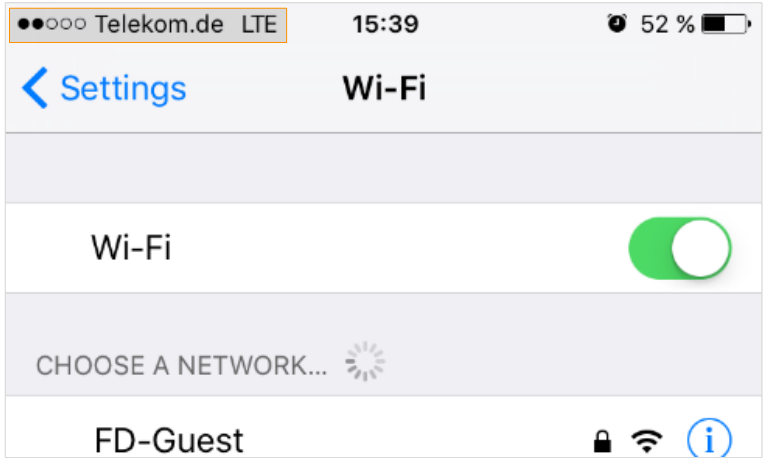


Fig. 22: iOS status bar

Check the online connection when using a SIM card in the vehicle slot

Check the online connection when using a device via Bluetooth or Wi-Fi

Check service-specific or general causes of faults

- Check whether the correct vehicle equipment is installed (Connect package)
- Check whether the RTTI service is activated in the vehicle
- Check for simultaneous use of service and phone
- Check whether the mobile data allowance has been used up
- Check whether the network quality is poor (tunnel, weather, etc.)
- Check whether the mobile phone network is down

Test step

"Please check the current network reception strength of your Porsche. To do this, check the icon on the left of the status bar."
"Please check the current network reception strength of your device. To do this, check the icon in the status bar at the top of the display."

Result check

"Do you have a network signal?"

Yes	The cause was not identified. Refer the customer to the Service department.
No	"Please move to an area with better reception or wait until the problem is fixed. The relevant department has already been informed and is working on resolving the problem."

Does the problem persist?

Yes (Contact the workshop) **No** (End fault finding)

PORSCHE



Porsche Communication Management

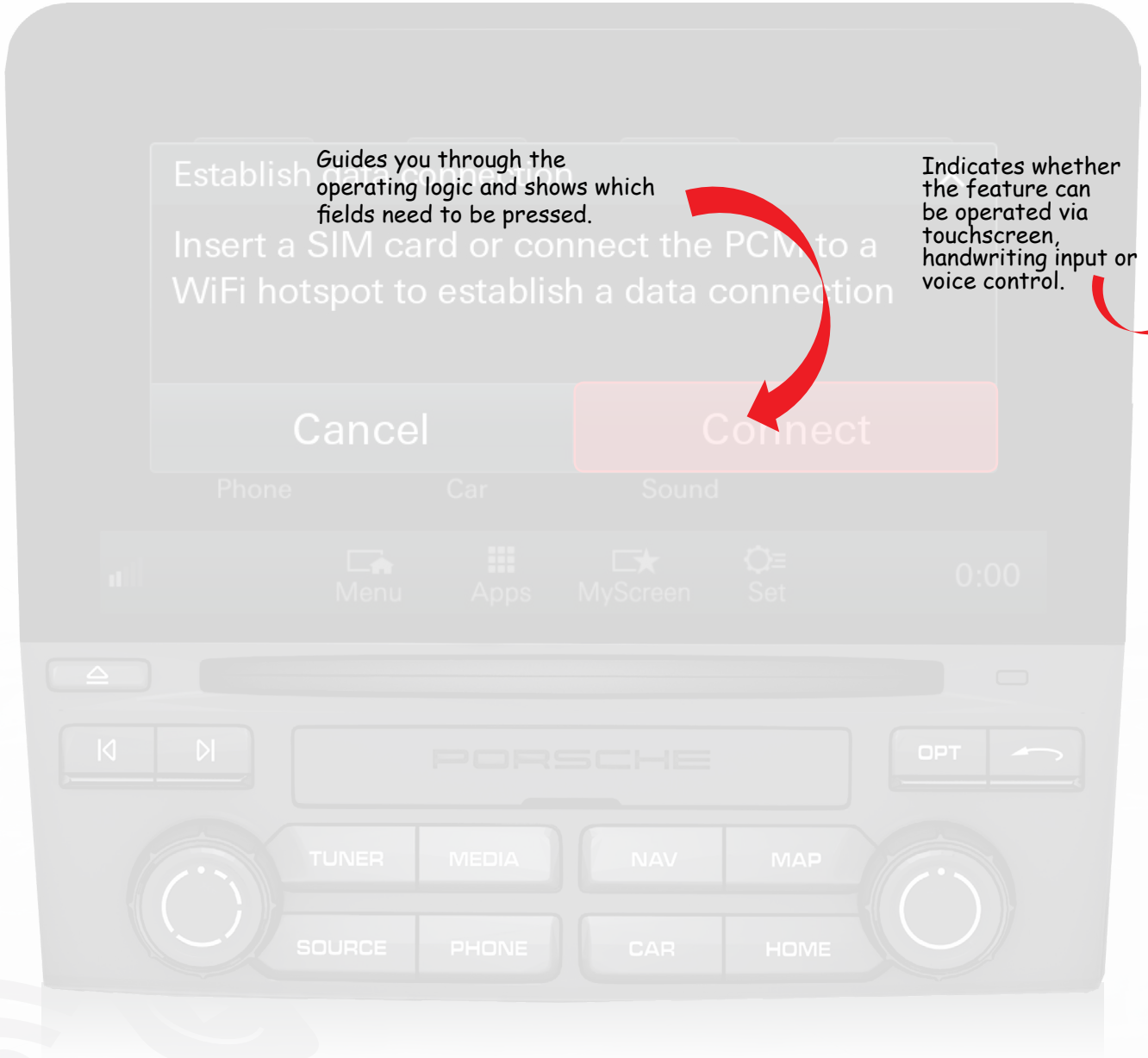
Internal!

Tutorial

I want to transfer a navigation destination to the PCM.

You can use the Porsche Connect App to transfer [illegible] an iPhone to the PCM. After destinations have been successfully transferred, they can be selected in the PCM and used for navigation.

Shows the title and describes the procedure.



Guides you through the operating logic and shows which fields need to be pressed.

Indicates whether the feature can be operated via touchscreen, handwriting input or voice control.

Prerequisites

PCM

PCM including navigation module

Shows the necessary prerequisites.

Note

Shows further information.

Depending on [illegible] manufacturer and operating system, the coupling procedure may vary

Shows additional information.

Goes back to the previous step.

Back

Shows the end of the chapter and either returns to the contents overview or goes to the next example.

To contents overview

Next example

Goes to the relevant chapter.

PCM

Connection manager

Porsche Connect App

Audio playback

Apple CarPlay®

Navigation

MyScreen

Start tutorial from A-Z

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.

Select your phone using the connection manager.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.

If you have not yet coupled a phone or have not activated Bluetooth, you can add your phone and activate Bluetooth using the connection manager.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.

After you have activated Bluetooth on the PCM, activate Bluetooth on your phone.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus



Back

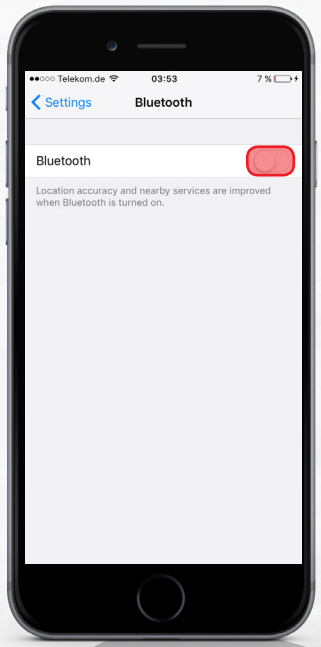
PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

After you have activated Bluetooth on the PCM, activate Bluetooth on your phone.





Back

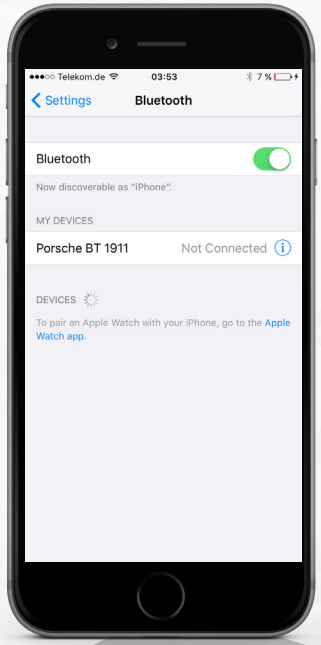
PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.

After you have activated Bluetooth on the PCM and your phone, you can couple the devices using the menu on the PCM.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus





Back

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.

The PCM generates a Bluetooth code for the coupling; compare this with the code shown on the phone and confirm.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Note

Depending on the phone manufacturer and operating system, the coupling procedure may vary.

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.

Once the connection is successful, you can select and call your phone contacts using the PCM.

Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus



PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to connect my phone to the PCM via Bluetooth and call a contact.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus



Back

✓ Telephone connected and contact called

To contents overview

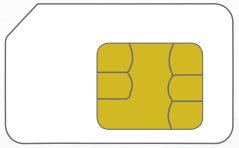
Next example

PCM

I want to set up a hotspot in my vehicle using the PCM.

You can set up a hotspot via the connection manager.

Insert a data-enabled SIM card in the PCM to be able to use a WiFi hotspot.





Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Note

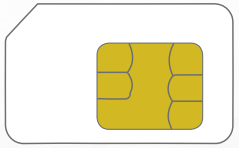
The use of online functions as well as wireless Internet access requires a data-enabled SIM card.
A separate, subscription-based contract with a mobile phone provider is required.

PCM

I want to set up a hotspot in my vehicle using the PCM.

You can set up a hotspot via the connection manager.

Insert a data-enabled SIM card in the PCM to be able to use a WiFi hotspot.



Back



i To insert a data-enabled SIM card in the PCM, the "trim" underneath the touchscreen must be open. The data-enabled SIM card can then be inserted in the SIM card slot provided.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



Note

The use of online functions as well as wireless Internet access requires a data-enabled SIM card.
A separate, subscription-based contract with a mobile phone provider is required.

PCM

I want to set up a hotspot in my vehicle using the PCM.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

PCM

I want to set up a hotspot in my vehicle using the PCM.



Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

PCM

I want to set up a hotspot in my vehicle using the PCM.



Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

PCM

I want to set up a hotspot in my vehicle using the PCM.



Back

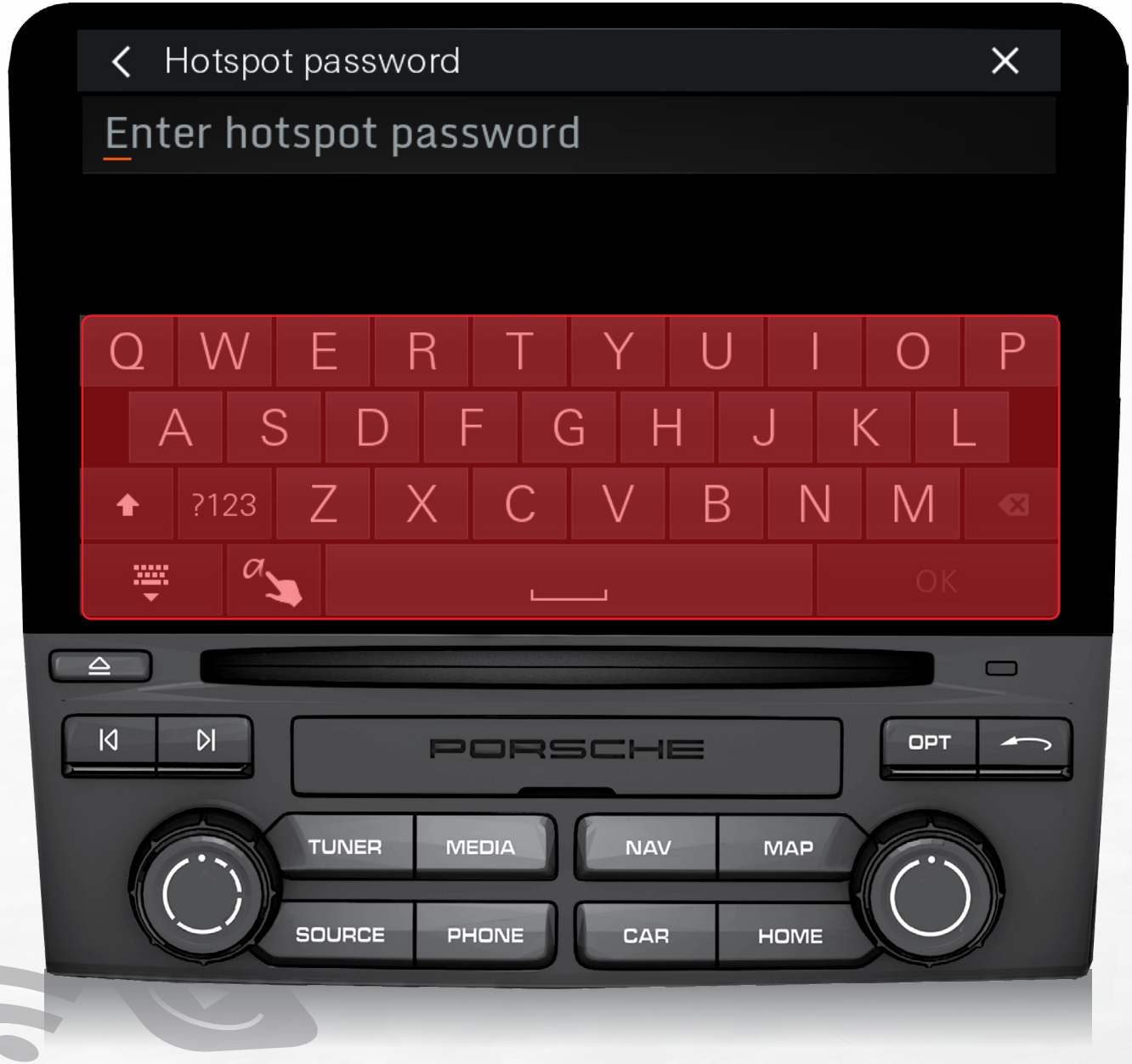
Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

PCM

I want to set up a hotspot in my vehicle using the PCM.



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Prerequisites

PCM

PCM including navigation module

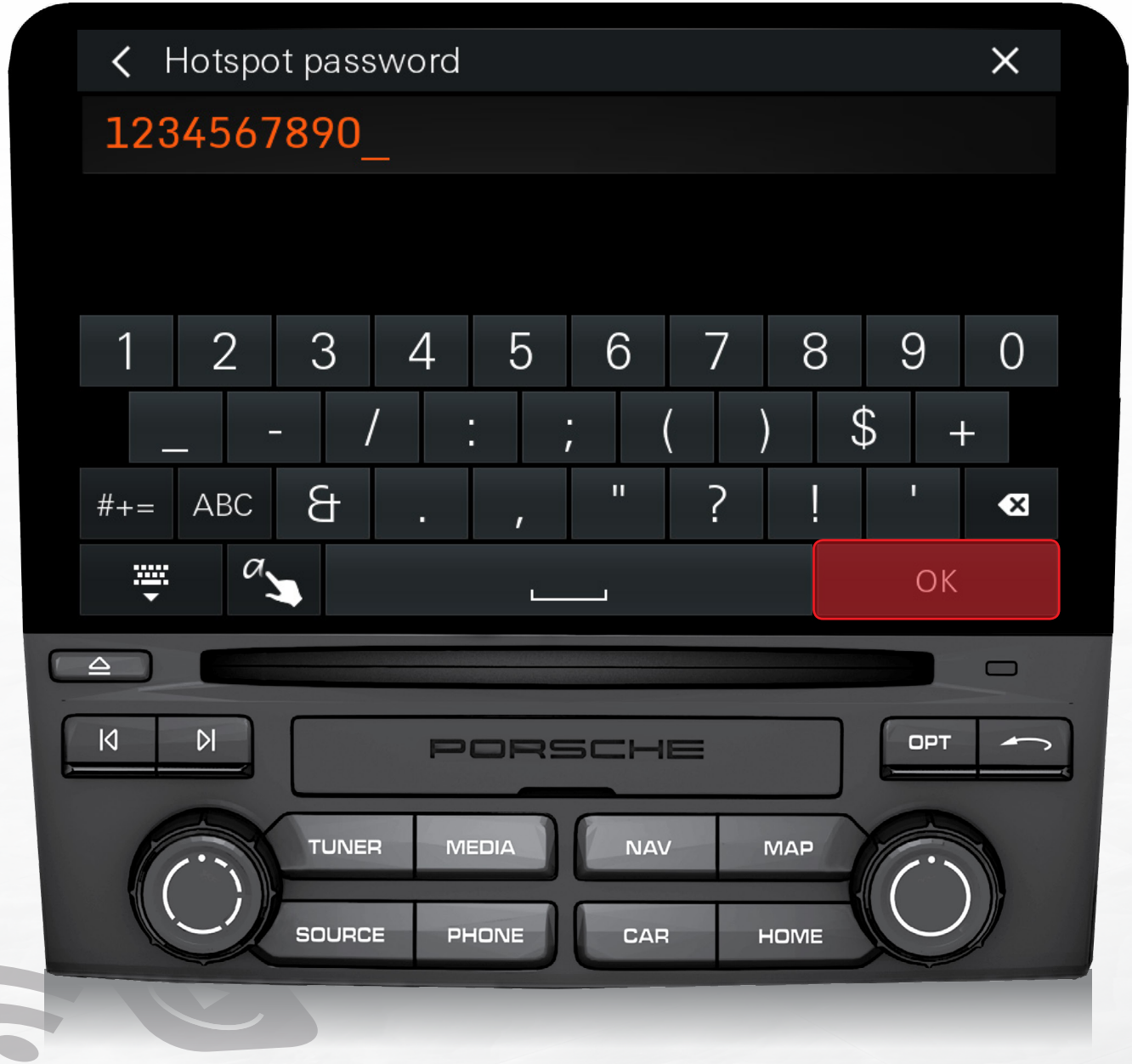
Connect

Connect Plus

abc

PCM

I want to set up a hotspot in my vehicle using the PCM.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

PCM

I want to set up a hotspot in my vehicle using the PCM.

As soon as you have set up the WiFi hotspot in your vehicle, you can connect end devices such as your phone. To do this, select the hotspot on the end device.

Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**





PCM

I want to set up a hotspot in my vehicle using the PCM.

Enter the password for your PCM hotspot.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



Back

PCM

I want to set up a hotspot in my vehicle using the PCM.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**





Back

Hotspot set up

To contents overview

Next example

PCM

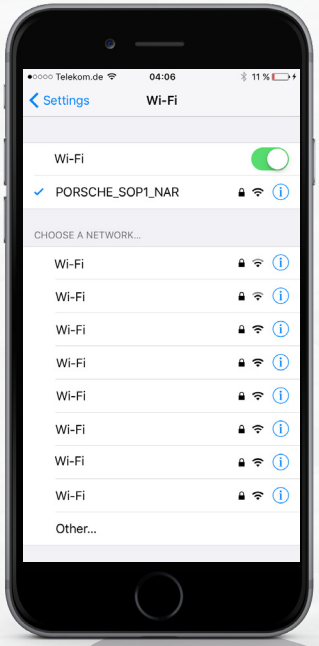
I want to set up a hotspot in my vehicle using the PCM.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**







Back

Hotspot set up

To contents overview

Next example

PCM

I want to establish an Internet connection via a smartphone.

To couple the PCM with a hotspot on a phone, you must first set up a personal hotspot on your phone.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Note

Use of wireless Internet access requires a subscription-based contract with a mobile phone provider.

PCM

I want to establish an Internet connection via a smartphone.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**







Back

PCM

I want to establish an Internet connection via a smartphone.

You will need to enter the password for the phone WiFi hotspot in the PCM later on.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**





Back

PCM

I want to establish an Internet connection via a smartphone.

You can now set up the connection via the connection manager.



Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

PCM

I want to establish an Internet connection via a smartphone.



Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

PCM

I want to establish an Internet connection via a smartphone.



Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

PCM

I want to establish an Internet connection via a smartphone.



Back

Prerequisites

PCM | PCM including navigation module

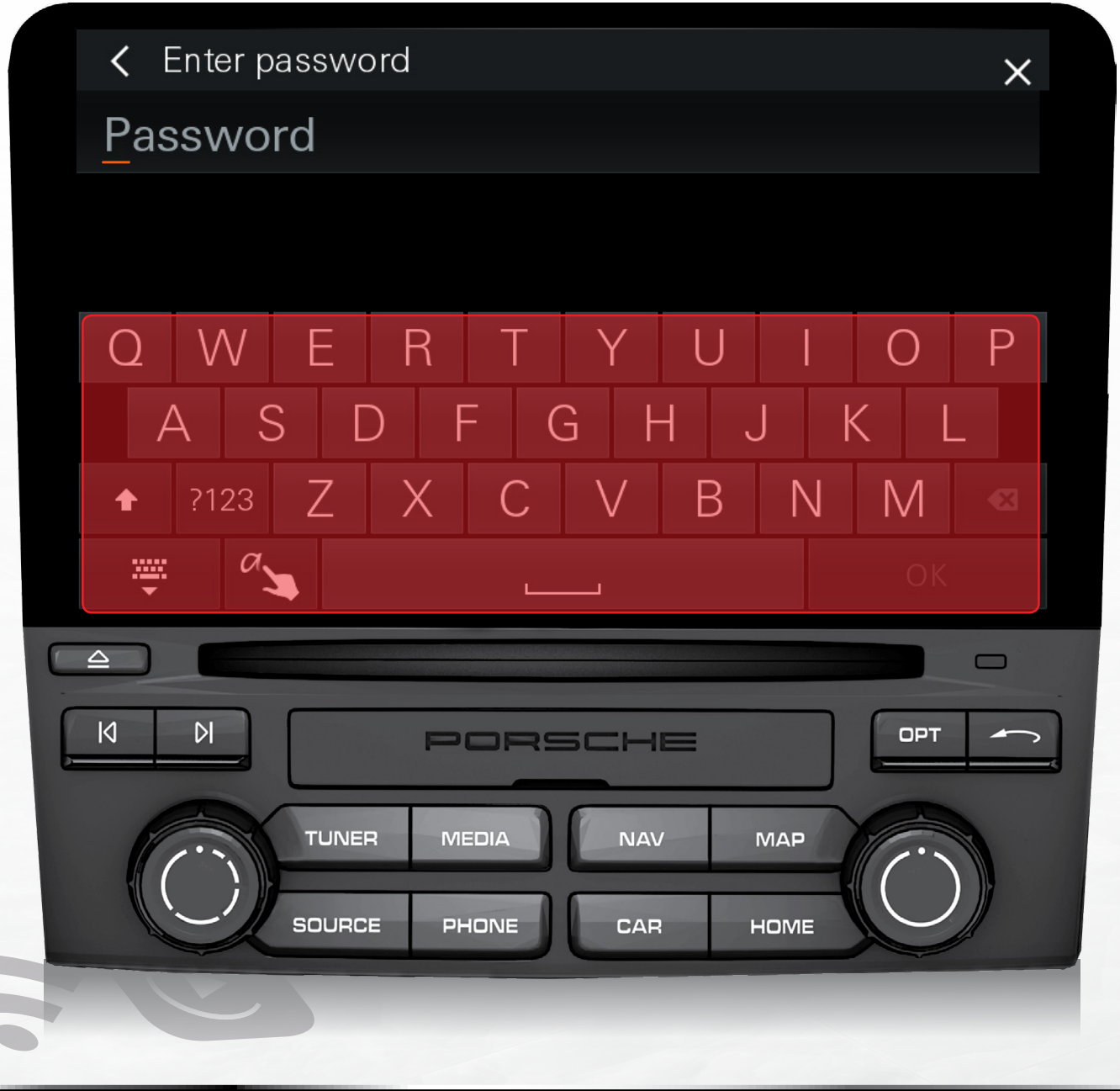
Connect | **Connect Plus**

PCM

I want to establish an Internet connection via a smartphone.

Enter your password for the personal hotspot here.

Back



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

PCM

I want to establish an Internet connection via a smartphone.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

✓ **Internet connection established**

To contents overview

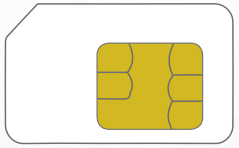
Next example

PCM

I want to register my SIM card in the PCM.

Insert a working SIM card in the PCM.

The SIM card must then be activated in the PCM to establish a connection.





Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Note

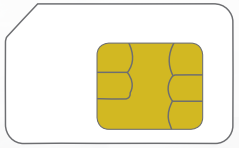
The use of online functions as well as wireless Internet access requires a data-enabled SIM card. A separate, subscription-based contract with a mobile phone provider is required.

PCM

I want to register my SIM card in the PCM.

Insert a working SIM card in the PCM.

The SIM card must then be activated in the PCM to establish a connection.



Back



i To register a SIM card in the PCM, a working SIM card must be inserted in the PCM. To do this, the "trim" underneath the touchscreen must be open. The SIM card can then be inserted in the SIM card slot provided.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



Note

The use of online functions as well as wireless Internet access requires a data-enabled SIM card. A separate, subscription-based contract with a mobile phone provider is required.

PCM

I want to register my SIM card in the PCM.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

PCM

I want to register my SIM card in the PCM.



Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

PCM

I want to register my SIM card in the PCM.

Enter the PIN for the SIM card.



Prerequisites

PCM

PCM including navigation module

Connect

Connect Plus

Back

PCM

I want to register my SIM card in the PCM.

Enter the PIN for the SIM card.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

PCM

I want to register my SIM card in the PCM.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

PCM

I want to register my SIM card in the PCM.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Note

By selecting "Data + Calls," the inserted SIM card will be used for both the data connection and to make calls.

If the SIM card is used to make calls as well as for a data connection, the data connection may be temporarily interrupted, especially on a GSM/2G network.

Back

PCM

I want to register my SIM card in the PCM.

You can now set up the connection via the connection manager.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Note

Enabling the data connection may incur further costs, depending on the type of mobile phone contract.

Back

Connection manager | Audio playback | Navigation | Porsche Connect App | Apple CarPlay® | MyScreen

PCM

I want to register my SIM card in the PCM.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

SIM card registered

To contents overview

Next example

PCM

I want to use the Porsche Connect App and its services on the PCM.

Install the Porsche Connect App on your phone. Ensure that the WiFi functions are activated on the phone and on the PCM.

Open the app on your phone. You can then select the individual online services via the PCM touchscreen.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Note

The use of online functions as well as wireless Internet access requires a data-enabled SIM card. A separate, subscription-based contract with a mobile phone provider is required.

PCM

I want to use the Porsche Connect App and its services on the PCM.

You can now select the individual online services via the PCM.

Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



PCM

I want to use the Porsche Connect App and its services on the PCM.

You can find more information about the Porsche Connect App here ❯



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

❮ Back

✓ App connected

To contents overview

Next example ❯

PCM

I want to use the Porsche Connect App and its services on the PCM.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

App connected

To contents overview

Next example

PCM

I want to establish a connection with Apple CarPlay®.

The connection with Apple CarPlay® can be established via the connection manager.

To use Apple CarPlay®, you need to connect the phone to the center console using a USB cable.





Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to establish a connection with Apple CarPlay®.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to establish a connection with Apple CarPlay®.

To use Apple CarPlay®, you need to connect the phone to the center console using a USB cable.



Back



Prerequisites

PCM | PCM including navigation module

Connect | Connect Plus

PCM

I want to establish a connection with Apple CarPlay®.



Prerequisites

PCM

PCM including navigation module

Connect

Connect Plus

Back

PCM

I want to establish a connection with Apple CarPlay®.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

PCM

I want to establish a connection with Apple CarPlay®.

Confirm the connection request on your phone.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



Back

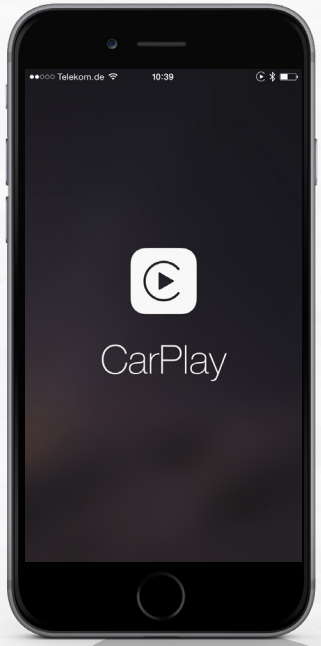
I want to establish a connection with Apple CarPlay®.

The Apple CarPlay® logo is displayed on the phone.

The Apple CarPlay® menu is now automatically displayed on the PCM touchscreen. All Apple CarPlay® functions are now available.

You can find more information about Apple CarPlay® here ❱

❰ Back





✓ Connected to CarPlay

To contents overview

Next chapter ❱

Prerequisites

PCM | PCM including navigation module

Connect | Connect Plus

Note

You can find the current range of Apple CarPlay® features and further information online at http://www.apple.com/ios/carplay/

PCM

I want to establish a connection with Apple CarPlay®.

The Apple CarPlay® logo is displayed on the phone.

The Apple CarPlay® menu is now automatically displayed on the PCM touchscreen. All Apple CarPlay® functions are now available.

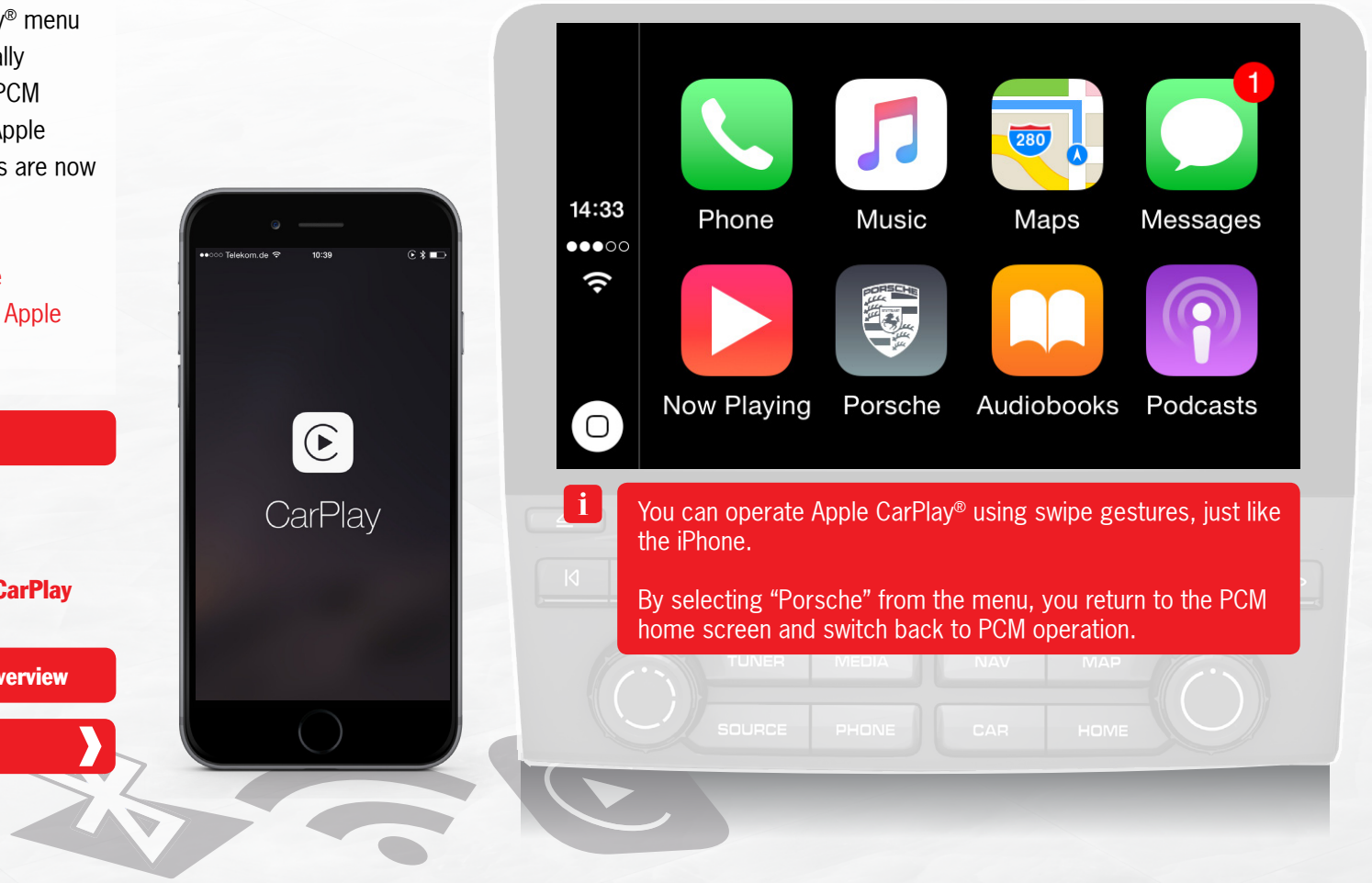
You can find more information about Apple CarPlay® here ❱

❰ Back

✓ Connected to CarPlay

To contents overview

Next chapter ❱



You can operate Apple CarPlay® using swipe gestures, just like the iPhone.

By selecting “Porsche” from the menu, you return to the PCM home screen and switch back to PCM operation.

Prerequisites

PCM

PCM including navigation module

Connect

Connect Plus

Note

You can find the current range of Apple CarPlay® features and further information online at http://www.apple.com/ios/carplay/

PCM

I want to play music from an SD card.

To play music from an SD card, insert the SD card into the PCM.





Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to play music from an SD card.

To play music from an SD card, insert the SD card into the PCM.



Back



i To insert an SD card into the PCM, the "trim" underneath the touchscreen must be open. The SD card can then be inserted into the SD card slot provided.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to play music from an SD card.

Select the SD card as the source to start the playback.



Back



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to play music from an SD card.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Music played

To contents overview

Next example

PCM

I want to play music from a mobile phone via Bluetooth.

To play music, there must be a Bluetooth connection between the phone and the PCM. (See the "Connection manager" chapter ❱)

Start the music playback on your phone, then select Bluetooth as the media source on the PCM.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus



PCM

I want to play music from a mobile phone via Bluetooth.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to play music from a mobile phone via Bluetooth.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Music played

To contents overview

Next example

PCM

I want to play music from a USB flash drive.

To play music from a USB flash drive, connect the USB flash drive in the glove compartment or the center console.





Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to play music from a USB flash drive.

Select USB as the source to start the playback.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Connection manager | Audio playback | Navigation | Porsche Connect App | Apple CarPlay® | MyScreen

PCM

I want to play music from a USB flash drive.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Music played

To contents overview

Next example

PCM

I want to transfer music to the jukebox.

You can import music from different media sources to the jukebox (e.g., SD card or USB flash drive).

First, select the media source of your choice (e.g., SD card) from which you want to import music to the jukebox.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Note

There is 11 GB of storage space available in the jukebox.

PCM

I want to transfer music to the jukebox.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to transfer music to the jukebox.

Import the music files of your choice to the jukebox.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to transfer music to the jukebox.



Prerequisites

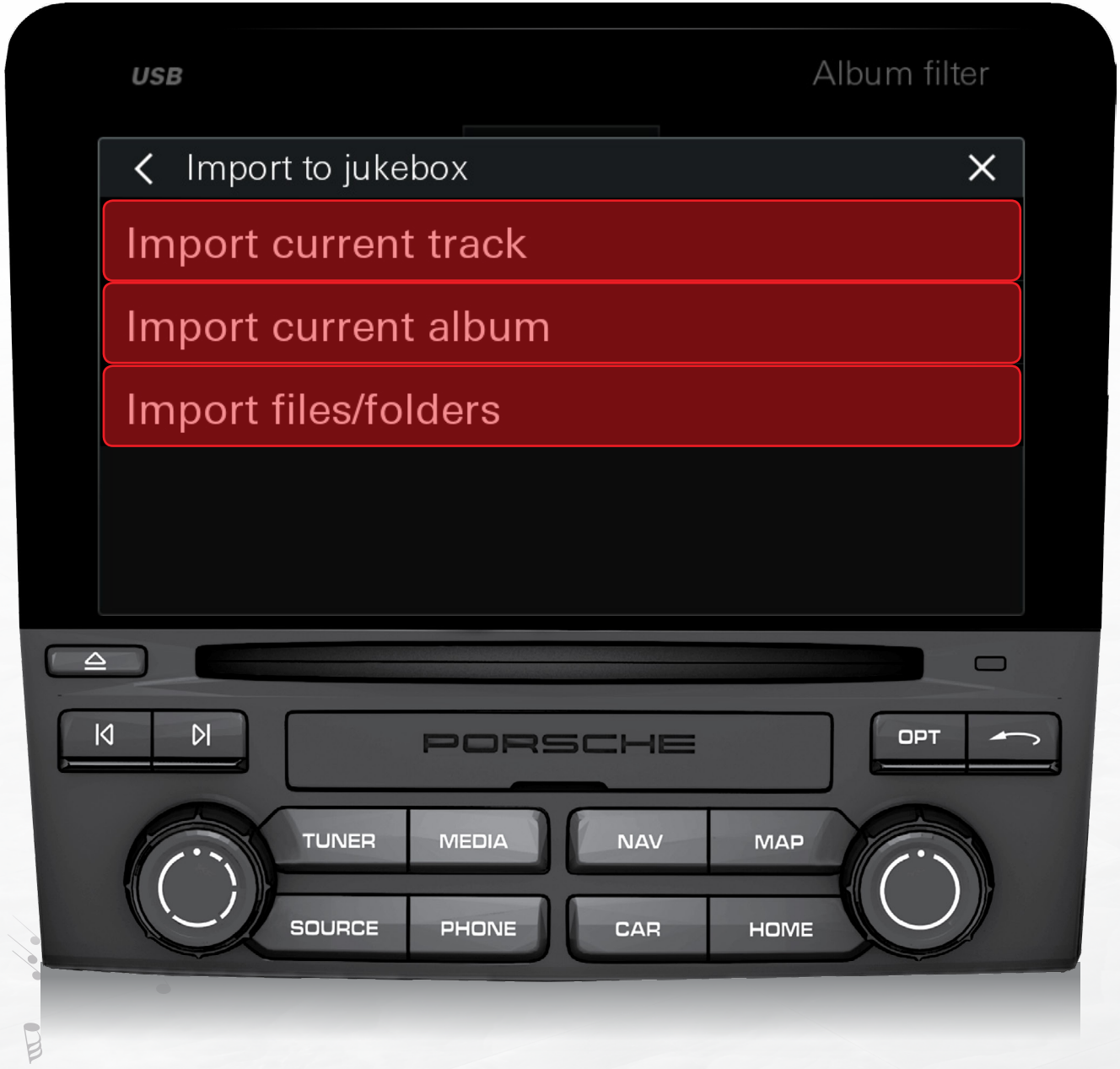
PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to transfer music to the jukebox.

Select whether you want you to import the current track, the current album or files/folders to the jukebox.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Connection manager | Audio playback | Navigation | Porsche Connect App | Apple CarPlay® | MyScreen

PCM

I want to transfer music to the jukebox.

The PCM shows the progress of the copying process.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Track transferred

To contents overview

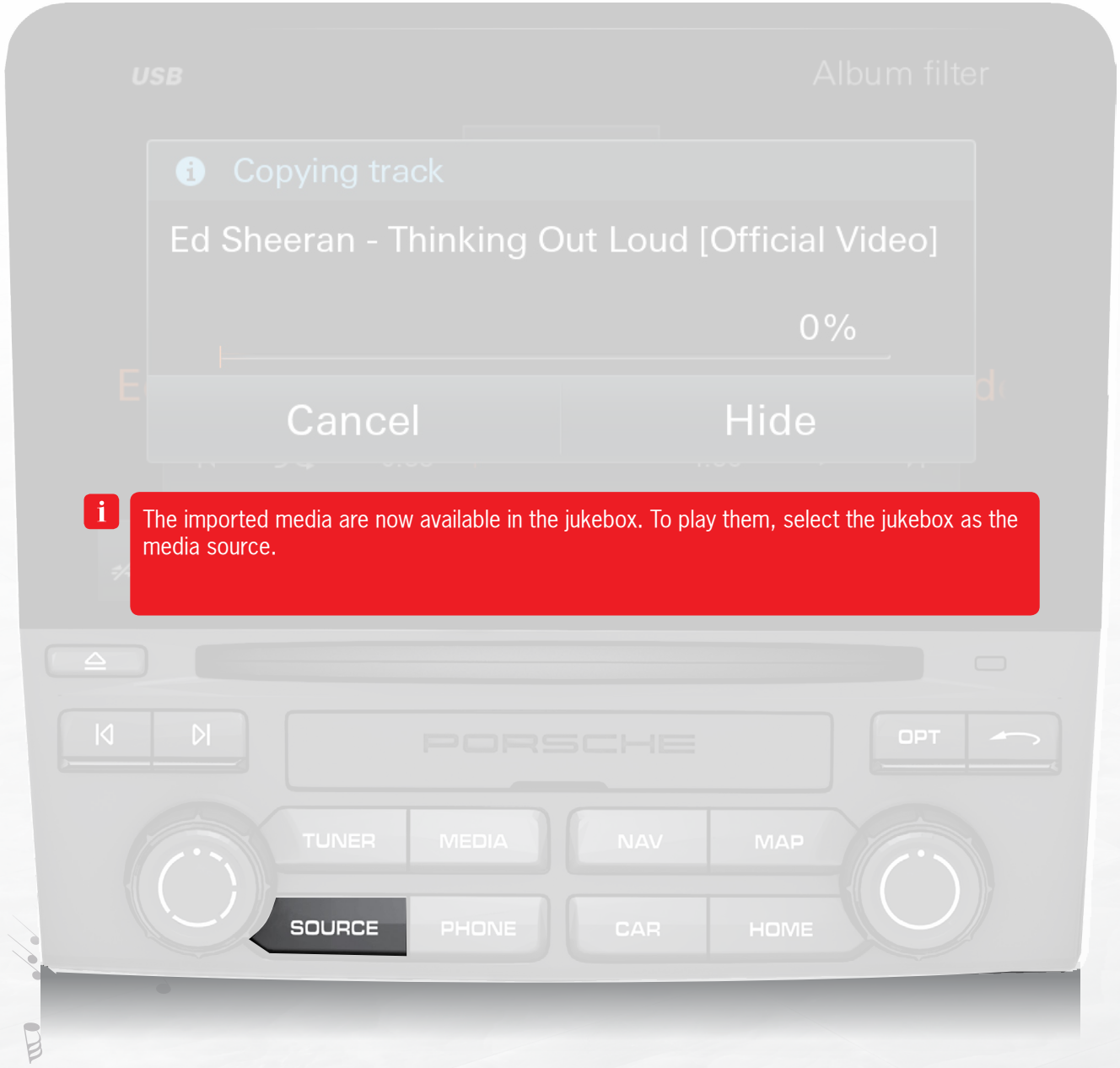
Next example

Connection manager | Audio playback | Navigation | Porsche Connect App | Apple CarPlay® | MyScreen

PCM

I want to transfer music to the jukebox.

The PCM shows the progress of the copying process.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Track transferred

To contents overview

Next example

PCM

I want to change the general tone settings of the sound system.

You can select the various tone settings for the sound system under Media.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to change the general tone settings of the sound system.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to change the general tone settings of the sound system.



Back

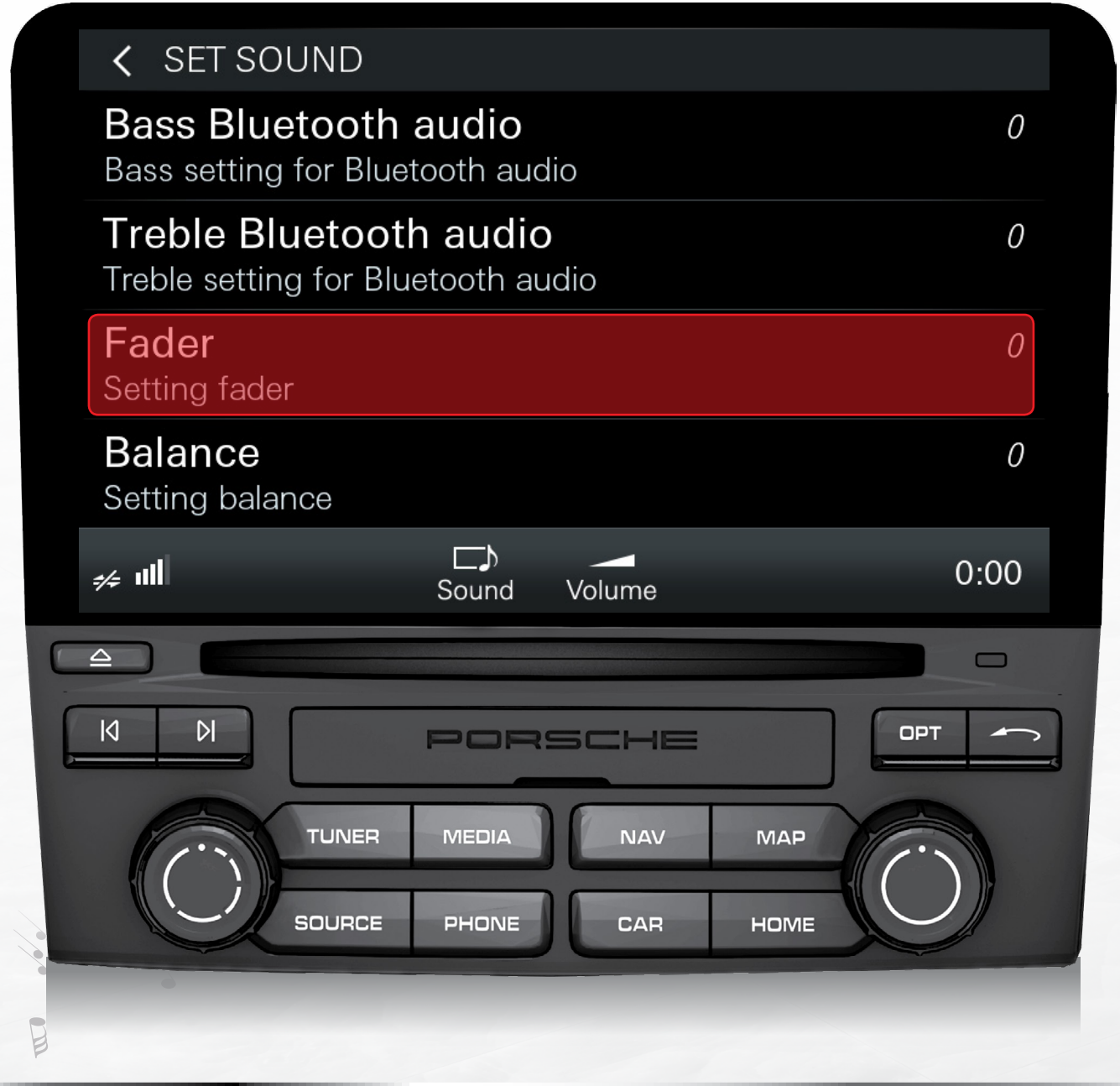
Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to change the general tone settings of the sound system.

Select the setting that you want to change (e.g., Fader).



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

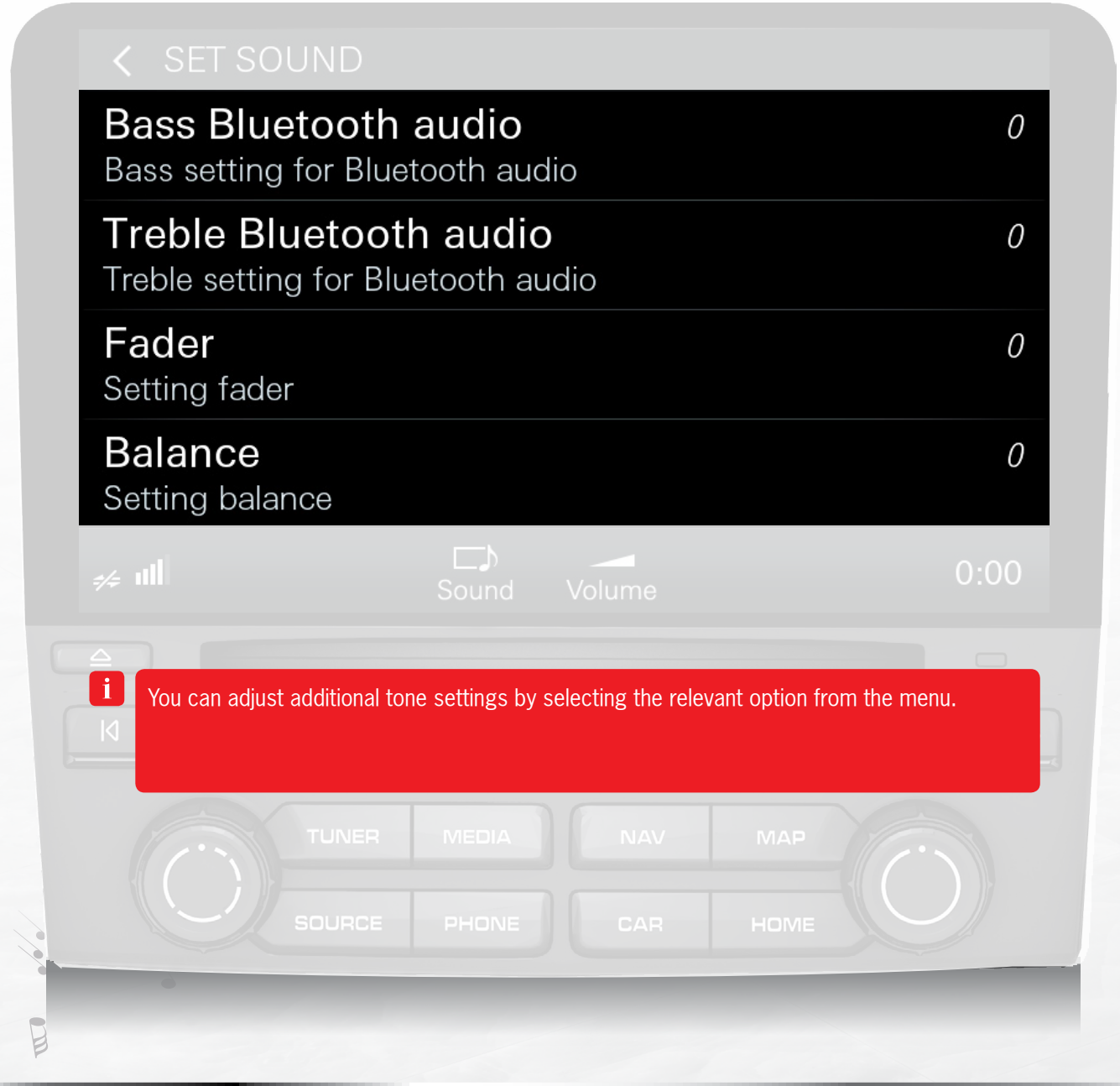
Note

Additional tone settings can be adjusted for BOSE® and Burmester® sound systems.

PCM

I want to change the general tone settings of the sound system.

Select the setting that you want to change (e.g., Fader).



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Note

Additional tone settings can be adjusted for BOSE® and Burmester® sound systems.

PCM

I want to change the general tone settings of the sound system.

For example, adjust the fader settings by dragging the orange fader point into the area of your preference using the touchscreen.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to change the general tone settings of the sound system.

Confirm the settings by returning to the Sound menu.

Back

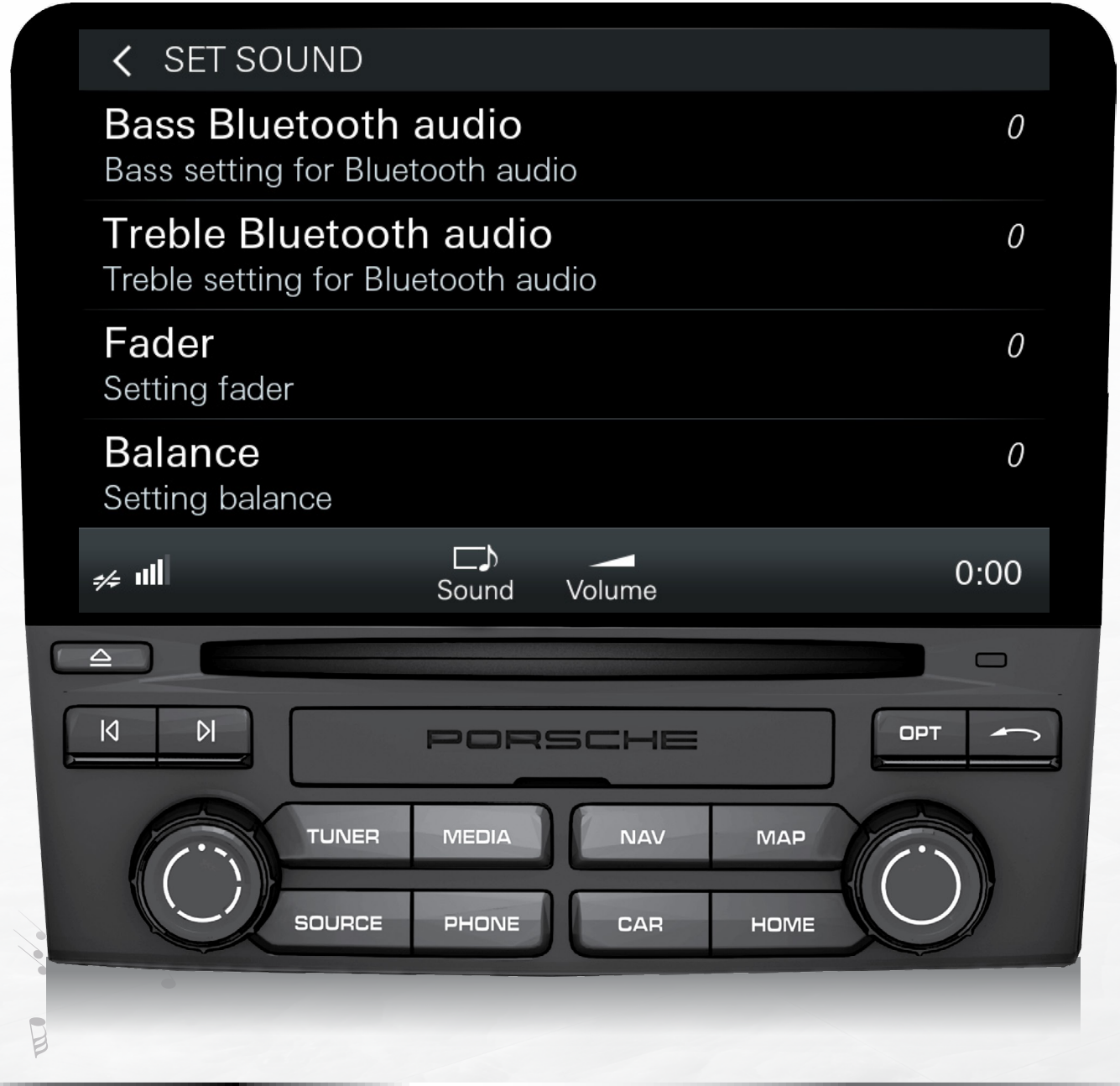


Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to change the general tone settings of the sound system.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Tone settings changed

To contents overview

Next example

PCM

I want to set the volume to adapt to the driving speed.

The speed-dependent volume can be adjusted in the volume settings.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to set the volume to adapt to the driving speed.



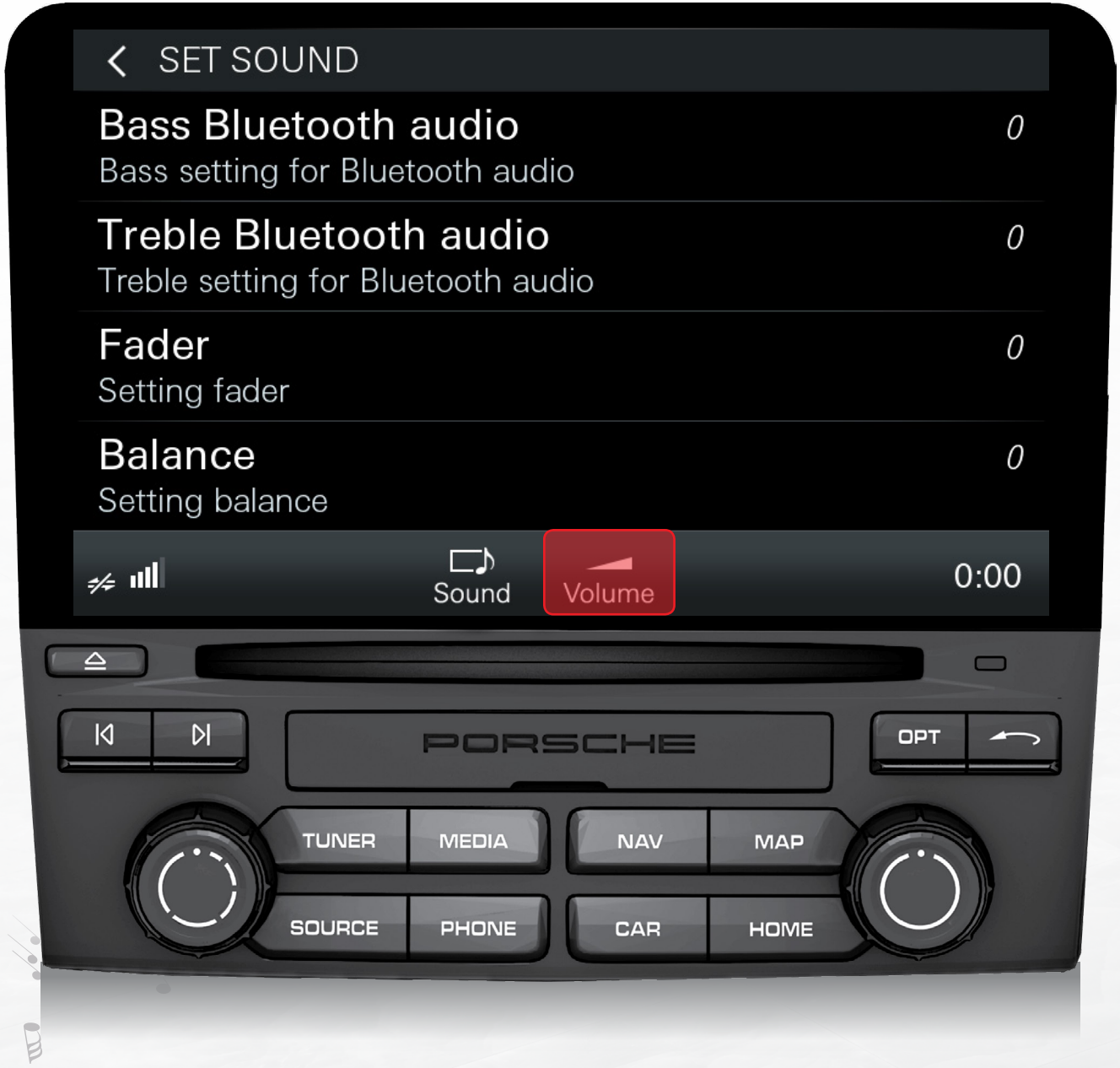
Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to set the volume to adapt to the driving speed.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to set the volume to adapt to the driving speed.

The speed-dependent volume can be adjusted in the volume settings.



Back

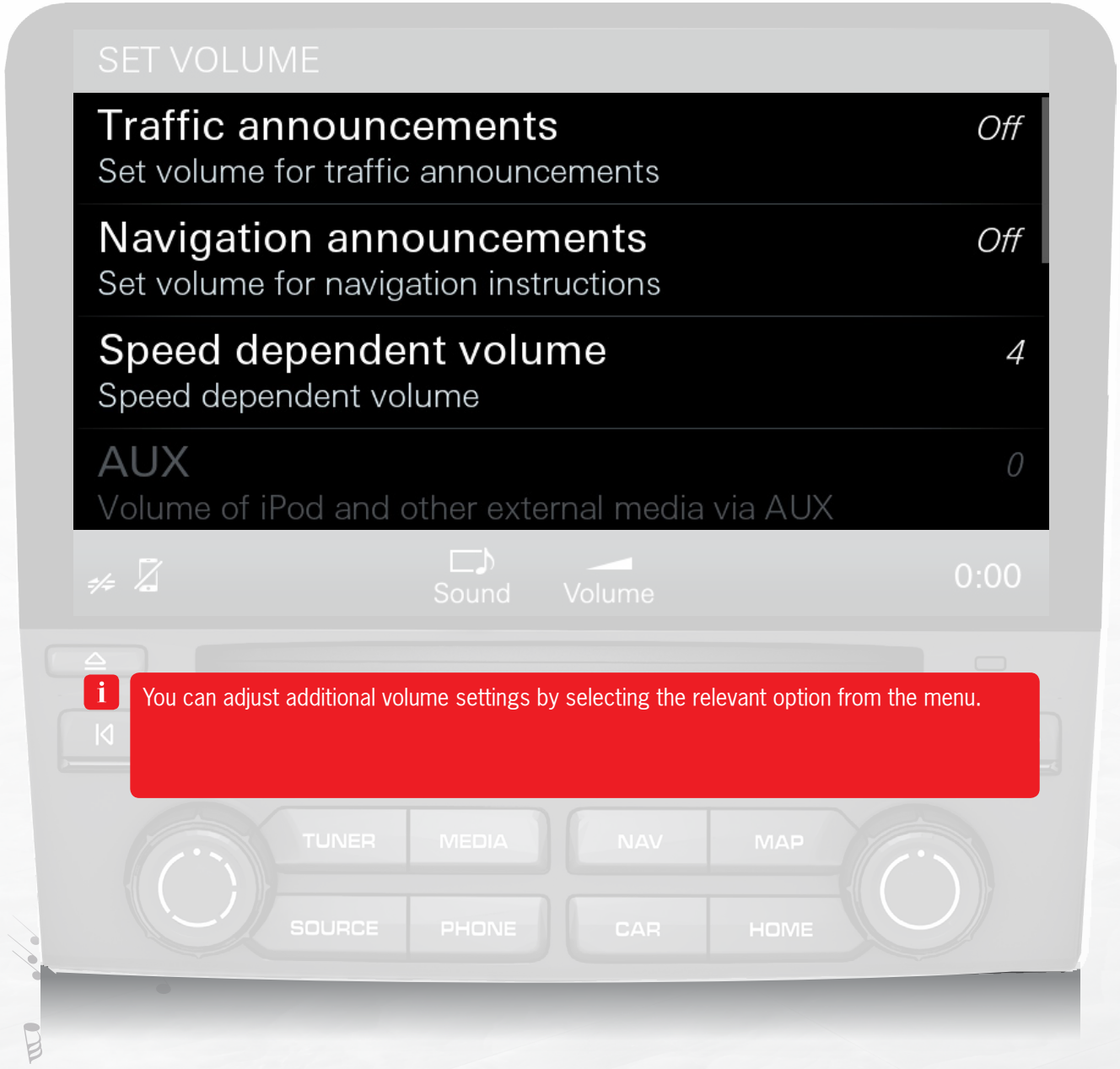
Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to set the volume to adapt to the driving speed.

The speed-dependent volume can be adjusted in the volume settings.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to set the volume to adapt to the driving speed.

Adjust the settings to the desired volume.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to set the volume to adapt to the driving speed.

Confirm the settings by returning to the previous menu.

Back



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to set the volume to adapt to the driving speed.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Volume adjusted

To contents overview

Next example

PCM

I want to find and save a radio station.

Before searching for a radio station, make sure that FM is selected as the media source.

Open the Tuner to search for a radio station.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to find and save a radio station.

Before searching for a radio station, make sure that FM is selected as the media source.

Open the Tuner to search for a radio station.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to find and save a radio station.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to find and save a radio station.

Adjust the settings to the desired frequency range or radio station.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to find and save a radio station.

Save the selected station.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

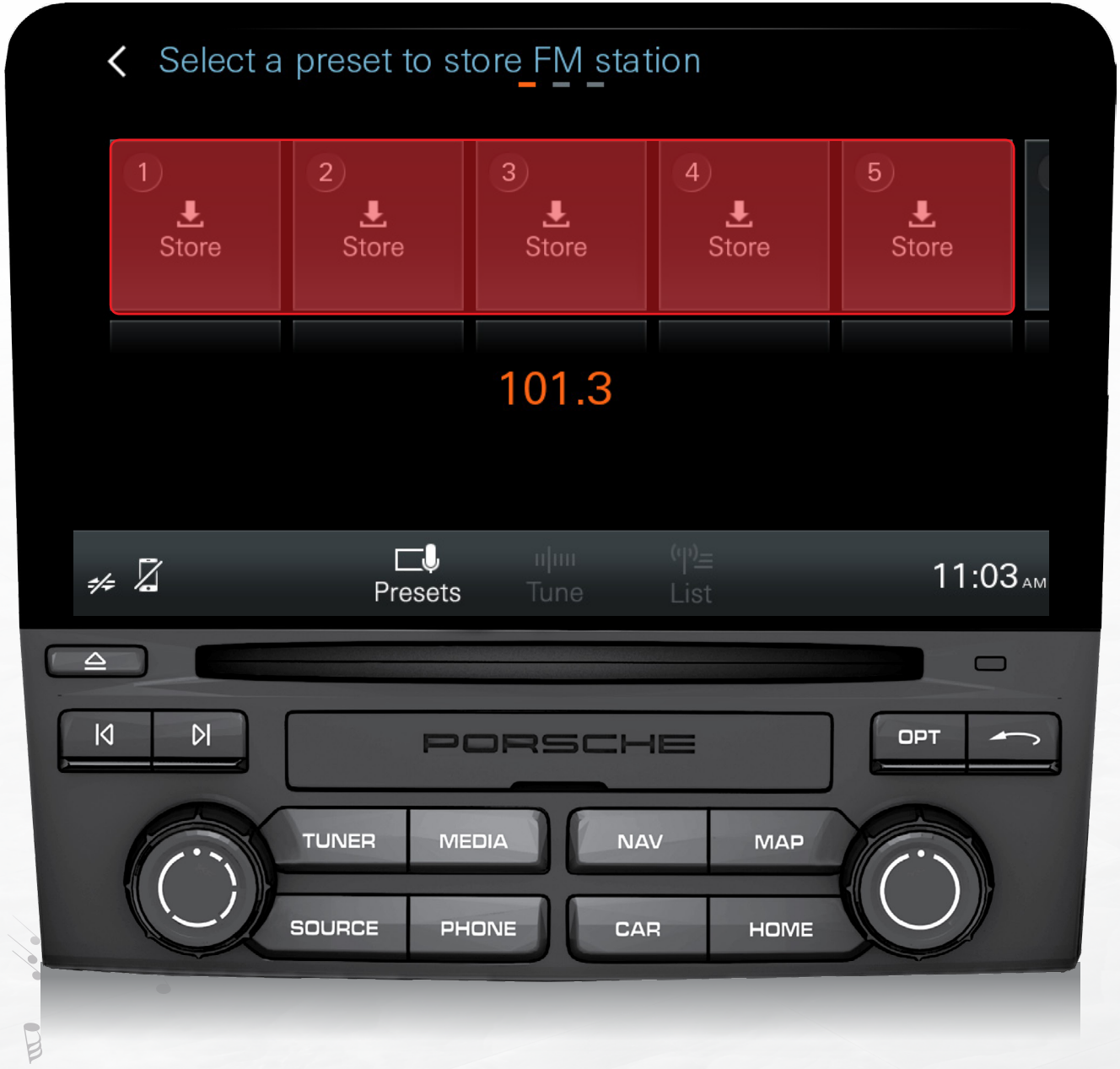
Back

Connection manager | Audio playback | Navigation | Porsche Connect App | Apple CarPlay® | MyScreen

PCM

I want to find and save a radio station.

Save the station by pressing and holding your finger on a preset. You can choose any preset.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to find and save a radio station.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to find and save a radio station.

You can see your saved stations in the overview.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

Station saved

To contents overview

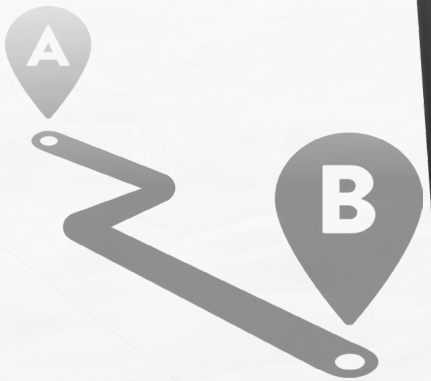
Next chapter

PCM

I want to enter a navigation destination.

Open the navigation system to open the destination input screen.





Prerequisites

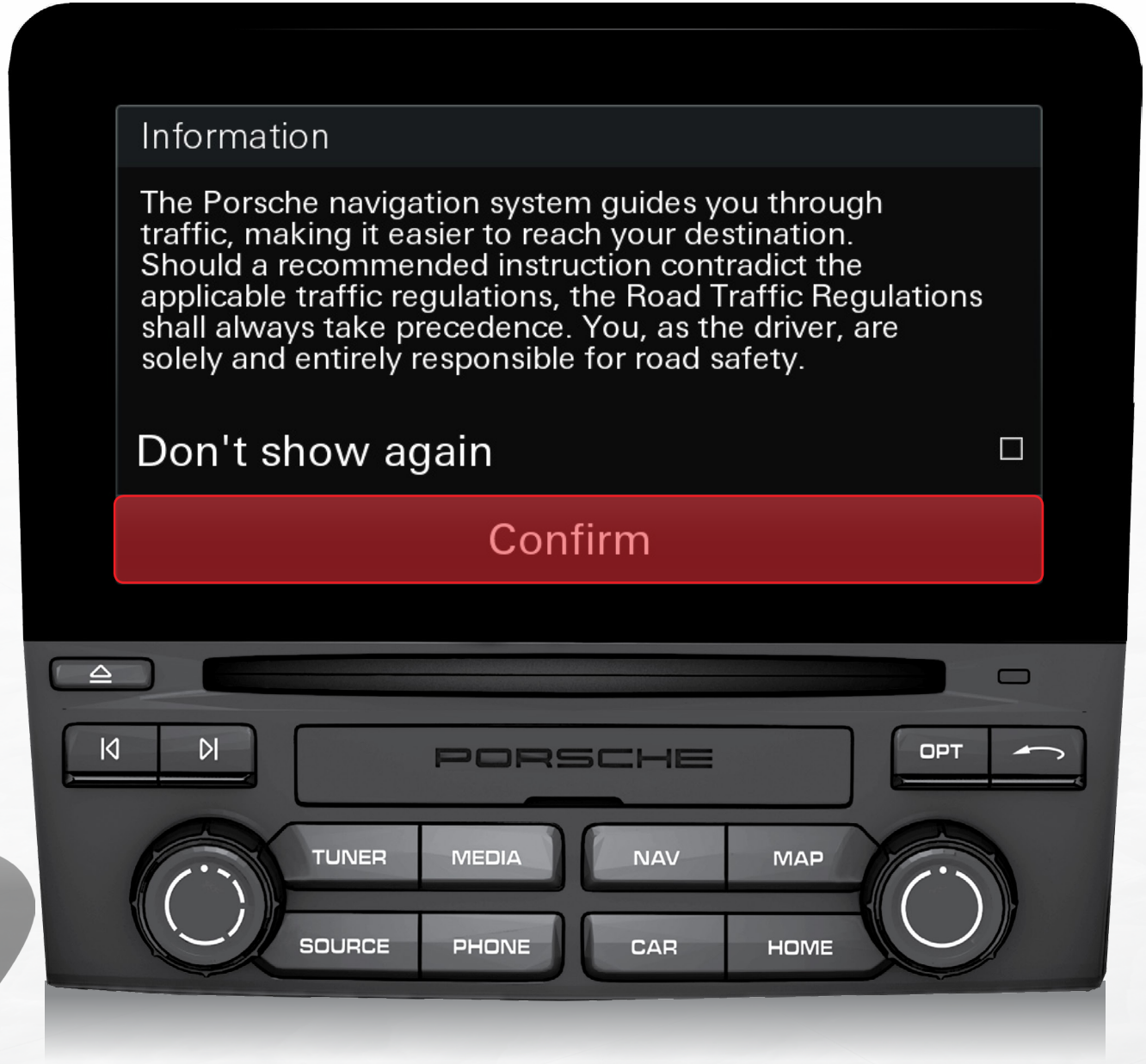
PCM | **PCM including navigation module**

Connect | Connect Plus

PCM

I want to enter a navigation destination.

You can either allow the notification about Road Traffic Regulations to be shown every time, or confirm once by selecting "Don't show again."



Prerequisites

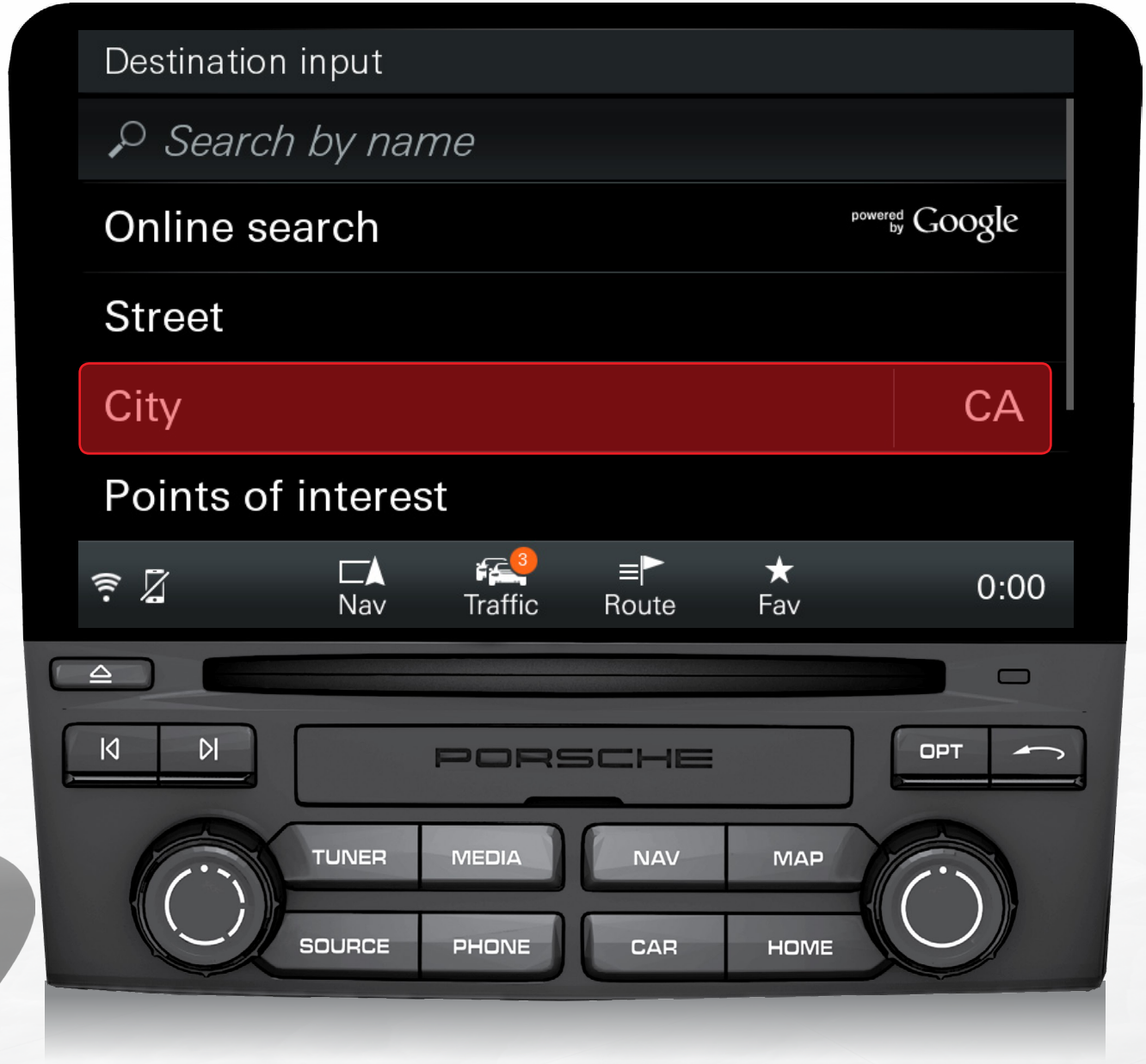
PCM | **PCM including navigation module**

Connect | Connect Plus

Back

PCM

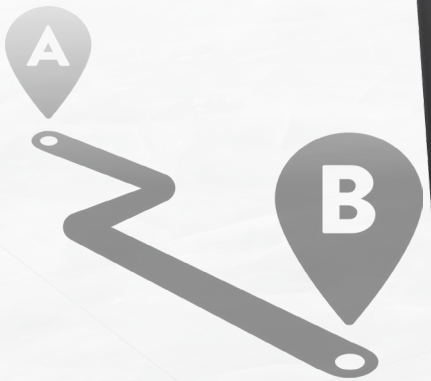
I want to enter a navigation destination.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back



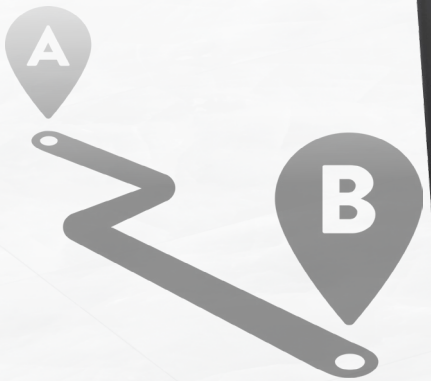
PCM

I want to enter a navigation destination.

Type in the name of the desired city and select the city from the list.



Back



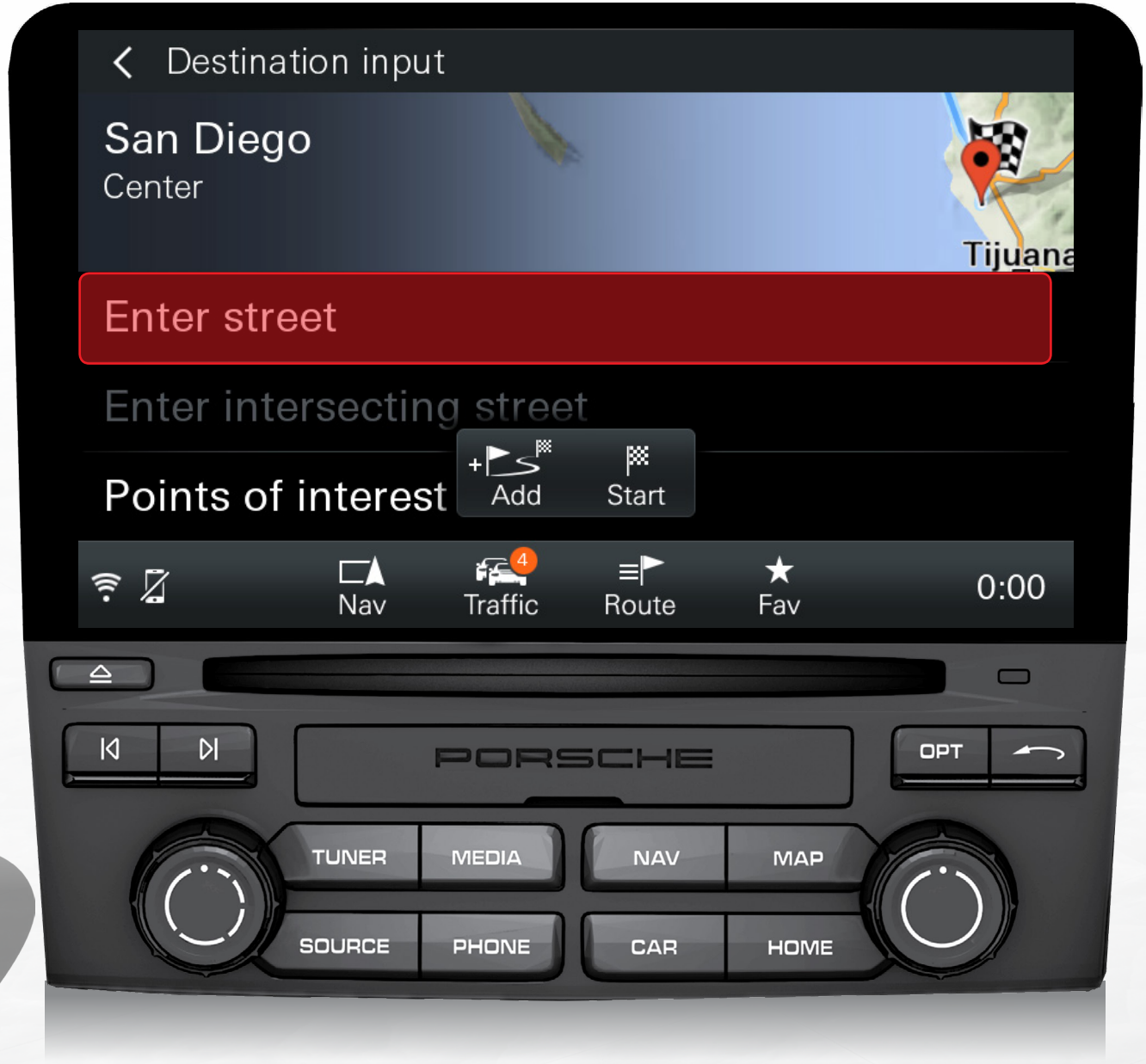
Prerequisites

PCM | **PCM including navigation module**

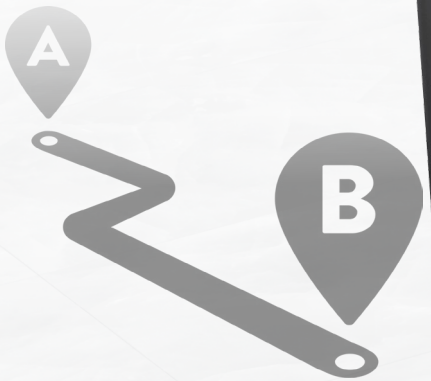
Connect | Connect Plus

PCM

I want to enter a navigation destination.



Back



Prerequisites

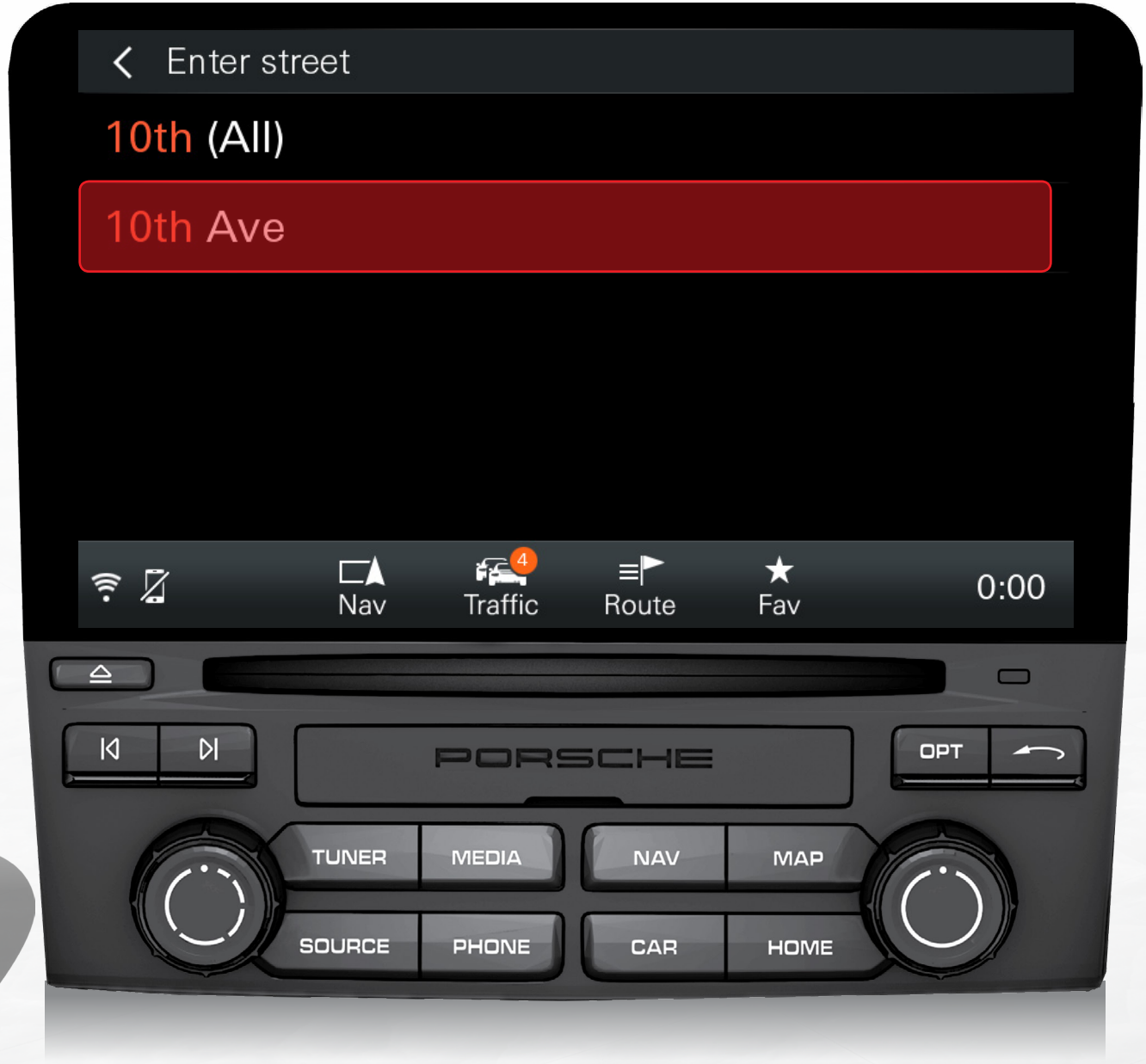
PCM | **PCM including navigation module**

Connect | Connect Plus

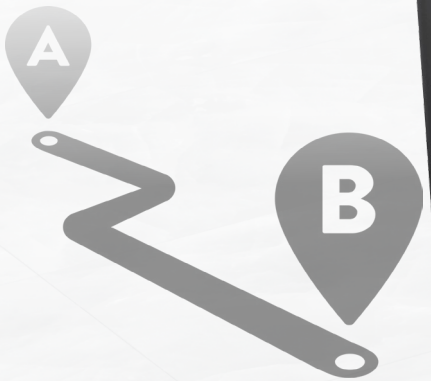
PCM

I want to enter a navigation destination.

Type in the name of the street and select the street from the list.



Back



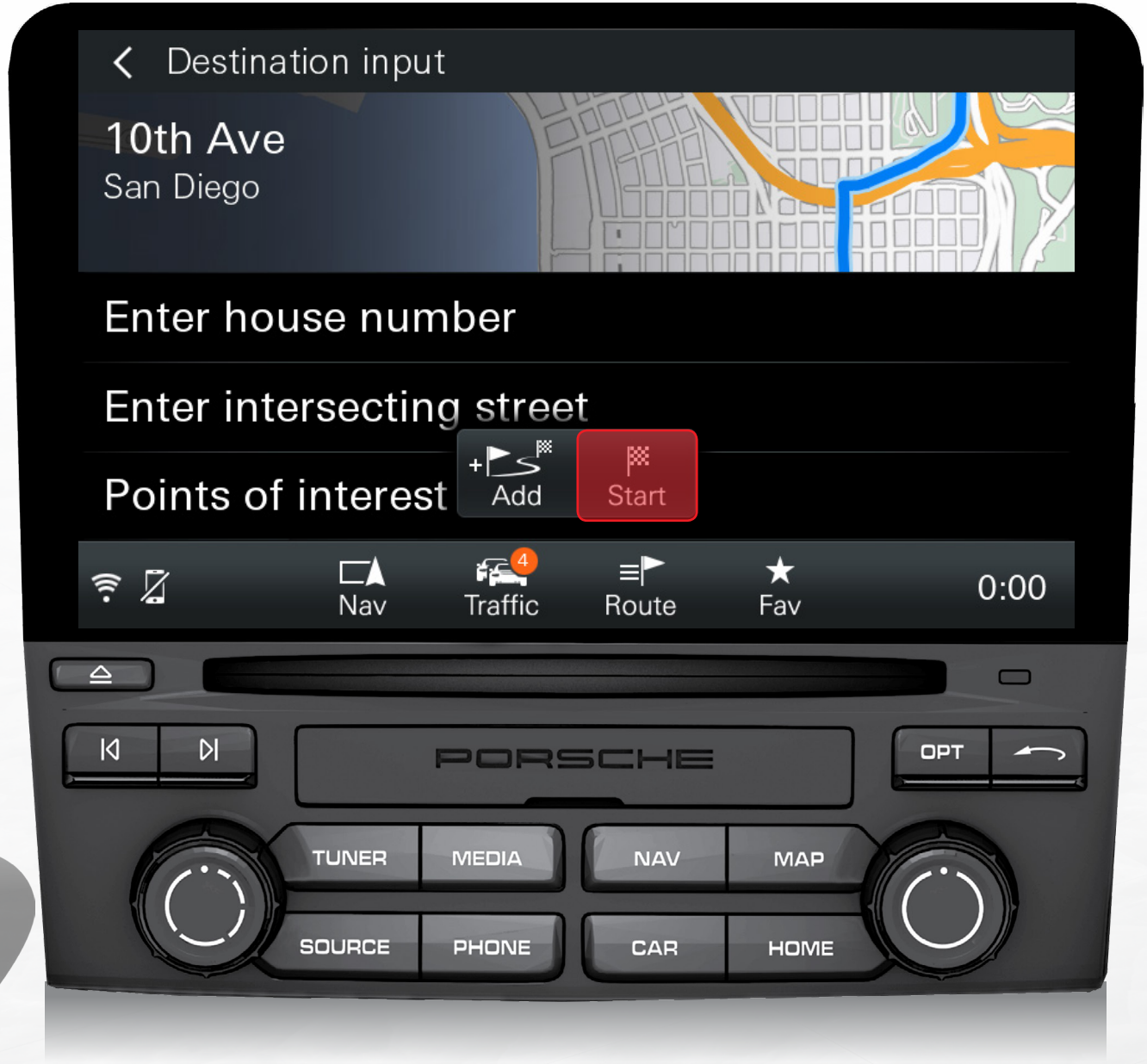
Prerequisites

PCM | **PCM including navigation module**

Connect | Connect Plus

PCM

I want to enter a navigation destination.



Prerequisites

PCM | **PCM including navigation module**

Connect | Connect Plus

Back

PCM

I want to enter a navigation destination.



Prerequisites

PCM | **PCM including navigation module**

Connect | Connect Plus

Back

Destination entered

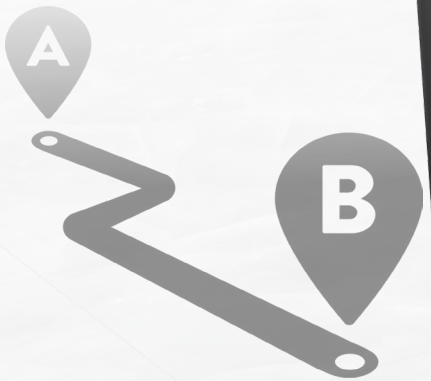
To contents overview

Next example

PCM

I want to enter a navigation destination and use the online search.





Prerequisites

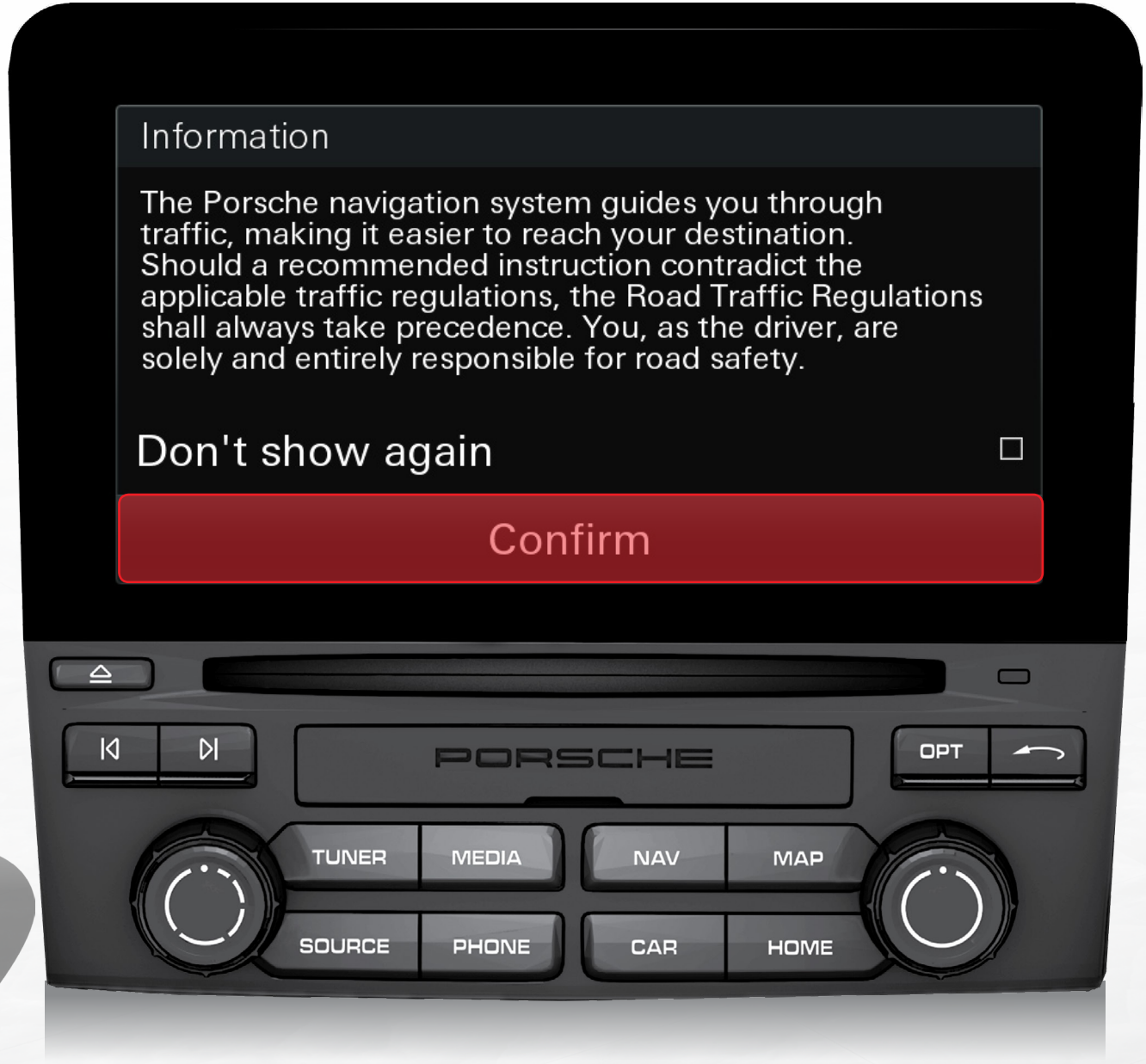
PCM	PCM including navigation module
Connect	Connect Plus

Note

To use the online search, a SIM card must be inserted. An active data connection is required.

PCM

I want to enter a navigation destination and use the online search.



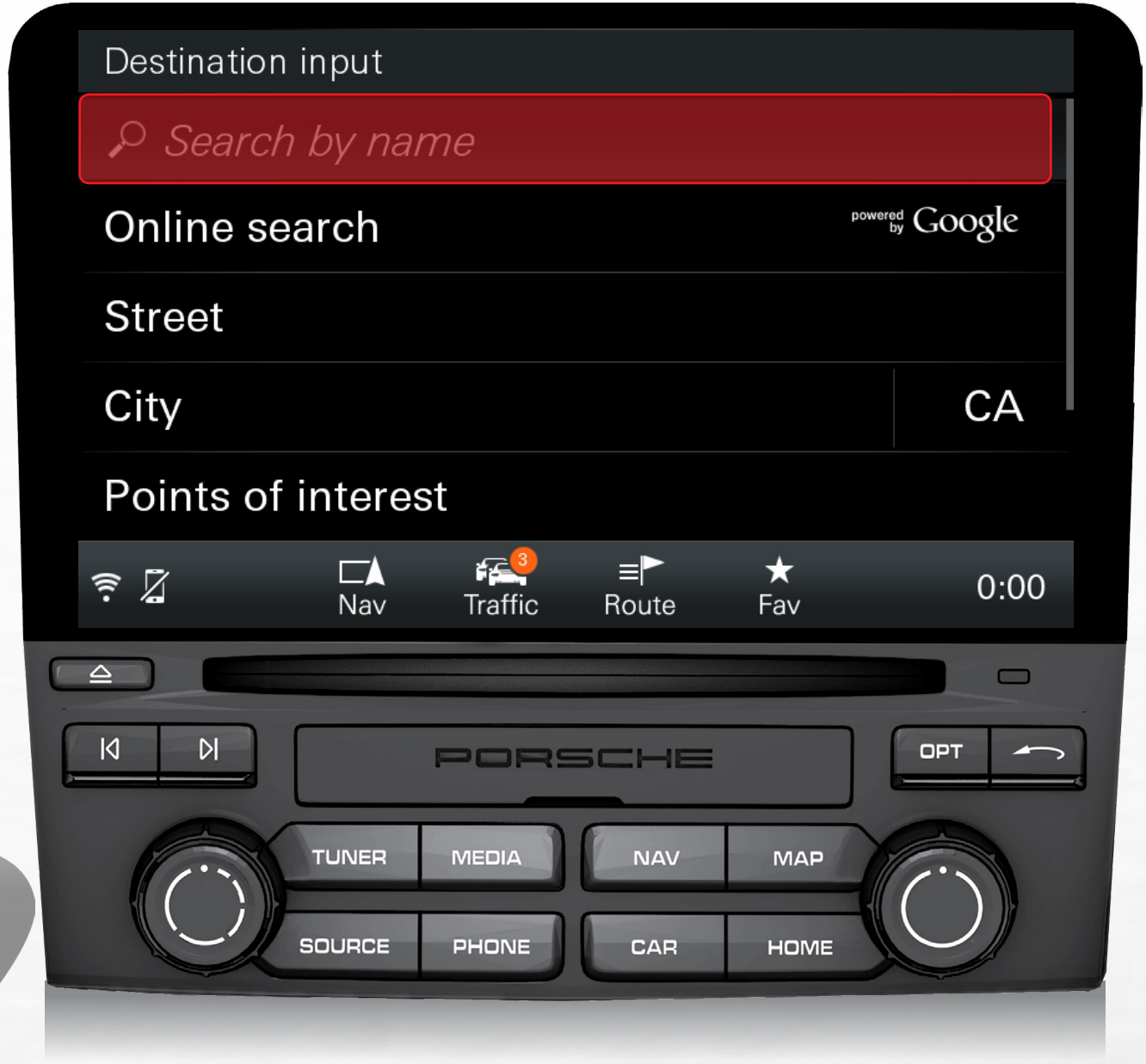
Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

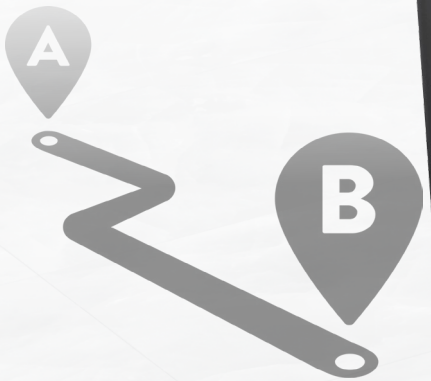
I want to enter a navigation destination and use the online search.



Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**

Back



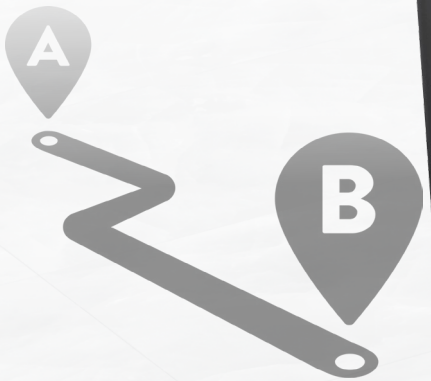
PCM

I want to enter a navigation destination and use the online search.

Type the name of the destination in the online search.



Back



Prerequisites

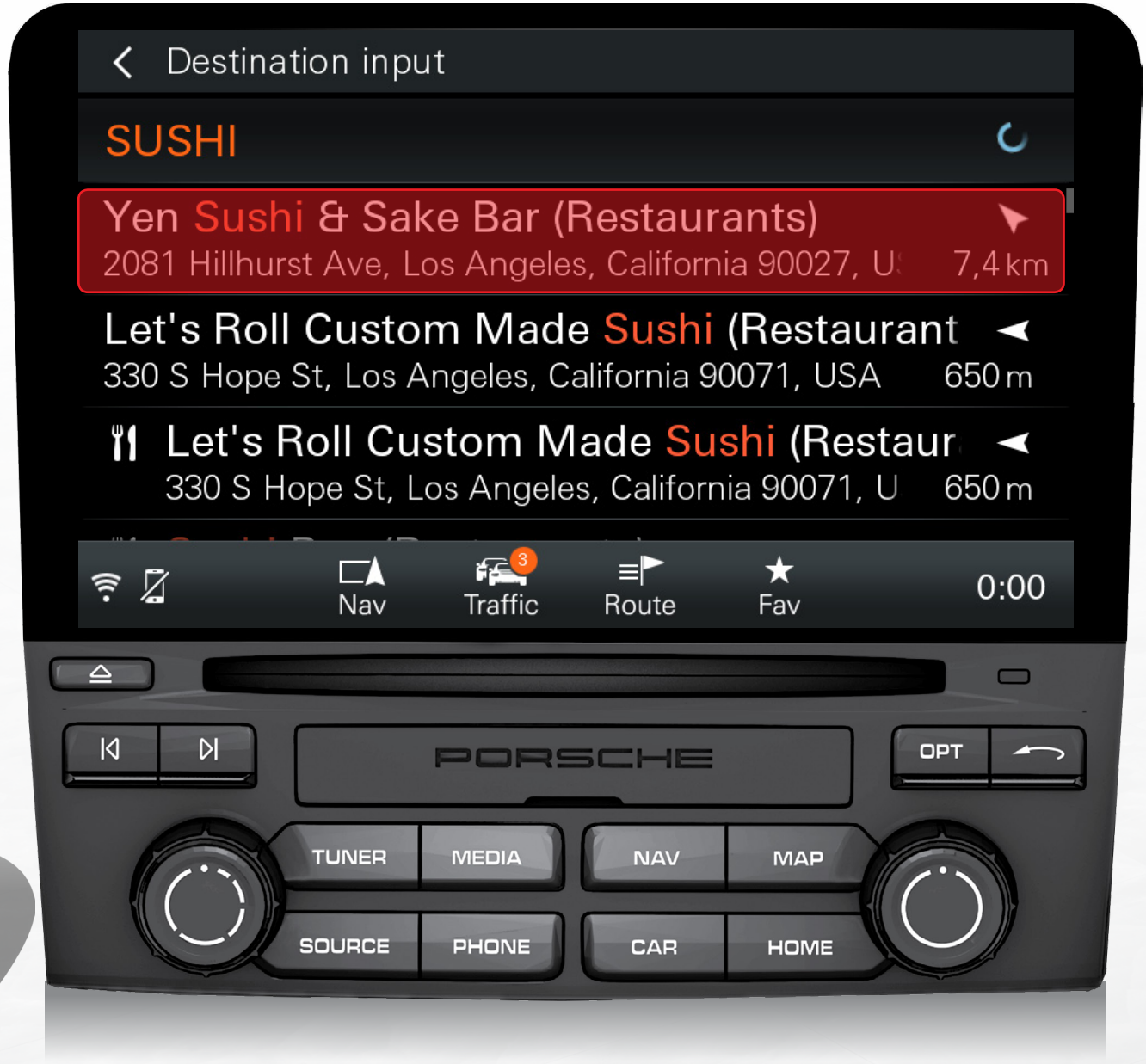
PCM | **PCM including navigation module**

Connect | **Connect Plus**

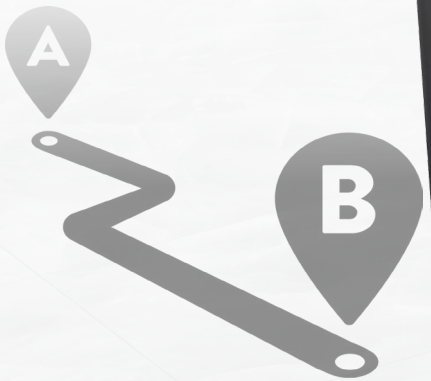
PCM

I want to enter a navigation destination and use the online search.

Select the destination from the list.



Back



Prerequisites

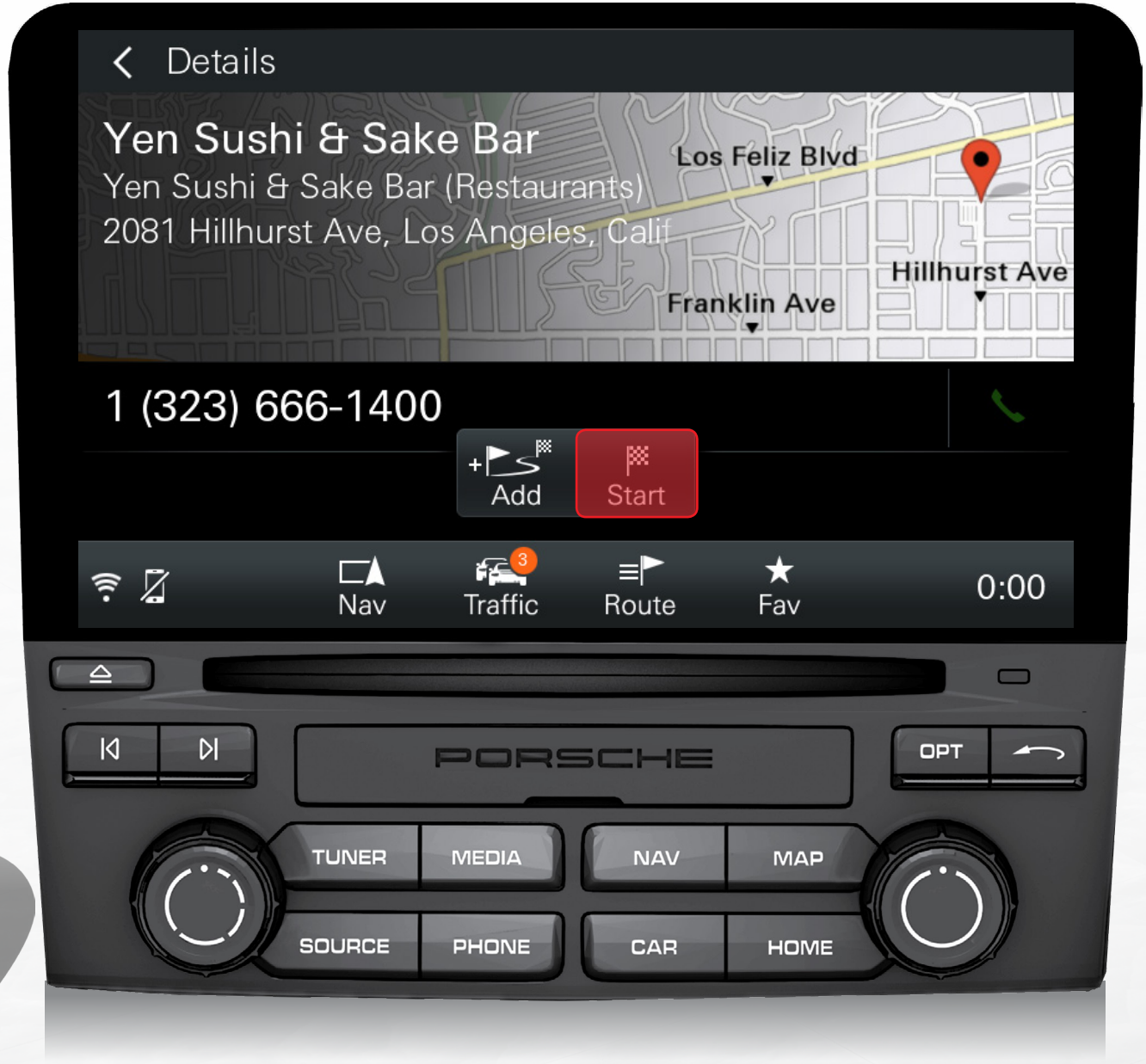
PCM | **PCM including navigation module**

Connect | **Connect Plus**

PCM

I want to enter a navigation destination and use the online search.

The PCM will show you additional information about your destination, such as the telephone number.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to enter a navigation destination and use the online search.



Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**

Back

Navigation started

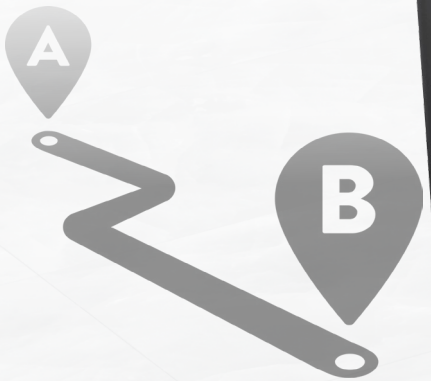
To contents overview

Next example

PCM

I want to enter a stopover into my current route.



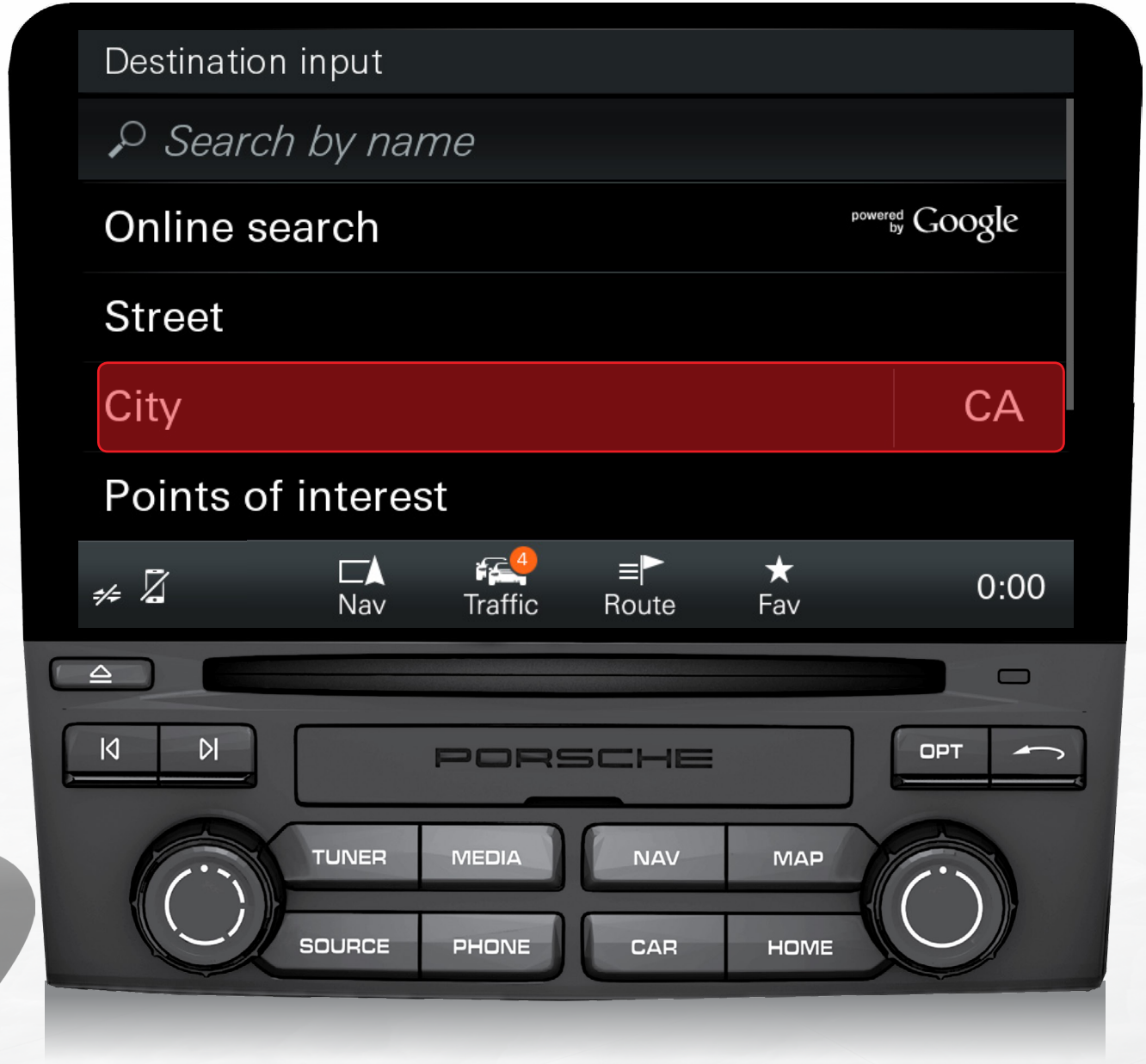


Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

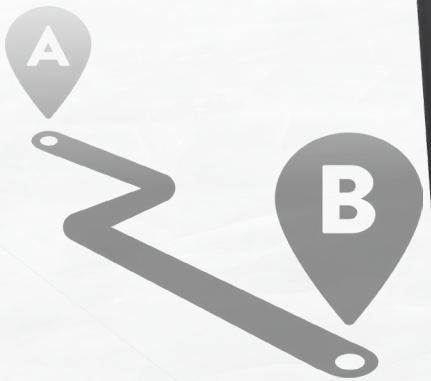
I want to enter a stopover into my current route.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

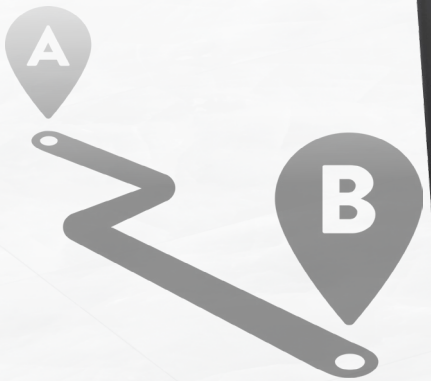


PCM

I want to enter a stopover into my current route.



Back



Prerequisites

PCM | **PCM including navigation module**

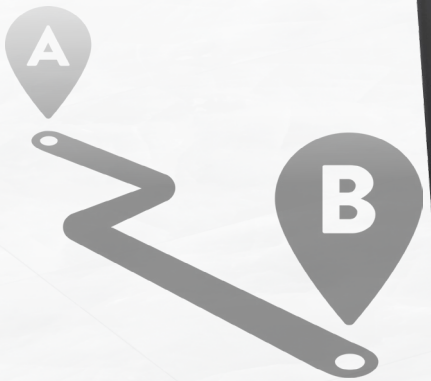
Connect | Connect Plus

PCM

I want to enter a stopover into my current route.



Back



Prerequisites

PCM | **PCM including navigation module**

Connect | Connect Plus

PCM

I want to enter a stopover into my current route.

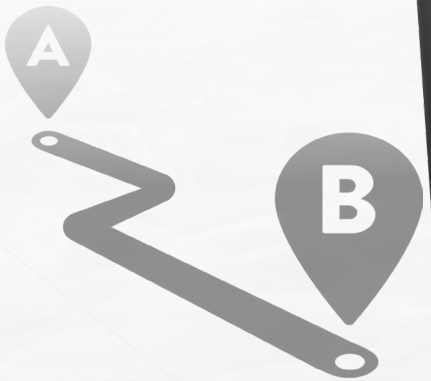


Prerequisites

PCM | **PCM including navigation module**

Connect | Connect Plus

Back



PCM

I want to enter a stopover into my current route.



Prerequisites

PCM | PCM including navigation module

Connect | Connect Plus

Back

Stopover added

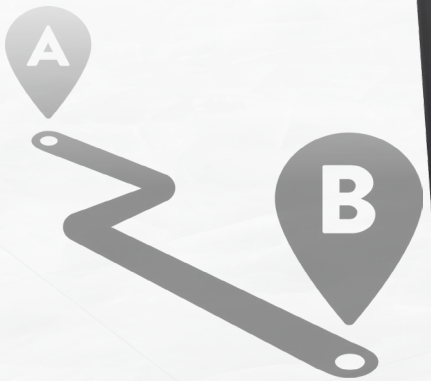
To contents overview

Next example

PCM

I want to view the traffic info and use the Google functions.





Prerequisites

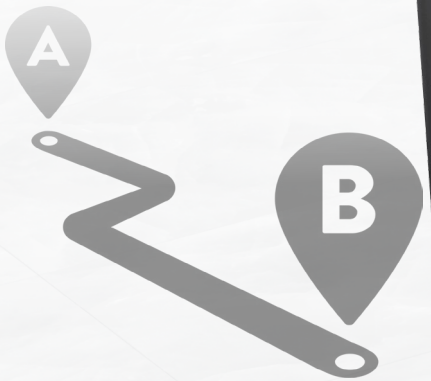
PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to view the traffic info and use the Google functions.



Back



Prerequisites

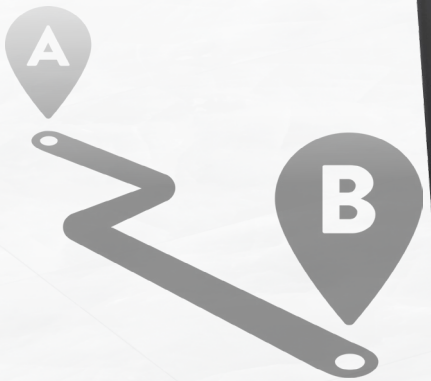
PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to view the traffic info and use the Google functions.



Back



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

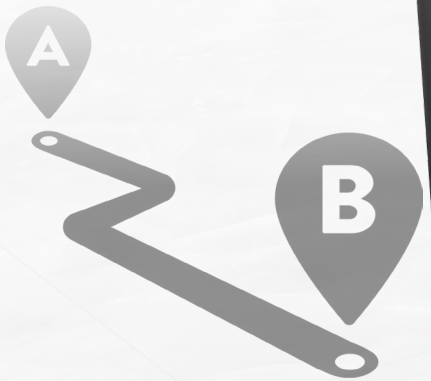
I want to view the traffic info and use the Google functions.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back



PCM

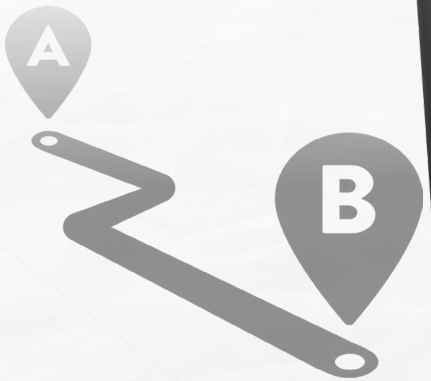
I want to view the traffic info and use the Google functions.

If you select the Google Earth® view and zoom into the map, the view (if available) will switch to Google Street View.

Alternatively, you can change the view by clicking on the little orange man.



Back



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Note

To use Google Earth® and Google Street View, a SIM card must be inserted. An active data connection is required.

PCM

I want to view the traffic info and use the Google functions.



Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**

Back

Traffic info and Google functions used

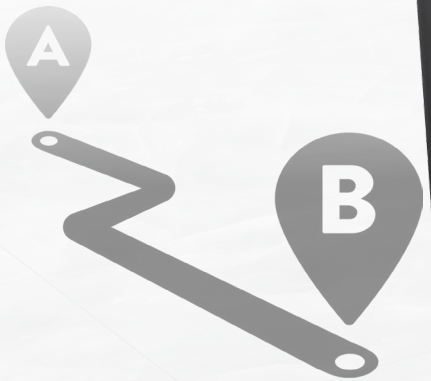
To contents overview

Next example

PCM

I want to navigate to the nearest gas station.



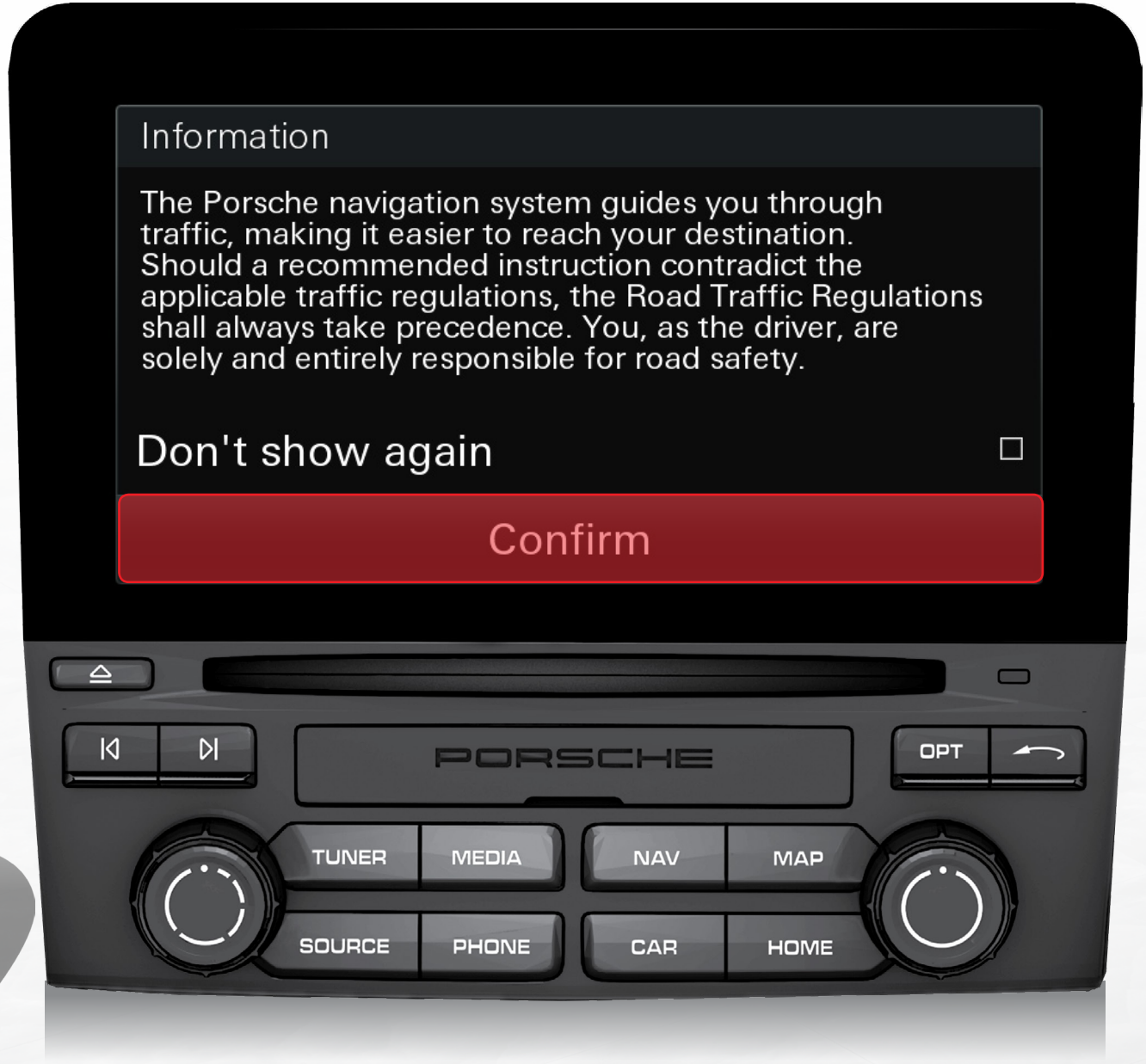


Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to navigate to the nearest gas station.

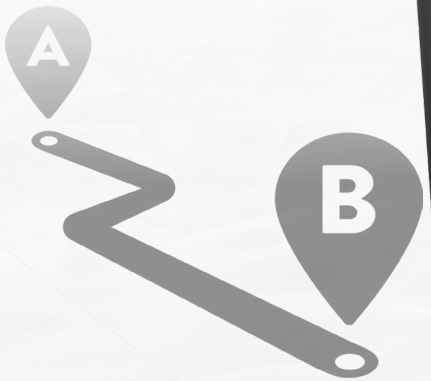


Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

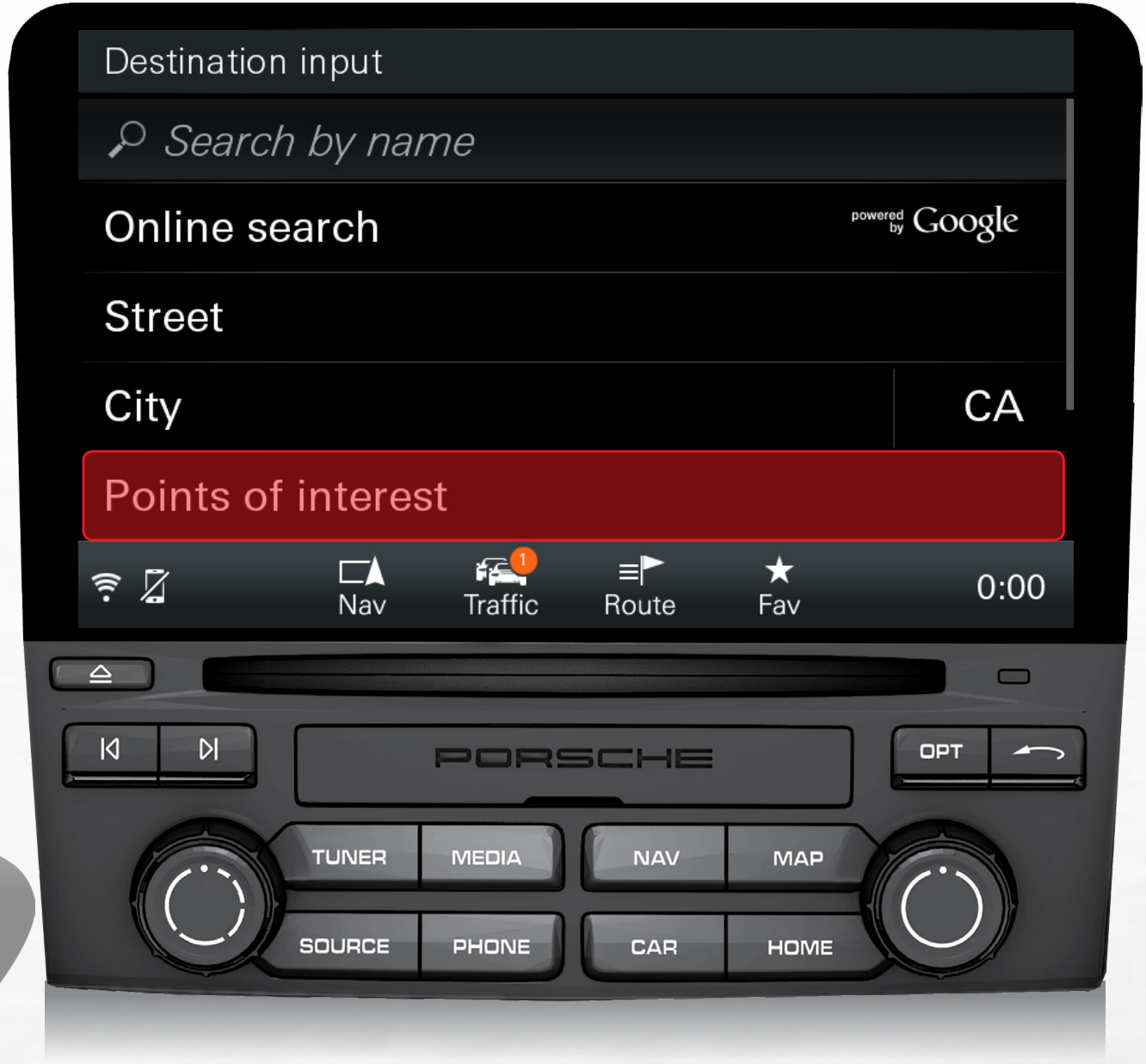


Back



PCM

I want to navigate to the nearest gas station.

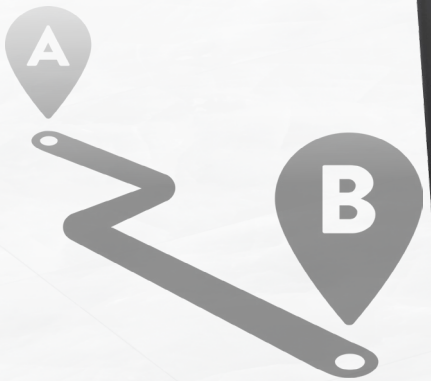


Prerequisites

PCM | **PCM including navigation module**

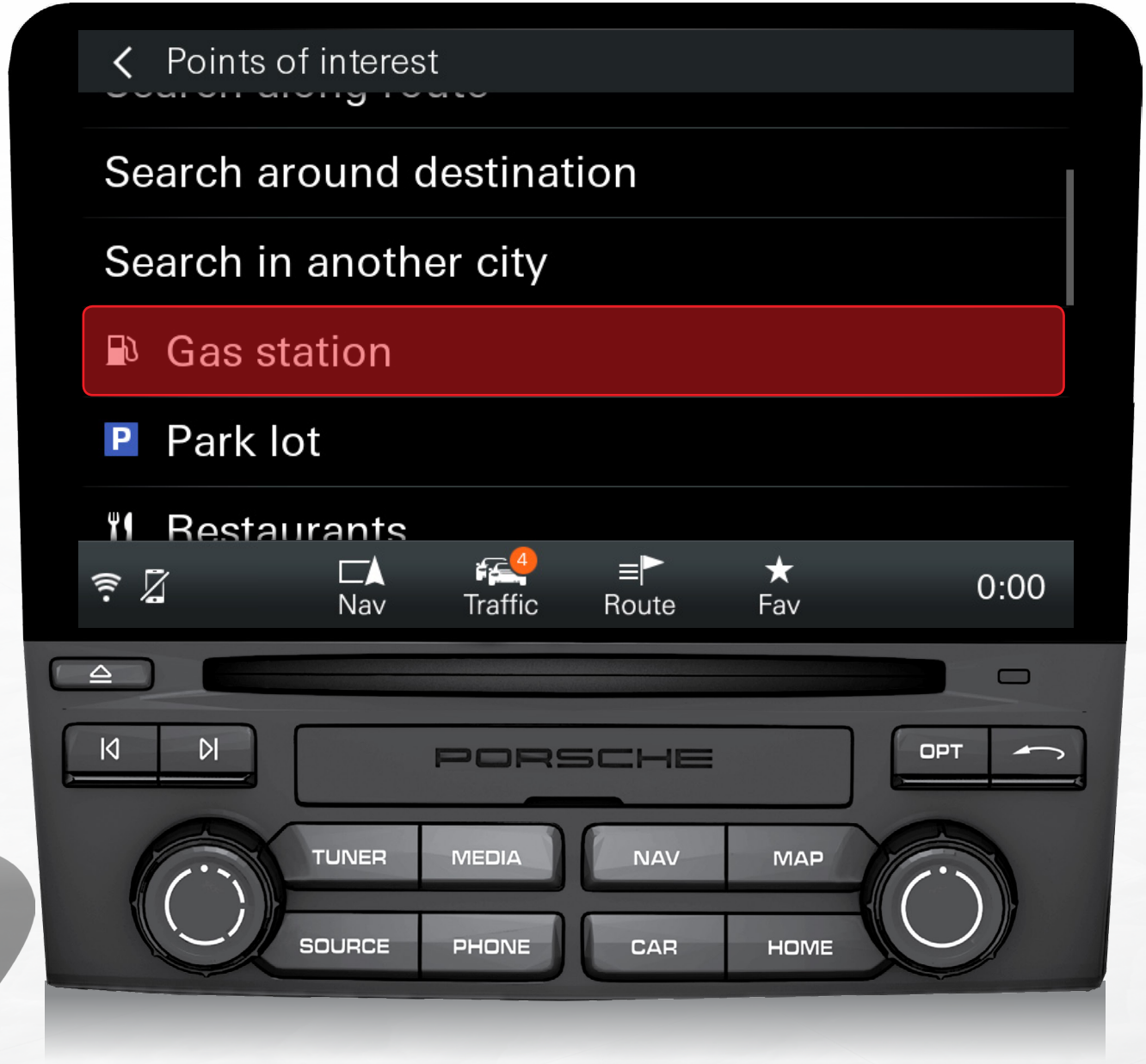
Connect | Connect Plus

Back

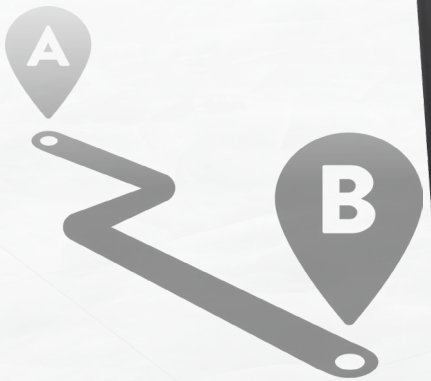


PCM

I want to navigate to the nearest gas station.



Back

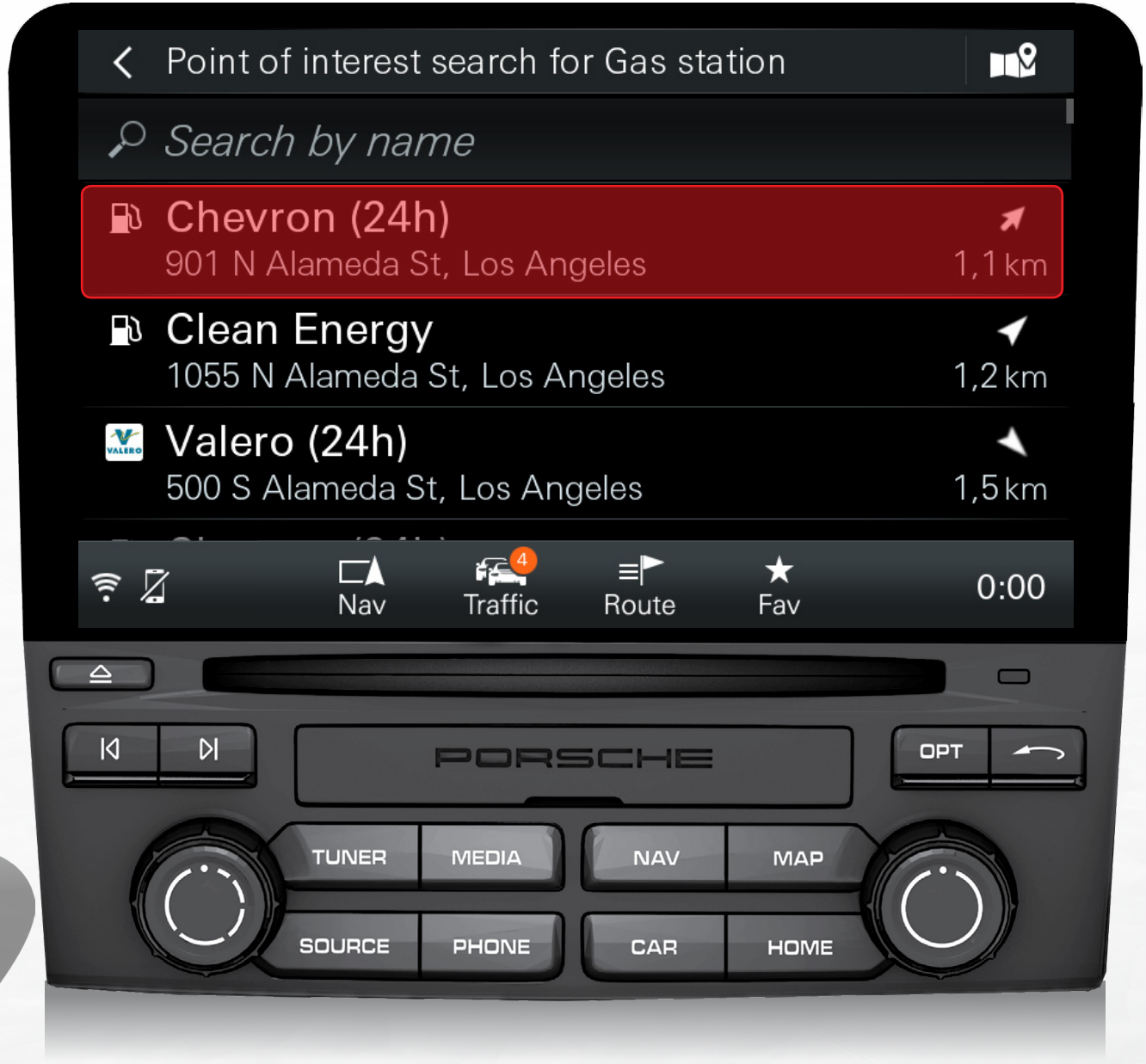


Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to navigate to the nearest gas station.



Prerequisites

PCM | **PCM including navigation module**

Connect | Connect Plus

Back

PCM

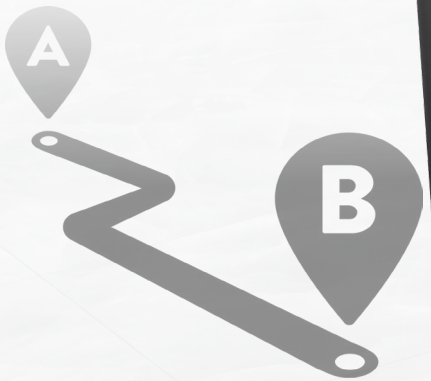
I want to navigate to the nearest gas station.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back



PCM

I want to navigate to the nearest gas station.



Prerequisites

PCM

PCM including navigation module

Connect

Connect Plus

Back

Search for point of interest started

To contents overview

Next chapter

PCM

I want to open the Porsche Connect App and its services on the PCM.

Install the Porsche Connect App on your phone. Ensure that the WiFi functions are activated on the phone and on the PCM.

Open the app on your phone. You can then select the individual online services via the PCM touchscreen.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Note

The use of online functions as well as wireless Internet access requires a data-enabled SIM card. A separate, subscription-based contract with a mobile phone provider is required.

PCM

I want to open the Porsche Connect App and its services on the PCM.

You can now select the individual online services via the PCM.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**





Back

PCM

I want to open the Porsche Connect App and its services on the PCM.

You can find more information about the Porsche Connect App here ❱



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

❰ **Back**

✓ **App connected**

To contents overview

Next example ❱

PCM

I want to transfer a navigation destination to the PCM and navigate to a contact.

Open the Porsche Connect App and select the contact you want to navigate to.

You can also search for a destination of your choice using the online search (e.g., a restaurant or museum), transfer it to the PCM and start the navigation.

Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**



PCM

I want to transfer a navigation destination to the PCM and navigate to a contact.

Select a contact and send the address data to the PCM.

Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**





Back

PCM

I want to transfer a navigation destination to the PCM and navigate to a contact.

Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**





Back

PCM

I want to transfer a navigation destination to the PCM and navigate to a contact.

Select the contact for navigation in the PCM.

Back

Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**



PCM

I want to transfer a navigation destination to the PCM and navigate to a contact.



Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**

Back

PCM

I want to transfer a navigation destination to the PCM and navigate to a contact.



Back

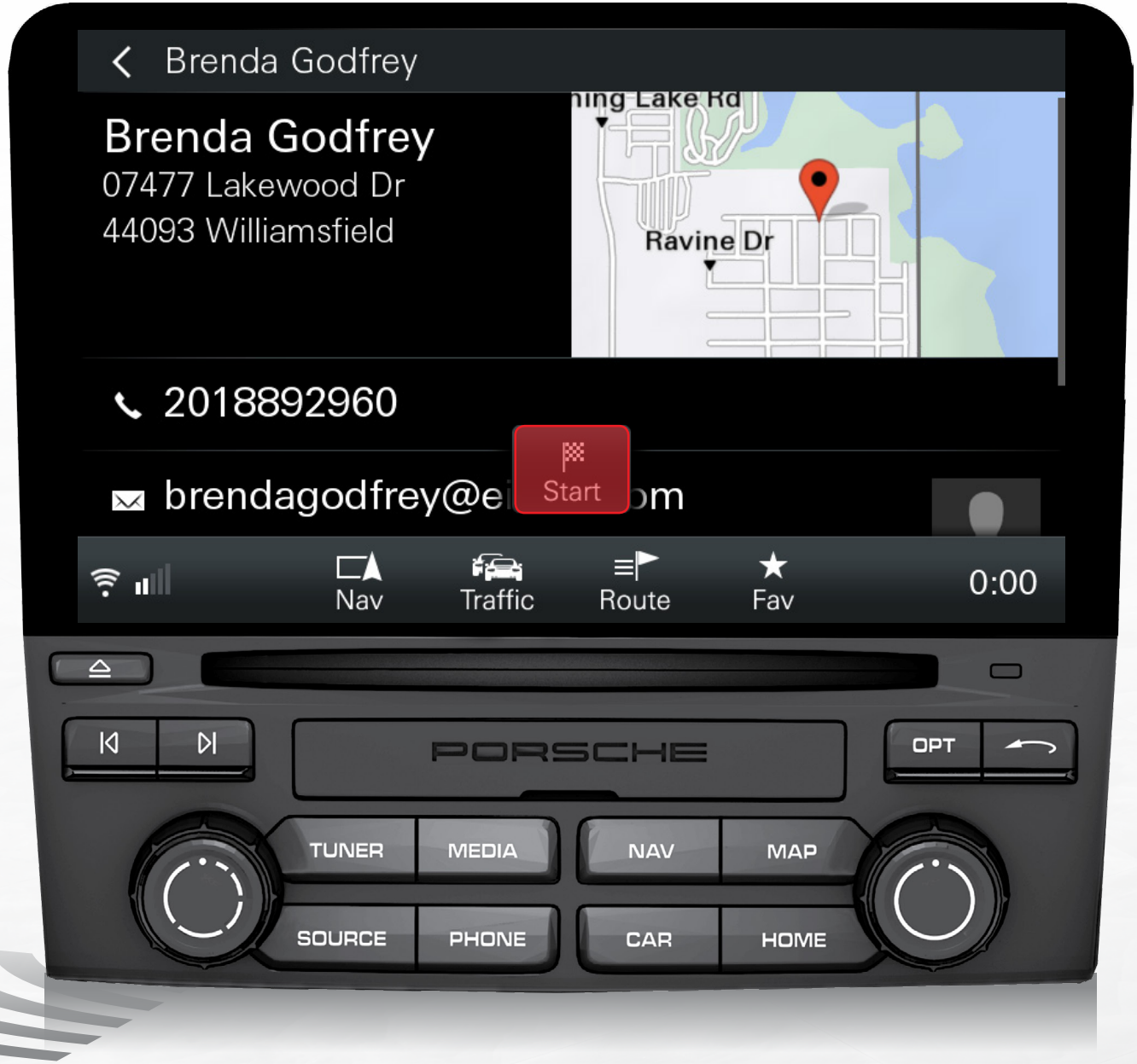
Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**

PCM

I want to transfer a navigation destination to the PCM and navigate to a contact.



Prerequisites

PCM — **PCM including navigation module**

Connect — **Connect Plus**

Back

PCM

I want to transfer a navigation destination to the PCM and navigate to a contact.



Back

✓ Navigation destination transferred

To contents overview

Next example

Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**

PCM

I want to view the appointments in my calendar.

To view your appointments, open the calendar on the PCM.



Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**

PCM

I want to view the appointments in my calendar.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

abc

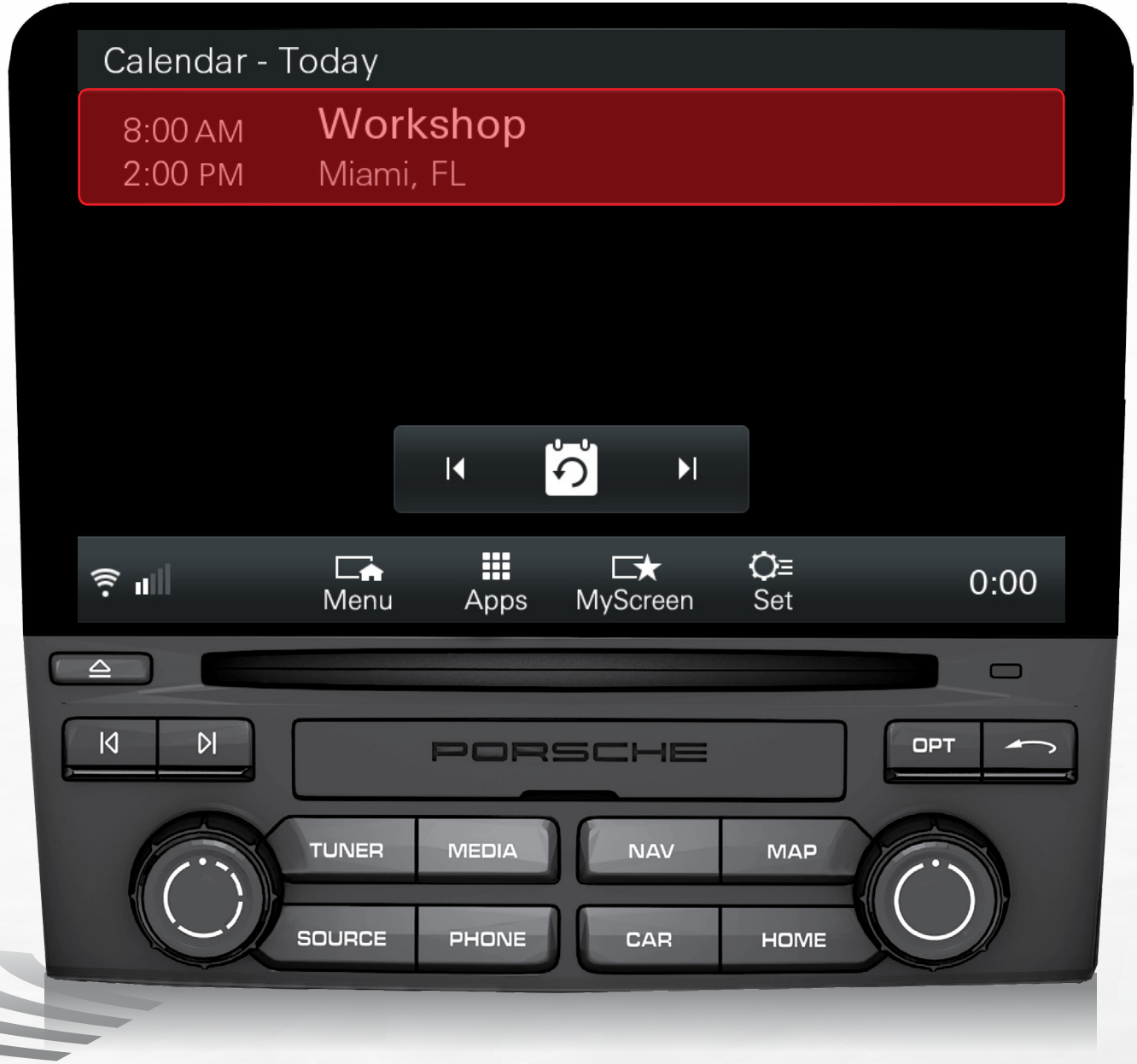
Back

PCM

I want to view the appointments in my calendar.

All calendar entries are displayed.

Select an appointment to view additional information (such as the address).



Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**

Back

PCM

I want to view the appointments in my calendar.



Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**

Back

Calendar entries viewed

To contents overview

Next example

PCM

I want to listen to my favorite radio station.

Open the Porsche Connect App and log into the radio.net app.



Prerequisites

PCM: **PCM including navigation module**

Connect: **Connect Plus**

Note

To use the radio.net app, you must create a user account.

PCM

I want to listen to my favorite radio station.

Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**



Back

PCM

I want to listen to my favorite radio station.

Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**



Back

PCM

I want to listen to my favorite radio station.

Start the radio.net app on the PCM.

Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**



Back

PCM

I want to listen to my favorite radio station.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to listen to my favorite radio station.



Back

Prerequisites

PCM	**PCM including navigation module**
Connect	**Connect Plus**

PCM

I want to listen to my favorite radio station.

You can access and select the favorites created in the app.



Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**

Back

PCM

I want to listen to my favorite radio station.



Back

Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**

PCM

I want to listen to my favorite radio station.



Prerequisites

PCM | **PCM including navigation module**

Connect | **Connect Plus**

Back

✓ **Radio station selected**

To contents overview

Next chapter

PCM

I want to establish a connection with Apple CarPlay®.

The connection with Apple CarPlay® can be established via the connection manager.

To use Apple CarPlay®, you need to connect the phone to the center console using a USB cable.





Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to establish a connection with Apple CarPlay®.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to establish a connection with Apple CarPlay®.

To use Apple CarPlay®, you need to connect the phone to the center console using a USB cable.



Back



Prerequisites

PCM | PCM including navigation module

Connect | Connect Plus

PCM

I want to establish a connection with Apple CarPlay®.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Back

PCM

I want to establish a connection with Apple CarPlay®.



Prerequisites

PCM | PCM including navigation module

Connect | Connect Plus

Back

PCM

I want to establish a connection with Apple CarPlay®.

Confirm the connection request on your phone.

Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



PCM

I want to establish a connection with Apple CarPlay®.

The Apple CarPlay® logo is displayed on the phone.

The Apple CarPlay® menu is now automatically displayed on the PCM touchscreen. All Apple CarPlay® functions are now available.



Prerequisites

PCM

PCM including navigation module

Connect

Connect Plus

Note

You can find the current range of Apple CarPlay® features and further information online at http://www.apple.com/ios/carplay/

Back

Connected to CarPlay

To contents overview

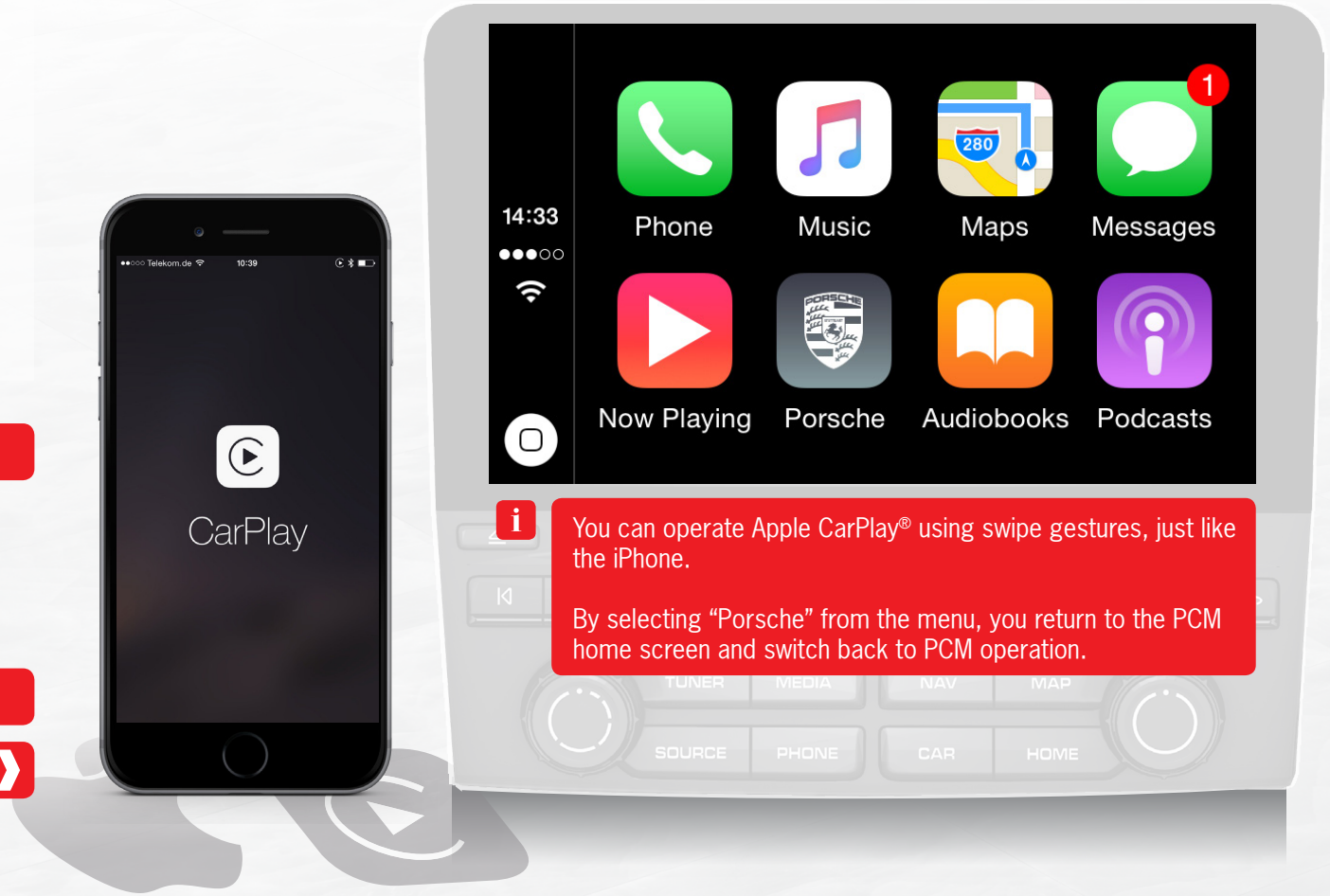
Next example

PCM

I want to establish a connection with Apple CarPlay®.

The Apple CarPlay® logo is displayed on the phone.

The Apple CarPlay® menu is now automatically displayed on the PCM touchscreen. All Apple CarPlay® functions are now available.



You can operate Apple CarPlay® using swipe gestures, just like the iPhone.

By selecting “Porsche” from the menu, you return to the PCM home screen and switch back to PCM operation.

Prerequisites

PCM

PCM including navigation module

Connect

Connect Plus

Note

You can find the current range of Apple CarPlay® features and further information online at http://www.apple.com/ios/carplay/

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Connected to CarPlay

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Next example

PCM

I want to have my messages read out and send an iMessage.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



PCM

I want to have my messages read out and send an iMessage.

On this screen, you can either dictate a new message or view your messages.

Back

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



PCM

I want to have my messages read out and send an iMessage.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus



Back

PCM

I want to have my messages read out and send an iMessage.

The message will be read out.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



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Message read out

To contents overview

Next example

PCM

I want to operate Apple CarPlay® using Siri voice recognition.

You can activate Siri by pressing and holding the "Home" button on the screen.
Siri also helps you automatically when you tap on "Phone" or "Messages."

To access voice control, press and hold the button on the steering wheel to activate the Apple "Siri" voice control.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to operate Apple CarPlay® using Siri voice recognition.

Siri waits for you to finish speaking. Alternatively, you can tap the audio wave to let Siri know that you are finished.



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Siri activated

To contents overview

Next example

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Note

Additional information about Siri is available at http://www.apple.com/ios/siri/

PCM

I want to use my Spotify music streaming app to listen to music.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**





Note

To use Spotify, the app must be installed on the iPhone and you must have a Spotify account.

PCM

I want to use my Spotify music streaming app to listen to music.



Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**

Note

To use Spotify, the app must be installed on the iPhone and you must have a Spotify account.

Back

PCM

I want to use my Spotify music streaming app to listen to music.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



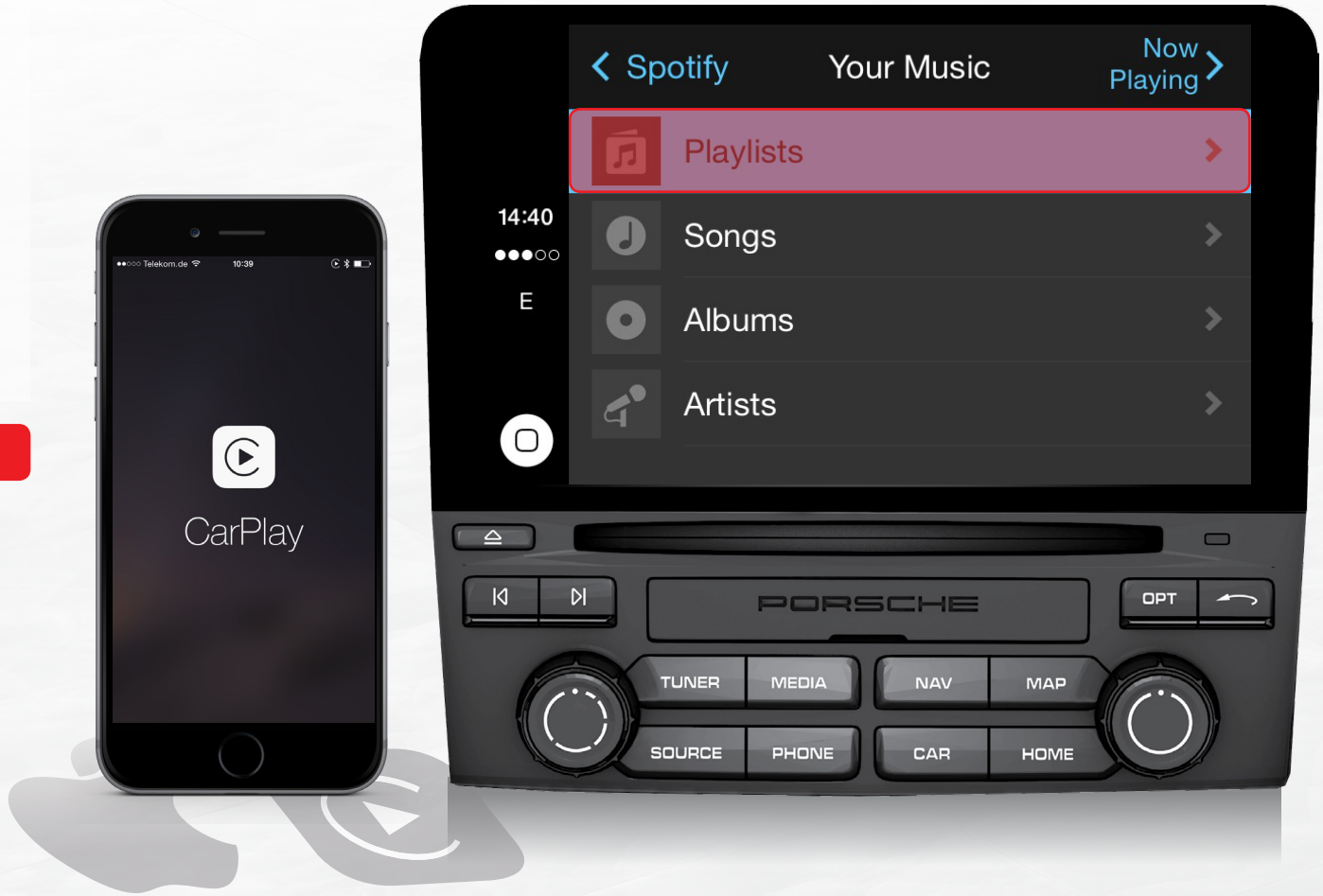
Back

PCM

I want to use my Spotify music streaming app to listen to music.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus



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PCM

I want to use my Spotify music streaming app to listen to music.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus



Back

PCM

I want to use my Spotify music streaming app to listen to music.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



Back

PCM

I want to use my Spotify music streaming app to listen to music.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



Back

✓ Spotify activated

To contents overview

Next example

PCM

I want to exit Apple CarPlay®.

To switch between PCM mode and Apple CarPlay® mode, press the Porsche icon on the PCM.

If you receive an incoming call while connected to Apple CarPlay® in PCM mode, Apple CarPlay® is automatically activated.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



PCM

I want to exit Apple CarPlay®.

Prerequisites

PCM | PCM including navigation module

Connect | **Connect Plus**



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CarPlay® exited

To contents overview

Next chapter

PCM

I want to create a custom start screen.

To create a custom start screen, select MyScreen.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to create a custom start screen.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to create a custom start screen.



Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to create a custom start screen.



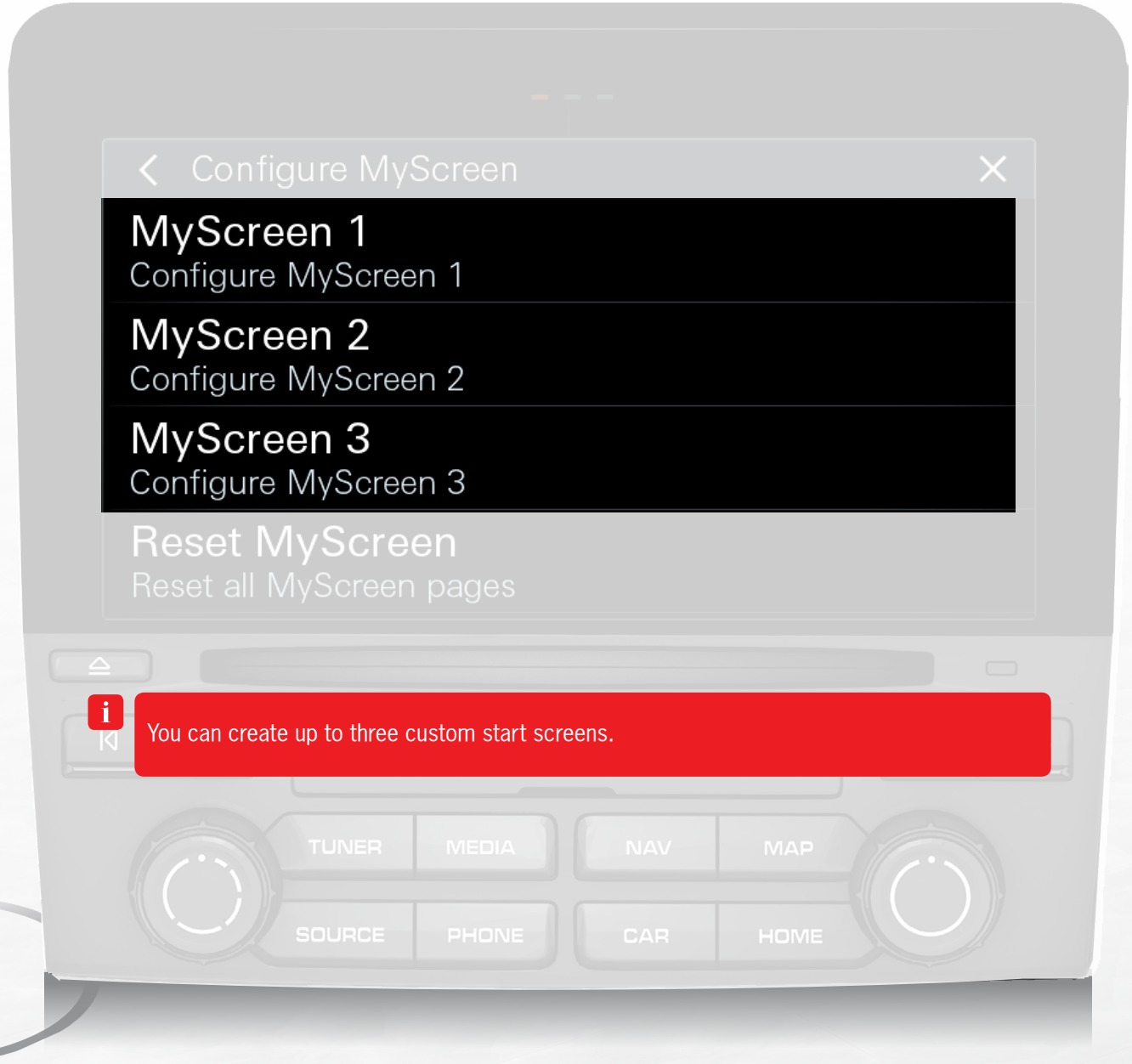
Back

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to create a custom start screen.



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You can create up to three custom start screens.

Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

PCM

I want to create a custom start screen.

You can freely configure a start screen by removing and adding individual elements.

First, remove one of the preconfigured elements by pressing and holding your finger on it and dragging it to the right.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to create a custom start screen.

Select a category from the right-hand side to view additional optional elements.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to create a custom start screen.

Select an element of your choice and use your finger to drag it into the empty space on the left-hand side.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to create a custom start screen.

Once you have created your custom start screen, close the window to confirm.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to create a custom start screen.

To go to the start screen you created earlier, swipe left.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

Back

PCM

I want to create a custom start screen.



Prerequisites

PCM	PCM including navigation module
Connect	Connect Plus

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✓ MyScreen created

To contents overview

End of tutorial ✓

PCM

Connection manager



I want to connect my phone to the PCM via Bluetooth.

I want to set up a hotspot in my vehicle using the PCM.

I want to establish an Internet connection via a smartphone.

I want to register my SIM card in the PCM.

I want to use the Porsche Connect App and its services on the PCM.

I want to establish a connection with Apple CarPlay®.

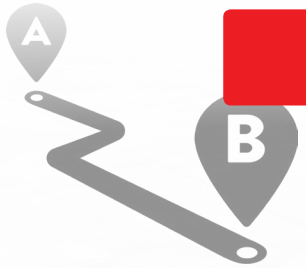
PCM



Audio playback

- I want to play music from an SD card.
- I want to play music from a mobile phone via Bluetooth.
- I want to play music from a USB flash drive.
- I want to transfer music to the jukebox.
- I want to change the general tone settings of the sound system.
- I want to set the volume to adapt to the driving speed.
- I want to find and save a radio station.

PCM



Navigation

I want to enter a navigation destination.

I want to enter a navigation destination and use the online search.

I want to enter a stopover into my current route.

I want to view the traffic info and use the Google functions.

I want to navigate to the nearest gas station.

PCM



I want to open the Porsche Connect App and its services on the PCM.

I want to transfer a navigation destination to the PCM and navigate to a contact.

I want to view the appointments in my calendar.

I want to listen to my favorite radio station.

PCM



Apple CarPlay®

I want to establish a connection with Apple CarPlay®.

I want to have my messages read out and send an iMessage.

I want to operate Apple CarPlay® using Siri voice recognition.

I want to use my Spotify music streaming app to listen to music.

I want to exit Apple CarPlay®.

PCM



MyScreen

I want to create a custom start screen.