Test plan for BMW Service (development status)

MSD87-6Z

ECU type	BMW Fault Code (hex)	BMW Fault Code (dez)	BMW Fault Code Description VS-Text	Fault description	DTC (Diagnostic Trouble Code)	DTC Description	Component	Subcomponent	Monitoring criteria	Fault debouncing	Terminal conditions	Voltage conditions	Temperature conditions	Time conditions	System test	Signal information	Calculated value Y/N	Possible Fault Causes	Repair procedures (plant/service)	MIL illumination/CC message/emergency program	Remarks	Customer perception comments	Breakdown instruction	Service instruction
MSD87-6Z	0x021200	135680	Power economy mode active: Production mode	The diagnostic function monitors whether the energy-saving mode is active. This is only activated following production.					The fault is recognized when the energy-saving mode is active. Potential problem source(s): - The energy-saving mode was not reset following shipping and/or delivery.	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None - Tempe	None	- None	End-of-line job: Energy saving mod	status_energiesparmodus	N	- The energy-saving mode was not reset.	- Reset energy-saving mode.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Engine speed governed to 4500 rpm	Breakdown notice: - none	- The fault self-heals when the energy saving mode is reset. It is not necessary to delete any diagnostic fault codes.
MSD87-6Z	0x100001	1048577	Throttle valve, function: jammed briefly	The diagnostic function monitors the throttle valve's PWM signal and recognises this when the throttle valve sticks.	P1638	Throttle Valve Position Control Throttle Stuck Temporarily (Bank 1)	Throttle Actuator	Throttle Stuck	The fault is recognized when the PWM signal is greater than 99 % for longer than 0.5 sec. Potential problem source(s): - Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective throttle valve	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	Throttle valve can be controlled with	None	N	- Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective throttle valve	- Check power supply to DME - Check wiring harness between DME and throttle valve - Open throttle valve manually, if it does not smoothly and consistently return to its closed position, then replace the throttle valve	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	- None	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x100101	1048833	Throttle valve, function: jammed permanently	The diagnostic function monitors the throttle valve's PWM signal and recognises this when the throttle valve sticks.	P1639	Throttle Valve Position Control Throttle Stuck Permanently (Bank 1)	Throttle Actuator	Throttle Stuck	The fault is recognized when the PWM signal is greater than 99 % for longer than 1 sec. Potential problem source(s): - Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective throttle valve	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	Throttle valve can be controlled with	None	N	- Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective throttle valve	- Check power supply to DME - Check wiring harness between DME and throttle valve - Open throttle valve manually, if it does not smoothly and consistently return to its closed position, then replace the throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- None	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x100201	1049089	Throttle valve, sluggish: too slow	The diagnostic function monitors the throttle valve for excessively high positional deviations relative to the specified position.	P114A	Throttle tight (Bank 1)	Throttle	Tight	The fault is recognized when the throttle valve's position deviates from the specified position by more than 10° for longer than 1 second. Potential problem source(s): - Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective throttle valve	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	Throttle valve can be controlled with	None	N	- Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective throttle valve	- Check power supply to DME - Check wiring harness between DME and throttle valve - Open throttle valve manually, if it does not smoothly and consistently return to its closed position, then replace the throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- None	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x100304	1049348	DME, internal fault, activation of throttle valve: malfunction	The diagnostic function monitors the status of the throttle valve's driver circuit.	P061F	Internal Control Module Throttle Actuator Controller Performance	ECM	Throttle Actuator	The fault is recognized when the DME's self-diagnosis recognizes a fault in the throttle valve driver circuit. Potential problem source(s): - Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective DME	The diagnostic fault code is logged when the fault persists for longer than 75 ms.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	None	N	- Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective DME	- Check power supply to DME - Check wiring harness between DME and throttle valve - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Driver circuit self-diagnosis	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x100304	1049348	DME, internal fault, activation of throttle valve: malfunction	The diagnostic function monitors the status of the throttle valve's driver circuit.	P2100	Throttle Actuator 'A' Control Motor Circuit/Open	Throttle Actuator	Control Motor	The fault is recognized when the DME's self-diagnosis recognizes a fault in the throttle valve driver circuit. Potential problem source(s): - Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective DME	The diagnostic fault code is logged when the fault persists for longer than 75 ms.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	None	N	- Defect in power supply to DME - Defective wiring harness between DME and throttle valve - Defective DME	- Check power supply to DME - Check wiring harness between DME and throttle valve - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Driver circuit self-diagnosis	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x100A04	1051140	Throttle valve, throttle potentiometer 1 and 2: Double fault	The diagnostic function monitors whether multiple throttle valve malfunctions are logged in the course of a single driving cycle.	P110D	Throttle Position Sensor A and B Circuit Range/Performance (Bank 1)	Throttle Position Sensor	1-2	The fault is recognized when at least two faults related to the throttle valve are present. Potential problem source(s): - see Individual fault	see Individual fault	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- see Individual fault	- None	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Sum fault	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x100A04	1051140	Throttle valve, throttle potentiometer 1 and 2: Double fault	The diagnostic function monitors whether multiple throttle valve malfunctions are logged in the course of a single driving cycle.	P1417	Throttle Control Incorrect Air Supply (Bank 1)	Throttle Control	Air Supply	The fault is recognized when at least two faults related to the throttle valve are present. Potential problem source(s): - see Individual fault	see Individual fault	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- see Individual fault	- None	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Sum fault	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x100C08	1051656	Throttle valve, throttle potentiometer 1: Air mass signal not plausible	The diagnostic function monitors the signal from the remaining sensor when an electrical fault is present at the throttle valve.	P0121	Throttle/Pedal Position Sensor/Switch 'A' Circuit Range/Performance	Throttle Position Sensor	1	The fault is recognized when the actual aperture angle does not match the specified angle. Potential problem source(s): - Collateral fault stemming from other throttle valve faults	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Collateral fault stemming from other throttle valve faults	- Repair the other faults related to the throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x100C08	1051656	Throttle valve, throttle potentiometer 1: Air mass signal not plausible	The diagnostic function monitors the signal from the remaining sensor when an electrical fault is present at the throttle valve.	P1141	Value Comparison Throttle Position Sensor 1 / Hot Film Air Mass Meter (Bank 1)	Throttle Position Sensor / Air Mass Meter	1	The fault is recognized when the actual aperture angle does not match the specified angle. Potential problem source(s): - Collateral fault stemming from other throttle valve faults	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Collateral fault stemming from other throttle valve faults	- Repair the other faults related to the throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x100E08	1052168	Throttle valve, throttle potentiometer 2: Air mass signal not plausible	The diagnostic function monitors the signal from the remaining sensor when an electrical fault is present at the throttle valve.	P0221	Throttle/Pedal Position Sensor/Switch 'B' Circuit Range/Performance	Throttle Position Sensor	2	The fault is recognized when the actual aperture angle does not match the specified angle. Potential problem source(s): - Collateral fault stemming from other throttle valve faults	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Collateral fault stemming from other throttle valve faults	- Repair the other faults related to the throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x100E08	1052168	Throttle valve, throttle potentiometer 2: Air mass signal not plausible	The diagnostic function monitors the signal from the remaining sensor when an electrical fault is present at the throttle valve.	P1142	Value Comparison Throttle Position Sensor 2 / Hot Film Air Mass Meter (Bank 1)	Throttle Position Sensor / Air Mass Meter	2	The fault is recognized when the actual aperture angle does not match the specified angle. Potential problem source(s): - Collateral fault stemming from other throttle valve faults	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Collateral fault stemming from other throttle valve faults	- Repair the other faults related to the throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x101001	1052673	Throttle valve, throttle potentiometer 1: Short to B+ or open circuit	The diagnostic function monitors the electrical connection between the DME and throttle valve sensor 1.	P0123	Throttle/Pedal Position Sensor/Switch 'A' Circuit High	Throttle Position Sensor	1	The fault is recognized when the voltage of throttle valve sensor 1 is > 4.70 V. Potential problem source(s): - Defective wiring harness between DME and throttle valve - Defective throttle valve	The diagnostic fault code is logged when the fault persists for longer than 230 ms.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	Voltage on sensor 1, throttle valve	N	- Defective wiring harness between DME and throttle valve - Defective throttle valve	- Check wiring harness between DME and throttle valve - Replace throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Voltage range diagnosis	Possible apparent symptoms: - none	Breakdown notice: - Continued driving possible, proceed to nearest service facility. Drive with moderation.	- none
MSD87-6Z	0x101002	1052674	Throttle valve: Throttle potentiometer 1, short to earth	The diagnostic function monitors the electrical connection between the DME and throttle valve sensor 1.	P0122	Throttle/Pedal Position Sensor/Switch 'A' Circuit Low	Throttle Position Sensor	1	The fault is recognized when the voltage on throttle valve sensor 1 is < 0.16 V. Potential problem source(s): - Defective wiring harness between DME and throttle valve - Defective throttle valve	The diagnostic fault code is logged when the fault persists for longer than 230 ms.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	Voltage on sensor 1, throttle valve	N	- Defective wiring harness between DME and throttle valve - Defective throttle valve	- Check wiring harness between DME and throttle valve - Replace throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Voltage range diagnosis	Possible apparent symptoms: - none	Breakdown notice: - Continued driving possible, proceed to nearest service facility. Drive with moderation.	- none
MSD87-6Z	0x101201	1053185	Throttle valve: Throttle potentiometer 2, short to positive	The diagnostic function monitors the electrical connection between the DME and throttle valve sensor 2.	P0223	Throttle/Pedal Position Sensor/Switch 'B' Circuit High	Throttle Position Sensor	2	The fault is recognized when the voltage of throttle valve sensor 2 is > 4.70 V. Potential problem source(s): - Defective wiring harness between DME and throttle valve - Defective throttle valve	The diagnostic fault code is logged when the fault persists for longer than 230 ms.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	Voltage on sensor 2, throttle valve	N	- Defective wiring harness between DME and throttle valve - Defective throttle valve	- Check wiring harness between DME and throttle valve - Replace throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Voltage range diagnosis	Possible apparent symptoms: - none	Breakdown notice: - Continued driving possible, proceed to nearest service facility. Drive with moderation.	- none
MSD87-6Z	0x101202	1053186	Throttle valve, throttle-valve potentiometer 2, electric: short circuit to ground or open circuit	The diagnostic function monitors the electrical connection between the DME and throttle valve sensor 2.	P0222	Throttle/Pedal Position Sensor/Switch 'B' Circuit Low	Throttle Position Sensor	2	The fault is recognized when the voltage of throttle valve sensor 2 is < 0.16 V. Potential problem source(s): - Defective wiring harness between DME and throttle valve - Defective throttle valve	The diagnostic fault code is logged when the fault persists for longer than 230 ms.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	Voltage on sensor 2, throttle valve	N	- Defective wiring harness between DME and throttle valve - Defective throttle valve	- Check wiring harness between DME and throttle valve - Replace throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Voltage range diagnosis	Possible apparent symptoms: - none	Breakdown notice: - Continued driving possible, proceed to nearest service facility. Drive with moderation.	- none
MSD87-6Z	0x101401	1053697	Throttle valve, adaptation: Marginal conditions not met	The diagnostic function monitors the throttle valve adaptation.	P1632	Throttle Valve Adaptation Conditions Not Met (Bank 1)	Throttle Actuator	Adaptation	The fault is recognized when a required throttle valve adaptation cannot be implemented due to failure to comply with specified general environmental conditions. Potential problem source(s): - Failure to comply with specified conditions when throttle valve adaptation routine is activated (electrical system voltage > 10V, Terminal 15 on, engine off, no other throttle valve diagnostic fault codes logged) - Convenience start after programming or replacing the DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical syst	Intake-air temperature > -10 °C -	- 5 sec.	Adaptation can be requested again	Adaptation step, voltages on throttle	Y	- Failure to comply with specified conditions when throttle valve adaptation routine is activated (electrical system voltage > 10V, Terminal 15 on, engine off, no other throttle valve diagnostic fault codes logged) - Convenience start after programming or replacing the DME	- Determine whether throttle valve adaptation has been prevented by diagnostic fault code entry or convenience start	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	The diagnosis routine is implemented only when it is requested with the tester; the DME or throttle valve is replaced, or a different fault triggers a request for a new adaptation.	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- Throttle valve adaptation is triggered following replacement of throttle valve or DME
MSD87-6Z	0x101402	1053698	Throttle valve: emergency running position not adapted	The diagnostic function monitors the throttle valve adaptation.	P1633	Throttle Valve Adaptation Limp-Home Position Unknown (Bank 1)	Throttle Actuator	Adaptation	The fault is recognized when the voltage values for the two throttle valve sensors are not within the valid range for the emergency-air position while an activation signal is not being applied (Sensor 1: 0.74 V +/- 0.3 V; Sensor 2: 4.28 V +/- 0.3 V) Potential problem source(s): - Throttle valve operation impaired by contamination - Defective throttle valve	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical syst	Intake-air temperature > -10 °C -	- 5 sec.	Adaptation can be requested again	Adaptation step, voltages on throttle	Y	- Throttle valve operation impaired by contamination - Defective throttle valve	- Inspect throttle valve for contamination - Check wiring harness between DME and throttle valve - Replace throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	The diagnosis routine is implemented only when it is requested with the tester; the DME or throttle valve is replaced, or a different fault triggers a request for a new adaptation.	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- Throttle valve adaptation is triggered following replacement of throttle valve or DME
MSD87-6Z	0x101404	1053700	Throttle valve: Spring and emergency running position check not carried out	The diagnostic function monitors the throttle valve adaptation.	P1694	Throttle Valve Actuator Start Test Spring Test and Limp-Home Position Failed (Bank 1)	Throttle Actuator	Spring Test	The fault is recognized when the voltage values for the two throttle valve sensors are not within the valid range for the emergency-air position while an activation signal is not being applied (Sensor 1: 0.74 V +/- 0.3 V; Sensor 2: 4.28 V +/- 0.3 V) Potential problem source(s): - Throttle valve operation impaired by contamination - Defective throttle valve	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical syst	Intake-air temperature > -10 °C -	- 5 sec.	Adaptation can be requested again	Adaptation step, voltages on throttle	Y	- Throttle valve operation impaired by contamination - Defective throttle valve	- Check: The sum of the throttle valve voltages must be 5 V - Measure wires to throttle-valve sensors and throttle-valve actuator motor - Check valve for stiction and contamination - Visual examination of plug-in contacts (at component and DME ends and in wiring harness) - Component replacement	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	The diagnosis routine is implemented only when it is requested with the tester; the DME or throttle valve is replaced, or a different fault triggers a request for a new adaptation.	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- Throttle valve adaptation is triggered following replacement of throttle valve or DME

MSD87-6Z	0x101408	1053704	Throttle valve: Initial adaptation, lower limit position not taught in	The diagnostic function monitors the throttle valve adaptation.	P168C	Throttle Valve Adaptation Lower Stop Not Learned (Bank 1)	Throttle Actuator	Adaptation	The fault is recognized when, at the lower mechanical travel stop position (throttle valve completely closed) the voltage data for both throttle valve sensors are outside the valid range (Sensor 1: 0.5 V +/- 0.3 V; Sensor 2: 4.9 V +/- 0.3 V) Potential problem source(s): - Throttle valve operation impaired by contamination - Defect in wiring harness between throttle-valve actuator motor and DME	This fault is logged in the control module's fault memory immediately	Terminal 15	Voltage condition: ; - Electrical syst	Intake-air temperature > -10 °C ; -	5 sec.		Adaptation can be requested again	Adaptation step, voltages on throttle	Y	- Throttle valve operation impaired by contamination - Defect in wiring harness between throttle-valve actuator motor and DME - Defective throttle valve	- Inspect throttle valve for contamination - Use tester to reposition throttle valve to lower end of travel range (0%) and determine whether it reaches the travel stop - Check wiring harness between DME and throttle valve actuator motor - Replace throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	The diagnosis routine is implemented only when it is requested with the tester, when the DME or throttle valve is replaced, or when a different (throttle valve) fault triggers a request for a new adaptation	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x101901	1054977	Throttle valve, start check: spring test	At each "Terminal 15 on" without a convenience start this diagnostic function monitors the voltages of the throttle valve at the emergency-air position and determines whether the throttle valve can be moved.	P168A	Throttle Valve Actuator Start Test Spring Test Failed (Bank 1)	Throttle Actuator	Spring Test	The fault is recognized when the throttle valve fails to reach the specified position of 17° in the specified period (roughly 0.6 sec.). Potential problem source(s): - Defect in wiring harness between DME and throttle valve - Defective throttle valve	The diagnostic fault code is logged when the fault remains current for longer than 2.2 sec.	Terminal 15	Voltage condition: ; - Electrical syst	Intake-air temperature > -10°C ; -	None		NO	Adaptation step, voltages on throttle	Y	- Defect in wiring harness between DME and throttle valve - Defective throttle valve	- Check wiring harness between DME and throttle valve - Replace throttle valve	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: on	Spring test, actually test to determine whether throttle valve is seizing	Possible apparent symptoms: - none	Breakdown notice: - Continued driving possible, proceed to nearest service facility. Drive with moderation.	None
MSD87-6Z	0x101902	1054978	Throttle valve, start check: check, emergency-air position	At each "Terminal 15 on" without a convenience start this diagnostic function monitors the voltages of the throttle valve at the emergency-air position and determines whether the throttle valve can be moved.	P168A	Throttle Valve Actuator Start Test Limp-Home Position Failed (Bank 1)	Throttle Actuator	Adaptation	The fault is recognized when the voltage values for the two throttle valve sensors are not within the valid range for the emergency-air position while an activation signal is being applied (Sensor 1: 0.74 V +/- 0.3 V; Sensor 2: 4.26 V +/- 0.3 V) Potential problem source(s): - Defect in wiring harness between DME and throttle valve - Defective throttle valve	The diagnostic fault code is logged when the fault remains current for longer than 2.2 sec.	Terminal 15	Voltage condition: ; - Electrical syst	Intake-air temperature > -10°C ; -	None		NO	Adaptation step, voltages on throttle	Y	- Defect in wiring harness between DME and throttle valve - Defective throttle valve	- Check wiring harness between DME and throttle valve - Replace throttle valve	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: on	Check of emergency-air position; when this fault is detected a command is generated requesting a new adaptation of the throttle valve	Possible apparent symptoms: - none	Breakdown notice: - Continued driving possible, proceed to nearest service facility. Drive with moderation.	None
MSD87-6Z	0x101A01	1055233	Throttle valve, continuous adaptation: lower stop not adapted	The diagnostic function monitors whether the lower mechanical travel stop is reached during the throttle valve start test.	P163E	Throttle Valve Adaptation Lower Mechanical Stop not Adapted (Bank 1)	Throttle Actuator	Adaptation	The fault is recognized when the lower travel stop is not reached during the start test. Potential problem source(s): - Throttle valve operation impaired by contamination - Defect in wiring harness between throttle-valve actuator motor and DME - Defective throttle valve	none	Terminal 15	Voltage condition: ; - Electrical syst	Intake-air temperature > -10°C ; -	5 sec.		NO	Adaptation step, voltages on throttle	Y	- Throttle valve operation impaired by contamination - Defect in wiring harness between throttle-valve actuator motor and DME - Defective throttle valve	- Inspect throttle valve for contamination - Use tester to reposition throttle valve to lower end of travel range (0%) and determine whether it reaches the travel stop (voltages S1: - 0.5 V and S2: 4.5 V) - Check wiring harness between DME and throttle valve - Replace throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	This fault triggers a complete new adaptation routine at the throttle valve	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- Diagnosis routine runs at each Terminal 15 status switch without immediate engine start
MSD87-6Z	0x101E01	1056257	Throttle-valve heating, relay: short circuit to positive	none	P167B	Throttle Heating Relay Circuit High	none	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x101E02	1056258	Throttle-valve heating, relay: short circuit to ground	none	P167C	Throttle Heating Relay Circuit Low	none	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x101E04	1056260	Throttle-valve heating, relay: open circuit	none	P167D	Throttle Heating Relay Circuit Open	none	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x101F01	1056513	Throttle-valve angle - intake-manifold pressure, correlation: limit value exceeded	The diagnostic function monitors the throttle valve aperture's plausibility relative to intake manifold pressure.	P112F	Manifold Absolute Pressure to Throttle Angle - Too High (Bank 1)	Manifold Absolute Pressure	Correlation	The fault is recognized when the calculated mass flow rate through the throttle valve is higher than the calculated mass flow rate into the cylinders on Bank 1 by 65 %. Potential problem source(s): - Measured intake-manifold pressure (absolute) too high - Vacuum/air leak within induction tract/crankcase - Incorrect throttle-valve angle - Pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: ; - Electrical syst	Coolant temperature > -10 °C ; -1	Time after ; - start ; - > 0 sec.	None	none	Y	- MAX fault (monitored intake manifold pressure (absolute) too high) Vacuum/air leak within induction tract/crankcase - Incorrect throttle-valve angle - Pressure sensor fault	- Check wiring harness from DME to boost-pressure sensor and intake-manifold pressure sensor - Check intake system and crankcase for leakage - Perform learning routine for throttle-valve travel stops	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x101F02	1056514	Throttle-valve angle - intake-manifold pressure, correlation: limit value undershot	The diagnostic function monitors the throttle valve aperture's plausibility relative to intake manifold pressure.	P112E	Manifold Absolute Pressure to Throttle Angle - Too Low (Bank 1)	Manifold Absolute Pressure	Correlation	The fault is recognized when the calculated mass flow rate through the throttle valve is higher than the calculated mass flow rate into the cylinders on Bank 1 by 55 %. Potential problem source(s): - Measured intake-manifold pressure (absolute) too high - Vacuum/air leak within induction tract/crankcase - Incorrect throttle-valve angle - Pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: ; - Electrical syst	Coolant temperature > -10 °C ; -1	Time after ; - start ; - > 0 sec.	None	none	Y	- MAX fault (monitored intake manifold pressure (absolute) too high) Vacuum/air leak within induction tract/crankcase - Incorrect throttle-valve angle - Pressure sensor fault	- Check wiring harness from DME to boost-pressure sensor and intake-manifold pressure sensor - Check intake system and crankcase for leakage - Perform learning routine for throttle-valve travel stops	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x102001	1056769	Air-mass system: measured value, air mass, too high	The diagnostic function monitors the actual load (mass airflow) relative to throttle-valve aperture.	P008D	Mass or Volume Air Flow 'A' Circuit Range/Performance - Air Flow Too High	Mass Air Flow	Too High	The fault is recognized when the mass airflow rate measured by the HFM exceeds the calculated mass airflow rate through the throttle valve to Bank 1 by 60 %. Potential problem source(s): - Mass airflow sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 6.2 sec.	Terminal 15	Voltage condition: ; - Electrical syst	Coolant temperature > -10 °C ; -1	None	None	none	Y+N	- MAX fault (HFM reading too high) Shunt current on HFM signal wire - HFM sensor fault	- Check wiring harness between DME and HFM - Check intake system and crankcase for leakage - Perform learning routine for throttle-valve travel stops	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x102002	1056770	Air-mass system: measured value, air mass, too low	The diagnostic function monitors the actual load (mass airflow) relative to throttle-valve aperture.	P008C	Mass or Volume Air Flow 'A' Circuit Range/Performance - Air Flow Too Low	Mass Air Flow	Too Low	The fault is recognized when the mass airflow rate measured by the HFM exceeds the calculated mass airflow rate through the throttle valve to Bank 1 by 65 %. Potential problem source(s): - Mass airflow sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 6.2 sec.	Terminal 15	Voltage condition: ; - Electrical syst	Coolant temperature > -10 °C ; -1	None	None	none	Y+N	- MAX fault (HFM reading too high) Shunt current on HFM signal wire - HFM sensor fault	- Check wiring harness between DME and HFM - Check intake system and crankcase for leakage - Perform learning routine for throttle-valve travel stops	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x102801	1058817	Air-mass sensor, measurement range: signal outside valid range	Air-mass sensor, measurement range	P008C	Mass or Volume Air Flow 'A' Circuit Range/Performance - Air Flow Too Low	Mass Air Flow	Too Low	Engine start completed	0.2 sec.	Terminal 15	OBD1 conditions met (voltage betw	none	none	none	none	N	Range violation in frequency supplied by HFM, stimulation with frequency generator	1) Visual inspection of plug-in contacts (at both component and DME ends) 2) Measure sensor wire, power supply and ground (possible intermittent contact) 3) Replace sensor	MIL ON	none	none	none	- Data configured
MSD87-6Z	0x102801	1058817	Air-mass sensor, measurement range: signal outside valid range	Air-mass sensor, measurement range	P110C	Air Mass Flow Sensor Signal Range	Mass Air Flow Sensor	Signal	Engine start completed	0.2 sec.	Terminal 15	OBD1 conditions met (voltage betw	none	none	none	none	N	Range violation in frequency supplied by HFM, stimulation with frequency generator	1) Visual inspection of plug-in contacts (at both component and DME ends) 2) Measure sensor wire, power supply and ground (possible intermittent contact) 3) Replace sensor	MIL ON	none	none	none	- Data configured
MSD87-6Z	0x102A01	1059329	Air mass sensor, signal: Electrical fault	Mass airflow signal	P0100	Mass or Volume Air Flow Sensor 'A' Circuit	Mass Air Flow Sensor	Electrical	Engine start completed	0.2 sec.	Terminal 15	OBD1 conditions met (voltage betw	none	none	none	none	N	Sensor wire fallen off	1) Visual inspection of plug-in contacts (at both component and DME ends) 2) Perform electrical check on sensor wire, power supply and ground 3) Replace sensor	MIL ON	Line break	none	none	- Data configured
MSD87-6Z	0x102A02	1059330	Air-mass sensor, signal: outside valid range	Mass airflow signal	P008D	Mass or Volume Air Flow Sensor 'A' Circuit Range/Performance - Air Flow Too High	Mass Air Flow	Too High	Engine start completed	0.2 sec.	Terminal 15	OBD1 conditions met (voltage betw	none	none	none	none	N	Sensor's self-diagnosis reports fault or range violation with period duration exceeding upper limit	1) Visual inspection of plug-in contacts (at both component and DME ends) 2) Measure sensor wire, power supply and ground (possible intermittent contact) 3) Replace sensor	MIL ON	If the "air mass period duration" displayed in the environmental data is > 4500us this is an fault generated by the sensor's own self-diagnosis utility (sensor reports active problem). The response should be to replace the sensor. If the "air mass period duration" is < 4500us, this is an upward range violation (period duration too high) that can be caused by defects in both the sensor and the wiring harness.	none	none	- Data configured
MSD87-6Z	0x102A02	1059330	Air-mass sensor, signal: outside valid range	Mass airflow signal	P0101	Mass or Volume Air Flow Sensor 'A' Circuit Range/Performance	Mass Air Flow Sensor	Plausibility	Engine start completed	0.2 sec.	Terminal 15	OBD1 conditions met (voltage betw	none	none	none	none	N	Sensor's self-diagnosis reports fault or range violation with period duration exceeding upper limit	1) Visual inspection of plug-in contacts (at both component and DME ends) 2) Measure sensor wire, power supply and ground (possible intermittent contact) 3) Replace sensor	MIL ON	If the "air mass period duration" displayed in the environmental data is > 4500us this is an fault generated by the sensor's own self-diagnosis utility (sensor reports active problem). The response should be to replace the sensor. If the "air mass period duration" is < 4500us, this is an upward range violation (period duration too high) that can be caused by defects in both the sensor and the wiring harness.	none	none	- Data configured
MSD87-6Z	0x103001	1060985	Accelerator pedal module, pedal travel sensor 1: Short circuit to B+	The diagnostic function monitors the electrical connection between the DME and sensor 1 at the accelerator pedal.	P2123	Throttle/Pedal Position Sensor/Switch 'D' Circuit High	Pedal Position Sensor	D Electrical	The fault is recognized when the voltage of pedal-travel sensor 1 is > 4.84 V. Potential problem source(s): - Defect in wiring harness between DME and accelerator pedal module (A_FWG1) - Accelerator pedal module defective	The diagnostic fault code is logged when the fault persists for longer than 240 ms.	Terminal 15	Voltage condition: ; - None; Tempe	None	- None	None	NO	none	N	- Defect in wiring harness between DME and accelerator pedal module (A_FWG1) - Accelerator pedal module defective	- Check wiring harness between DME and accelerator pedal module - Replace accelerator pedal module	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Voltage range diagnosis	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x103002	1060986	Accelerator pedal module, pedal travel sensor 1: Short to earth or open circuit	The diagnostic function monitors the electrical connection between the DME and sensor 1 at the accelerator pedal.	P2122	Throttle/Pedal Position Sensor/Switch 'D' Circuit Low	Pedal Position Sensor	D Electrical	The fault is recognized when the voltage of pedal-travel sensor 1 is < 0.15 V. Potential problem source(s): - Defect in wiring harness between DME and accelerator pedal module (M_FWG1, U_FWG1, A_FWG1) - Defective accelerator pedal module	The diagnostic fault code is logged when the fault persists for longer than 240 ms.	Terminal 15	Voltage condition: ; - None; Tempe	None	- None	None	NO	none	N	- Defect in wiring harness between DME and accelerator pedal module (M_FWG1, U_FWG1, A_FWG1) - Defective accelerator pedal module	- Check wiring harness between DME and accelerator pedal module - Replace accelerator pedal module	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Voltage range diagnosis	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x103101	1061121	Accelerator pedal module, pedal travel sensor 2: Short circuit to B+	The diagnostic function monitors the electrical connection between the DME and sensor 2 at the accelerator pedal.	P2128	Throttle/Pedal Position Sensor/Switch 'E' Circuit High	Pedal Position Sensor	E Electrical	The fault is recognized when the voltage of pedal-travel sensor 2 is > 2.75 V. Potential problem source(s): - Defect in wiring harness between DME and accelerator pedal module (A_FWG2) - Accelerator pedal module defective	The diagnostic fault code is logged when the fault persists for longer than 240 ms.	Terminal 15	Voltage condition: ; - None; Tempe	None	- None	None	NO	none	N	- Defect in wiring harness between DME and accelerator pedal module (A_FWG2) - Accelerator pedal module defective	- Check wiring harness between DME and accelerator pedal module - Replace accelerator pedal module	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Voltage range diagnosis	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x103102	1061122	Accelerator pedal module, pedal travel sensor 2: Short to earth or open circuit	The diagnostic function monitors the electrical connection between the DME and sensor 2 at the accelerator pedal.	P2127	Throttle/Pedal Position Sensor/Switch 'E' Circuit Low	Pedal Position Sensor	E Electrical	The fault is recognized when the voltage of pedal-travel sensor 2 is < 0.15 V. Potential problem source(s): - Defect in wiring harness between DME and accelerator pedal module (M_FWG2, U_FWG2, A_FWG2) - Defective accelerator pedal module	The diagnostic fault code is logged when the fault persists for longer than 240 ms.	Terminal 15	Voltage condition: ; - None; Tempe	None	- None	None	NO	none	N	- Defect in wiring harness between DME and accelerator pedal module (M_FWG2, U_FWG2, A_FWG2) - Defective accelerator pedal module	- Check wiring harness between DME and accelerator pedal module - Replace accelerator pedal module	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Voltage range diagnosis	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x103208	1061384	Accelerator pedal module, pedal travel sensor, signal: Double fault	The diagnostic function monitors the sensors in the accelerator pedal module.	P1224	Pedal Position Sensor 1 and 2 Circuit Range/Performance	Pedal Position Sensor	D and E Electrical	The fault is recognized when both sensors in the accelerator pedal module are defective. Potential problem source(s): - Defect with power-supply voltage to accelerator pedal module - Accelerator pedal module defective - Defective DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: ; - None; Tempe	None	- None	None	NO	Accelerator-pedal value, ; voltages	N	- Defect with power-supply voltage to accelerator pedal module - Accelerator pedal module defective - Defective DME	- Determine whether other diagnostic fault codes are logged - Check wiring harness between DME and accelerator pedal module - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - No response to accelerator; just slight increase in idle speed allowing the vehicle to be moved slowly	Breakdown notice: - none	- none
MSD87-6Z	0x103308	1061640	Accelerator pedal module, pedal-travel sensor, plausibility: synchronism fault between signal 1 and signal 2	The diagnostic function monitors the plausibility of the voltages of the sensors in the accelerator pedal module.	P2138	Throttle/Pedal Position Sensor/Switch 'D' / 'E' Voltage Correlation	Pedal Position Sensor	D/E Correlation	The fault is recognized when the difference between the voltage from sensor 1 and twice the voltage from sensor 2 is > threshold value (characteristic curve). Potential problem source(s): - Defect in wiring harness between DME and accelerator pedal module; excessive contact resistance - Accelerator pedal module defective	The diagnostic fault code is logged when the fault persists for longer than 340 ms.	Terminal 15	Voltage condition: ; - None; Tempe	None	- None	None	NO	analog	N	- Defect in wiring harness between DME and accelerator pedal module; excessive contact resistance - Accelerator pedal module defective	- Check wiring harness between DME and accelerator pedal module - Replace accelerator pedal module	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Implausible spread between the two PWG voltages	Possible apparent symptoms: - Poor throttle response - Loss of power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x104101	1065217	Differential-pressure sensor, intake manifold, plausibility: actual value too high	Differential pressure sensor, intake manifold: Plausibility	P1105	Differential Pressure Sensor Intake Manifold Pressure Too High (Bank 1)	Differential Pressure Sensor	Pressure	Differential pressure sensor monitor 6 % < Relative charge factor <120 % -20° < Induction air temperature sensor < 85 °C 560 rpm < Engine speed < 7200 rpm Time after start > 30 sec. regardless of EVAP active/inactive	0.2 sec.	none	Voltage in onboard electrical system	Coolant temperature > -10 °C	4.4 sec.	none	none	Y	MAX fault (intake manifold pressure (absolute) too high) - Induction system/crankcase vacuum leak - Incorrect throttle plate angle - Vacuum sensor malfunction	1) Visual inspection of vacuum sensor plug contacts 2) Check wiring between vacuum sensor and DME 3) Check induction system/crankcase for leaks (crankcase vacuum control can allow excess air from the crankcase to flow into the intake manifold, for instance, if vacuum line from brake booster to vacuum pump is leaking)	US: MIL ON	US only	none	none	- Data configured

MSD87-6Z	0x104101	1065217	Differential-pressure sensor, intake manifold; plausibility; actual value too high	Differential pressure sensor, intake manifold: Plausibility	P1148	Differential Pressure to Throttle Angle - Too High	Differential Pressure	Correlation	Differential pressure sensor monitor 6 % < Relative charge factor <120 % -20° < Induction air temperature sensor < 85 °C 560 rpm < Engine speed < 7200 rpm Time after start > 30 sec. regardless of EVAP active/inactive	0.2 sec.	none	Voltage in onboard electrical system	Coolant temperature > -10 °C	4.4 sec.	none	none	Y	MAX fault (intake manifold pressure (absolute) too high): - Induction system/crankcase vacuum leak - Incorrect throttle plate angle - Vacuum sensor malfunction	1) Visual inspection of vacuum sensor plug contacts 2) Check wiring between vacuum sensor and DME 3) Check induction system/crankcase for leaks (crankcase vacuum control can allow excess air from the crankcase to flow into the intake manifold, for instance, if vacuum line from brake booster to vacuum pump is leaking)	US: MIL ON	US only	none	none	- Data configured
MSD87-6Z	0x104102	1065218	Differential-pressure sensor, intake manifold; plausibility; actual value too low	Differential pressure sensor, intake manifold: Plausibility	P1104	Differential Pressure Sensor Intake Manifold Pressure Too Low (Bank 1)	Differential Pressure Sensor	Pressure	Differential pressure sensor monitor 6 % < Relative charge factor <120 % -20° < Induction air temperature sensor < 85 °C 560 rpm < Engine speed < 7200 rpm Time after start > 30 sec. regardless of EVAP active/inactive	0.2 sec.	none	Voltage in onboard electrical system	Coolant temperature > -10 °C	4.4 sec.	none	none	Y	MIN Fault (monitored intake manifold pressure (absolute) too low) - Incorrect throttle plate angle - Vacuum sensor fault	1) Visual inspection of vacuum sensor plug contacts 2) Check wiring between vacuum sensor and DME 3) Check induction system/crankcase for leaks (crankcase vacuum control can allow excess air from the crankcase to flow into the intake manifold, for instance, if vacuum line from brake booster to vacuum pump is leaking)	US: MIL ON	US only	none	none	- Data configured
MSD87-6Z	0x104102	1065218	Differential-pressure sensor, intake manifold; plausibility; actual value too low	Differential pressure sensor, intake manifold: Plausibility	P1147	Differential Pressure to Throttle Angle - Too Low	Differential Pressure	Correlation	Differential pressure sensor monitor 6 % < Relative charge factor <120 % -20° < Induction air temperature sensor < 85 °C 560 rpm < Engine speed < 7200 rpm Time after start > 30 sec. regardless of EVAP active/inactive	0.2 sec.	none	Voltage in onboard electrical system	Coolant temperature > -10 °C	4.4 sec.	none	none	Y	MIN Fault (monitored intake manifold pressure (absolute) too low) - Incorrect throttle plate angle - Vacuum sensor fault	1) Visual inspection of vacuum sensor plug contacts 2) Check wiring between vacuum sensor and DME 3) Check induction system/crankcase for leaks (crankcase vacuum control can allow excess air from the crankcase to flow into the intake manifold, for instance, if vacuum line from brake booster to vacuum pump is leaking)	US: MIL ON	US only	none	none	- Data configured
MSD87-6Z	0x104208	1065480	Differential-pressure sensor, intake manifold; adaptation; offset maximum exceeded	not used	P1124	Differential Pressure Sensor Intake Manifold Offset (Bank 1)	Differential Pressure Sensor	Offset	not used	not used	none	not used	not used	not used	not used	not used	N	not used	not used	not used	not used	not used	not used	- Data configured
MSD87-6Z	0x104208	1065480	Differential-pressure sensor, intake manifold; adaptation; offset maximum exceeded	not used	P1258A	Differential Pressure Sensor Intake Manifold Afterrunning Diagnosis Pressure Implausible	Differential Pressure Sensor	Afterrunning	not used	not used	none	not used	not used	not used	not used	not used	N	not used	not used	not used	not used	not used	not used	- Data configured
MSD87-6Z	0x104308	1065736	Absolute pressure sensor, intake pipe, overrun: Pressure implausible	During the control module's shutdown phase the diagnostic function monitors the barometric pressure sensor, intake-manifold sensor and the pressure sensor on the air-intake side of the throttle valve to determine whether they are all measuring the same pressure.	P1298	Manifold Absolute Pressure Sensor 'A' Afterrunning Diagnosis Pressure Implausible	Manifold Absolute Pressure Sensor	Afterrunning	The fault is recognized when the indicated sensor value on Bank 1 deviates by (-330 mbar or 10 %) during the post-operational shutdown phase. Potential problem source(s): - Defect in wiring harness - Fault in intake-manifold pressure sensor	This fault is logged in the control module's fault memory if it remains present for longer than 2.2 sec.	none	Voltage condition: ... - Electrical syst	10 °C < control module temperatu	In post-operational shutdown phas	None	none	N	- Sensor wire with shunt current - Error in sensor measurement	- Check signal transmission path - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x104401	1065585	Absolute pressure sensor, intake pipe: Short to B+ or open circuit	The diagnostic function monitors the upper voltage limit of the differential pressure sensor.	P0108	Manifold Absolute Pressure/Barometric Pressure Sensor Circuit High	Manifold Absolute Pressure Sensor	Electrical	The fault is recognized when the sensor voltage >4.8 V. Potential problem source(s): - Fault in wiring harness between sensor and DME - Sensor defective - Defective DME	0.5 sec.	Terminal 15	Voltage condition: : None : Tempera	none	- None	NO	'Read test data block': ID4A88	N	- Fault in wiring harness between sensor and DME - Sensor defective - Defective DME	- Visual examination of plug-in contacts (at component and DME ends) Measure sensor wire, power supply and ground - Replace sensor - Replace DME	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	none	Possible apparent symptoms: Engine runs roughly	Breakdown notice: None	None
MSD87-6Z	0x104401	1065585	Absolute pressure sensor, intake pipe: Short to B+ or open circuit	The diagnostic function monitors the upper voltage limit of the differential pressure sensor.	P1119A	Manifold Absolute Pressure Sensor Circuit High (Bank 1)	Manifold Absolute Pressure Sensor	Electrical	The fault is recognized when the sensor voltage >4.8 V. Potential problem source(s): - Fault in wiring harness between sensor and DME - Sensor defective - Defective DME	0.5 sec.	Terminal 15	Voltage condition: : None : Tempera	none	- None	NO	'Read test data block': ID4A88	N	- Fault in wiring harness between sensor and DME - Sensor defective - Defective DME	- Visual examination of plug-in contacts (at component and DME ends) Measure sensor wire, power supply and ground - Replace sensor - Replace DME	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	none	Possible apparent symptoms: Engine runs roughly	Breakdown notice: None	None
MSD87-6Z	0x104402	1065586	Absolute pressure sensor, intake pipe: Short circuit to earth	The diagnostic function monitors the lower voltage limit of the differential pressure sensor.	P0107	Manifold Absolute Pressure/Barometric Pressure Sensor Circuit Low	Manifold Absolute Pressure Sensor	Electrical	The fault is recognized when the sensor voltage is < 0.16 V. Potential problem source(s): - Fault in wiring harness between sensor and DME - Sensor defective - Defective DME	0.5 sec.	Terminal 15	Voltage condition: : None : Tempera	none	- None	NO	'Read test data block': ID4A88	N	- Fault in wiring harness between sensor and DME - Sensor defective - Defective DME	- Visual examination of plug-in contacts (at component and DME ends) Measure sensor wire, power supply and ground - Replace sensor - Replace DME	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	none	Possible apparent symptoms: Engine runs roughly	Breakdown notice: None	None
MSD87-6Z	0x104402	1065586	Absolute pressure sensor, intake pipe: Short circuit to earth	The diagnostic function monitors the lower voltage limit of the differential pressure sensor.	P1118B	Manifold Absolute Pressure Sensor Circuit Low (Bank 1)	Manifold Absolute Pressure Sensor	Electrical	The fault is recognized when the sensor voltage is < 0.16 V. Potential problem source(s): - Fault in wiring harness between sensor and DME - Sensor defective - Defective DME	0.5 sec.	Terminal 15	Voltage condition: : None : Tempera	none	- None	NO	'Read test data block': ID4A88	N	- Fault in wiring harness between sensor and DME - Sensor defective - Defective DME	- Visual examination of plug-in contacts (at component and DME ends) Measure sensor wire, power supply and ground - Replace sensor - Replace DME	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	none	Possible apparent symptoms: Engine runs roughly	Breakdown notice: None	None
MSD87-6Z	0x104701	1066753	Differential-pressure sensor, intake pipe: Short to B+ or open circuit	none	P1107	Differential Pressure Sensor Intake Manifold Circuit High (Bank 1)	Differential Pressure Sensor	Electrical	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x104702	1066754	Differential-pressure sensor, intake manifold; electric: short circuit to ground	none	P1108	Differential Pressure Sensor Intake Manifold Circuit Low (Bank 1)	Differential Pressure Sensor	Electrical	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x105001	1069057	Ambient pressure sensor: Short to B+ or open circuit	The diagnostic function monitors the upper voltage limit of the barometric pressure sensor.	P2229	Barometric Pressure Sensor 'A' Circuit High	Ambient Pressure Sensor	Electrical	The fault is recognized when the voltage of the barometric pressure sensor > 4.5 V. Potential problem source(s): - DME defective.	This fault is logged in the control module's fault memory if it remains present for longer than 0.6 sec.	none	Voltage condition: : - Electrical syst	None	- None	NO	Test data block ID 4A08	N	- DME defective.	- If the fault persists continuously or multiple diagnostic fault codes for it are logged then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x105002	1069058	Ambient pressure sensor: Short to earth	The diagnostic function monitors the lower voltage limit of the barometric pressure sensor.	P2228	Barometric Pressure Sensor 'A' Circuit Low	Ambient Pressure Sensor	Electrical	The fault is recognized when the voltage of the barometric pressure sensor is < 1.7 V. Potential problem source(s): - DME defective.	This fault is logged in the control module's fault memory if it remains present for longer than 0.6 sec.	none	Voltage condition: : - Electrical syst	None	- None	NO	Test data block ID 4A08	N	- DME defective.	- If the fault persists continuously or multiple diagnostic fault codes for it are logged then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x105101	1069313	Ambient-pressure sensor, plausibility: maximum pressure implausible	The diagnostic function watches for excessively fast rises in barometric pressure.	P11CB	Barometric Pressure Too High	Ambient Pressure	General	The fault is recognized when the barometric pressure spikes upward by 50 hPa. Potential problem source(s): - DME defective.	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	NO	None	N	- DME defective.	- If the fault persists continuously or multiple diagnostic fault codes for it are logged then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x105101	1069313	Ambient-pressure sensor, plausibility: maximum pressure implausible	The diagnostic function watches for excessively fast rises in barometric pressure.	P321E	Ambient Pressure Sensor Maximum Pressure Implausible	Ambient Pressure Sensor	Pressure	The fault is recognized when the barometric pressure spikes upward by 50 hPa. Potential problem source(s): - DME defective.	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	NO	None	N	- DME defective.	- If the fault persists continuously or multiple diagnostic fault codes for it are logged then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x105102	1069314	Ambient-pressure sensor, plausibility: minimum pressure implausible	The diagnostic function watches for excessively rapid drops in barometric pressure.	P0129	Barometric Pressure Too Low	Ambient Pressure	General	The fault is recognized when the barometric pressure drops by 50 hPa. Potential problem source(s): - DME defective.	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	NO	None	N	- DME defective.	- If the fault persists continuously or multiple diagnostic fault codes for it are logged then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x105102	1069314	Ambient-pressure sensor, plausibility: minimum pressure implausible	The diagnostic function watches for excessively rapid drops in barometric pressure.	P321F	Ambient Pressure Sensor Minimum Pressure Implausible	Ambient Pressure Sensor	Pressure	The fault is recognized when the barometric pressure drops by 50 hPa. Potential problem source(s): - DME defective.	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	NO	None	N	- DME defective.	- If the fault persists continuously or multiple diagnostic fault codes for it are logged then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x105208	1069576	Ambient-pressure sensor, run-on: pressure implausible	In control module's shutdown phase, at NMOT=0 all three pressure sensors undergo mutual plausibility checks. intake-manifold pressure, boost pressure and ambient barometric pressure in the control module. A two out of three selection process detects sensors outside the tolerance range	P129C	Ambient Pressure Sensor Afterrunning Diagnosis Pressure Implausible	Ambient Pressure Sensor	Afterrunning	If the barometric pressure deviates from the other two sensors by more than 70 mbar then it is classified as implausible Potential problem source(s): - Sensor in ECU is defective - Ventilation orifice in ECU is obstructed - Problem with EBOX ventilation	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	none	Voltage condition: : ->10 volts: Tab	Induction air: : - Control-module tem	In post-operational shutdown phas	NO	none	N	- Sensor in ECU is defective - Ventilation orifice in ECU is obstructed - Problem with EBOX ventilation	Sensor on chip, measure with Terminal 15 on (Inpa)	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Inactive	Possible apparent symptoms: - Low	Breakdown notice: - none	- Data configured
MSD87-6Z	0x106001	1073153	Variable intake system, servomotor: Activation, short to positive	none	P0662	Intake Manifold Tuning Valve Control Circuit High (Bank 1)			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106002	1073154	Variable intake system, servomotor: Activation, short to earth	none	P0661	Intake Manifold Tuning Valve Control Circuit Low (Bank 1)			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106004	1073156	Variable intake system, servomotor: Activation, open circuit	none	P0660	Intake Manifold Tuning Valve Control Circuit/Open (Bank 1)			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106101	1073409	Variable intake system, servomotor 2: Activation, short to positive	none	P0665	Intake Manifold Tuning Valve Control Circuit High (Bank 2)			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106102	1073410	Variable intake system, servomotor 2: Activation, short to earth	none	P0664	Intake Manifold Tuning Valve Control Circuit Low (Bank 2)			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106104	1073412	Variable intake system, servomotor 2: Activation, open circuit	none	P0663	Intake Manifold Tuning Valve Control Circuit/Open (Bank 2)			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106201	1073665	Variable intake manifold, plausibility: DISA 2, switch faulty	none	P2075	Intake Manifold Tuning (IMT) Valve Position Sensor/Switch Circuit (Bank 1)			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106202	1073666	Variable intake manifold, plausibility: DISA 1, switch faulty	none	P207A	Intake Manifold Tuning (IMT) Valve Position Sensor/Switch Circuit (Bank 2)			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106308	1073928	Variable intake manifold, self-diagnosis: mechanical fault or servomotor faulty	none	P14C2	DISA (Differentiated Intake Manifold) Actuator 1 Mechanical or Hardware Defect			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x106408	1074184	Variable intake manifold 2, self-diagnosis: mechanical fault or servomotor faulty	none	P14C3	DISA (Differentiated Intake Manifold) Actuator 2 Mechanical or Hardware Defect			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x107101	1077505	No throttle valve adaptation values: new adaptation required	The diagnostic function determines whether the throttle valve reaches the emergency-air position during the start test.	P1675	Throttle Valve Actuator Start Test Re-Adaptation Required	Throttle Actuator	Adaptation	The fault is recognized when the throttle valve fails to reach the emergency-air position either when diagnosis starts or from the 17 degree position following deactivation of voltage (activation test). Potential problem source(s): - Throttle valve operation impaired by contamination - Defect in wiring harness between throttle-valve actuator motor and DME - Defective throttle valve	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: : - Electrical syst	Intake-air temperature > -10°C: -	- None	NO	Adaptation step. voltages on throttle	Y	- Throttle valve operation impaired by contamination - Defect in wiring harness between throttle-valve actuator motor and DME - Defective throttle valve	- Watch for collateral faults in initial adaptation, when not under current the two sensors must provide the following voltage values: S1: 0.86 V (+/- 0.3 V), S2: 4.14 V (+/- 0.3 V) - Check the valve for contamination and sticking - Check wires to throttle-valve sensors, visual examination of plug contacts (at components, wiring harness and DME). - Trigger initial adaptation with tester and determine whether it detects faults, if so, repair these using test plan - This fault does not usually make a component replacement necessary	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	Not possible to initialize for emergency air position, leading to demand for basic adaptation	Possible apparent symptoms: - The fault triggers an initial adaptation, the vehicle can be started as usual once the initial adaptation has been completed - If the adaptation diagnosis routines detect a fault then the vehicle is in its limp-home mode	Breakdown notice: - none	- To repair the fault determine whether the requested initial adaptation has recognized faults and repair these using the test plan.

MSD87-6Z	0x107201	1077761	Throttle valve, start check: spring test	The diagnostic function monitors throttle valve repositioning during the start test.	P168A	Throttle Valve Actuator Start Test Spring Test Failed (Bank 1)	Throttle Actuator	Spring Test	The fault is recognized when the throttle valve fails to reach the specified position of 17° in the specified period. Potential problem source(s): - Throttle valve operation impaired by contamination - Defective wiring harness between DME and throttle valve - Defective throttle valve	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical supp	Intake-air temperature > -10°C; -	- 5 sec.	NO	Adaptation step, voltages on throttle	Y	- Throttle valve operation impaired by contamination - Defective wiring harness between DME and throttle valve - Defective throttle valve	- Check power supply to DME - Check wiring harness between DME and throttle valve - Open throttle valve manually, if it does not smoothly and consistently return to its closed position, then replace the throttle valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- None	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- To repair the fault determine whether the requested initial adaptation has recognized faults and repair these using the test plan.
MSD87-6Z	0x107202	1077762	Throttle valve, start check: check, emergency-air position	The diagnostic function determines whether the throttle valve reaches the emergency-air position during the start test.	P168A	Throttle Valve Actuator Start Test Limp-Home Position Failed (Bank 1)	Throttle Actuator	Adaptation	The fault is recognized when the throttle valve fails to reach the emergency-air position in the specified time when current supply is deactivated while it is in the 17° position during the activation test. Potential problem source(s): - Throttle valve operation impaired by contamination - Defective wiring harness between DME and throttle valve - Defective throttle valve	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical supp	Intake-air temperature > -10°C; -	- 5 sec.	NO	Adaptation step, voltages on throttle	Y	- Throttle valve operation impaired by contamination - Defective wiring harness between DME and throttle valve - Defective throttle valve	- When not under current the two sensors must provide the following voltage values: S1: 0.86 V (+/- 0.3 V), S2: 4.14 V (+/- 0.3 V). - Check wires to throttle-valve sensors - Check valve for stiction and contamination - Visual examination of plug contacts (at components, wiring harness and DME). - Component malfunction unlikely, only replace throttle valve in response to emergency	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Check return of valve to the emergency-air position	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- To repair the fault determine whether the requested initial adaptation has recognized faults and repair these using the test plan.
MSD87-6Z	0x107801	1079297	Anti-tampering protection, airfuel flow rate: maximum air mass exceeded	The diagnostic function monitors the air mass.					The fault is recognized when a limit value that varies with rpm is exceeded. Potential problem source(s): - Defect in wiring harness - Boost-pressure sensor defective - Vehicle operated with fuel containing a large proportion of ethanol	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - None; Tempe	- roughly 0°.	- 3 sec.	NO	none	Y	- Defect in wiring harness - Boost-pressure sensor defective - Vehicle operated with fuel containing a large proportion of ethanol	- Kale customer if fuel with ethanol has been used - Check wiring harness - Replace boost-pressure sensor	- ECE emissions warning lamp: off US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Less efficient turbocharger response	Breakdown notice: - none	- None
MSD87-6Z	0x108001	1081345	Intake-air temperature sensor, electric: short circuit to positive or open circuit	The diagnostic function monitors the upper voltage limit of the charge-air-temperature sensor.	P0113	Intake Air Temperature Sensor 1 Circuit High (Bank 1)	Intake Air Temperature Sensor	1 Electrical	The fault is recognized when the voltage of the charge-air temperature sensor > 3.17 V. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	2.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- Time after end of start phase > 60	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Visual inspection of plug - Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x108002	1081346	Intake-air temperature sensor, electric: short circuit to ground	The diagnostic function monitors the lower voltage limit of the charge-air-temperature sensor.	P0112	Intake Air Temperature Sensor 1 Circuit Low (Bank 1)	Intake Air Temperature Sensor	1 Electrical	The fault is recognized when the voltage of the charge-air temperature sensor is < 0.10 V. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	2.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- None	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Visual inspection of plug - Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x108401	1082369	Intake-air temperature sensor before throttle valve, electric: short circuit to positive or open circuit	The diagnostic function monitors the upper voltage limit of the charge-air-temperature sensor.	P0113	Intake Air Temperature Sensor 1 Circuit High (Bank 1)	Intake Air Temperature Sensor	1 Electrical	The fault is recognized when the voltage of the charge-air temperature sensor > 3.17 V. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 2.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- Time after end of start phase > 60	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x108402	1082370	Intake-air temperature sensor before throttle valve, electric: short circuit to ground	The diagnostic function monitors the lower voltage limit of the charge-air-temperature sensor.	P0112	Intake Air Temperature Sensor 1 Circuit Low (Bank 1)	Intake Air Temperature Sensor	1 Electrical	The fault is recognized when the voltage of the charge-air temperature sensor is < 0.10 V. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 2.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- None	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x108601	1082881	Intake-air temperature sensor before throttle valve, plausibility: maximum temperature implausible	The diagnostic function monitors whether the charge-air temperature is implausibly high.	P113E	Intake Air Temperature Sensor 1 Maximum Temperature Implausible (Bank 1)	Intake Air Temperature Sensor	1 Electrical	The fault is recognized when the charge-air temperature is more than 15°C above the maximum of coolant and ambient temperature. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - None; Tempe	- When the engine is started the are	- Drive above 40km/h longer than 1	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: on - CC message: None	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x108602	1082882	Intake-air temperature sensor before throttle valve, plausibility: minimum temperature implausible	The diagnostic function monitors whether the charge-air temperature is implausibly low.	P111F	Intake Air Temperature Sensor 1 Minimum Temperature Implausible (Bank 1)	Intake Air Temperature Sensor	1 Electrical	The fault is recognized when the charge-air temperature is more than 15°C below the minimum of coolant and ambient temperature. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - None; Tempe	- When the engine is started the are	- None	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: on - CC message: None	ATTENTION: This fault can also be triggered by an implausibly high figure for outside temperature. Therefore: Always check outside temperature to ensure that it is plausible.	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x108608	1082888	Intake-air temperature sensor before throttle valve, plausibility: signal hangs	The diagnostic function monitors the charge-air temperature to determine whether it changes under conditions in which it should change.	P113C	Intake Air Temperature Sensor 1 Signal Stuck (Bank 1)	Intake Air Temperature Sensor	1 Electrical	The fault is recognized when the charge-air temperature has not displayed a variation of at least 1.5°C. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - None; Tempe	- When the engine is started the are	- Drive vehicle at >40km/h for more	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: on - CC message: None	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x108604	1083396	Intake-air temperature sensor before throttle valve, gradient: offset too high	The diagnostic function monitors whether the charge-air temperature is unacceptably high during cold starts.	P118B	Intake Air Temperature Sensor 1 Offset (Bank 1)			The fault is recognized when the charge-air temperature is more than 25°C above the coolant temperature, while the coolant temperature is simultaneously in the vicinity of the ambient temperature. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 1.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- None	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x108608	1083400	Intake-air temperature sensor before throttle valve, gradient: gradient too high or jump	The diagnostic function monitors the charge-air temperature for unacceptably high positive rises.	P115E	Intake Air Temperature Sensor 1 Gradient Implausible (Bank 1)	Intake Air Temperature Sensor	1 Plausibility	The fault is recognized when the boost-air temperature rises by more than 7.5 °C within 0.5 sec. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 1.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- None	NO	None	Y	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x108A01	1083905	Charge-air temperature sensor, electric: short circuit to positive or open circuit	The diagnostic function monitors the upper voltage limit of the charge-air-temperature sensor.	P007D	Charge Air Cooler Temperature Sensor Circuit High (Bank 1)	Charge Air Temperature Sensor Charge Air Cooler	Electrical	The fault is recognized when the voltage of the charge-air temperature sensor > 3.17 V. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	2.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- Time after end of start phase > 60	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Visual inspection of plug - Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x108A02	1083906	Charge-air temperature sensor, electric: short circuit to ground	The diagnostic function monitors the lower voltage limit of the charge-air-temperature sensor.	P007C	Charge Air Cooler Temperature Sensor Circuit Low (Bank 1)	Charge Air Temperature Sensor Charge Air Cooler	Electrical	The fault is recognized when the voltage of the charge-air temperature sensor is < 0.10 V. Potential problem source(s): - Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	2.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- None	NO	None	N	- Defect in wiring harness - Charge-air temperature sensor defective - Defective DME	- Visual inspection of plug - Check wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x108C01	1084417	Charge-air temperature sensor, plausibility: maximum temperature implausible	The diagnostic function monitors the charge-air temperature for unacceptably high positive gradients and jumps.	P1080	Charge Air Cooler Temperature Too High (Bank 1)	Charge Air Temperature	General	The fault is recognized when the boost-air temperature rises by more than 7.5 °C within 0.5 sec. Potential problem source(s): - Loose contact - Sensor manipulation - Defective DME	1.5 sec.	Terminal 15	Voltage condition: - - None; Tempe	- None	- None	NO	None	Y	- Loose contact - Sensor manipulation - Defective DME	- Visual examination of plug/sensor for tampering - Check sensor data/wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x108C02	1084418	Charge-air temperature sensor, plausibility: minimum temperature implausible	The diagnostic function monitors whether the charge-air temperature is implausibly low.	P1081	Charge Air Cooler Temperature Too Low (Bank 1)	Charge Air Temperature	General	The fault is recognized when the charge-air temperature is more than 15°C below the minimum of coolant and ambient temperature. Potential problem source(s): - Sticking sensor - Shunt current - Sensor manipulation - Defective DME	10 sec.	Terminal 15	Voltage condition: - - None; Tempe	- When the engine is started the are	- None	NO	None	N	- Sticking sensor - Shunt current - Sensor manipulation - Defective DME	- Visual examination of plug/sensor for tampering - Check sensor data/wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: on - CC message: None	ATTENTION: This fault can also be triggered by an implausibly high figure for outside temperature. Therefore: Always check outside temperature to ensure that it is plausible.	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x108C08	1084424	Charge-air temperature sensor, plausibility: signal hangs	The diagnostic function monitors the charge-air temperature to determine whether it changes under conditions in which it should change.	P1088	Charge Air Cooler Temperature Sensor Signal Stuck (Bank 1)	Charge Air Temperature Sensor Charge Air Cooler	Electrical	The fault is recognized when the charge-air temperature has not displayed a variation of at least 1.5°C. Potential problem source(s): - Sticking sensor - Shunt current - Sensor manipulation - Defective DME	10 sec.	Terminal 15	Voltage condition: - - None; Tempe	- When the engine is started the are	- Drive vehicle at >40km/h for more	NO	None	N	- Sticking sensor - Shunt current - Sensor manipulation - Defective DME	- Visual examination of plug/sensor for tampering - Check sensor data/wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: on - CC message: None	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x109001	1085441	Coolant-temperature sensor, electric: short circuit to positive or open circuit	The diagnostic function monitors the upper voltage limit of the coolant-temperature sensor.	P0118	Engine Coolant Temperature Sensor 1 Circuit High	Engine Coolant Temperature Sensor	1 Electrical	The fault is recognized when the voltage exceeds 3.24 V. Potential problem source(s): - Defect in wiring harness between DME and sensor - Sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 1.5 sec.	none	Voltage condition: - - Electrical supp	- None	- 3 sec. after engine start when inta	NO	none	N	- Defect in wiring harness between DME and sensor - Sensor defective	- Check wiring harness between DME and sensor - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x109002	1085442	Coolant-temperature sensor, electric: short circuit to ground	The diagnostic function monitors the lower voltage limit of the coolant temperature sensor.	P0117	Engine Coolant Temperature Sensor 1 Circuit Low	Engine Coolant Temperature Sensor	1 Electrical	The fault is recognized when the voltage is less than 0.1 V. Potential problem source(s): - Defect in wiring harness between DME and sensor - Sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 1.5 sec.	Terminal 15	Voltage condition: - - Electrical supp	- None	- None	NO	none	N	- Defect in wiring harness between DME and sensor - Sensor defective	- Check wiring harness between DME and sensor - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x109208	1085960	Coolant-temperature sensor, plausibility: signal hangs	The diagnostic function monitors whether the coolant temperature sensor's signal is sticking in the lower temperature range.	P118B	Engine Coolant Temperature Signal Stuck Low	Engine Coolant Temperature	General	The fault is recognized when the engine runs hot and the coolant temperature remains constant for longer than 10 min. Potential problem source(s): - Sensor defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical supp	- None	- 10 min.	NO	none	N	- Sensor defective	- Check wiring harness between DME and sensor - Replace sensor	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Possible reduction in power - Fan rotates at high speed	Breakdown notice: - none	- none
MSD87-6Z	0x109208	1085960	Coolant-temperature sensor, plausibility: signal hangs	The diagnostic function monitors whether the coolant temperature sensor's signal is sticking in the lower temperature range.	P3199	Engine Coolant Temperature Signal Stuck	Engine Coolant Temperature	General	The fault is recognized when the engine runs hot and the coolant temperature remains constant for longer than 10 min. Potential problem source(s): - Sensor defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical supp	- None	- 10 min.	NO	none	N	- Sensor defective	- Check wiring harness between DME and sensor - Replace sensor	- ECE emissions warning lamp: off US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Possible reduction in power - Fan rotates at high speed	Breakdown notice: - none	- none

MSD87-6Z	0x109308	1086216	Coolant-temperature sensor, plausibility: signal change too fast	The diagnostic function monitors the gradients of the voltage shifts from the coolant temperature sensor.	P0116	Engine Coolant Temperature Sensor 1 Circuit Range/Performance	Engine Coolant Temperature Sensor	1 Plausibility	The fault is recognized when variations of 2.25 °C/100 ms occur. Potential problem source(s): - Creeping contact resistance or intermittent open contact in sensor/power wires - Sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.6 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	none	N	- Creeping contact resistance or intermittent open contact in sensor/power wires - Sensor defective	- Check wiring harness between DME and sensor - Replace sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Fan rotates at high speed	Breakdown notice: - none	- none
MSD87-6Z	0x109308	1086216	Coolant-temperature sensor, plausibility: signal change too fast	The diagnostic function monitors the gradients of the voltage shifts from the coolant temperature sensor.	P3198	Engine Coolant Temperature 1 Gradient Too High	Engine Coolant Temperature	General	The fault is recognized when variations of 2.25 °C/100 ms occur. Potential problem source(s): - Creeping contact resistance or intermittent open contact in sensor/power wires - Sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.6 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	none	N	- Creeping contact resistance or intermittent open contact in sensor/power wires - Sensor defective	- Check wiring harness between DME and sensor - Replace sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Fan rotates at high speed	Breakdown notice: - none	- none
MSD87-6Z	0x109408	1086472	Coolant temperature sensor, plausibility: Signal stuck in upper measuring range	The diagnostic function monitors whether the coolant temperature sensor's signal is sticking in the higher temperature range.	P016A	Engine Coolant Temperature Signal Stuck High	Engine Coolant Temperature	General	The fault is recognized when the value from the sensor is too high relative to time with engine off. (Downtime -nfn) Potential problem source(s): - Sensor defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Intake-air temperature at start bat	Downtime > 360 min , time since d	NO	none	N	- Sensor defective	- Check wiring harness between DME and sensor - Replace sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Fan rotates at high speed	Breakdown notice: - none	- none
MSD87-6Z	0x108008	1093640	Outside temperature sensor, plausibility: Signal implausible	Following engine start after a period of at least ten hours with the engine off the diagnostic function monitors the ambient temperature by running a plausibility check against the charge-air temperature (on engine-intake side of the intercooler) and the engine temperature.	P0071	Ambient Air Temperature Sensor Circuit 'A' Range/Performance	Ambient Air Temperature Sensor	Plausibility	The fault is recognized when the ambient temperature deviates from boost-air temperature and engine temperature by more than 20 °C. Potential problem source(s): - Outside temperature sensor defective - Tampering with wiring harness	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -10 °C	- Engine off for > 10 hours	NO	TAM = ID 4204 ; TCO = ID 4300 ; T	Y	- Outside temperature sensor defective - Tampering with wiring harness	- Read out outside temperature and assess plausibility - Determine whether situations as indicated in "Notice" have been present - Visual inspection of outside temperature sensor - Check wiring harness for tampering - Replace outside temperature sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	MIL ON in US versions only	Possible apparent symptoms: - none	Breakdown notice: - none	- The following conditions can lead to an incorrect diagnosis: - Battery change or defective battery - Engine heated by secondary source, such as auxiliary heater
MSD87-6Z	0x108008	1093640	Outside temperature sensor, plausibility: Signal implausible	Following engine start after a period of at least ten hours with the engine off the diagnostic function monitors the ambient temperature by running a plausibility check against the charge-air temperature (on engine-intake side of the intercooler) and the engine temperature.	P10EC	Ambient Air Temperature Implausible	Ambient Air Temperature	Plausibility	The fault is recognized when the ambient temperature deviates from boost-air temperature and engine temperature by more than 20 °C. Potential problem source(s): - Outside temperature sensor defective - Tampering with wiring harness	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -10 °C	- Engine off for > 10 hours	NO	TAM = ID 4204 ; TCO = ID 4300 ; T	Y	- Outside temperature sensor defective - Tampering with wiring harness	- Read out outside temperature and assess plausibility - Determine whether situations as indicated in "Notice" have been present - Visual inspection of outside temperature sensor - Check wiring harness for tampering - Replace outside temperature sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	MIL ON in US versions only	Possible apparent symptoms: - none	Breakdown notice: - none	- The following conditions can lead to an incorrect diagnosis: - Battery change or defective battery - Engine heated by secondary source, such as auxiliary heater
MSD87-6Z	0x108101	1093889	Outside temperature sensor, electrical: Short to B+ or open circuit	The diagnostic function monitors communications between the instrument cluster and the DME related to ambient temperature.	P0073	Ambient Air Temperature Sensor Circuit 'A' High	Ambient Air Temperature Sensor	Electrical	The fault is recognized when the ambient temperature is not transmitted. Potential problem source(s): - Wiring harness to outside temperature sensor defective - Outside temperature sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 22 sec.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	Test data block ID 5824	N	- Wiring harness to outside temperature sensor defective - Outside temperature sensor defective	- Conduct fault diagnosis at the instrument cluster	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Incorrect temperature display	Breakdown notice: - none	- none
MSD87-6Z	0x108102	1093890	Outside temperature sensor, electrical: Short to earth	The diagnostic function monitors communications between the instrument cluster and the DME related to ambient temperature.	P0072	Ambient Air Temperature Sensor Circuit 'A' Low	Ambient Air Temperature Sensor	Electrical	The fault is recognized when the ambient temperature is not transmitted. Potential problem source(s): - Wiring harness to outside temperature sensor defective - Outside temperature sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 22 sec.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	Test data block ID 5824	N	- Wiring harness to outside temperature sensor defective - Outside temperature sensor defective	- Conduct fault diagnosis at the instrument cluster	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Incorrect temperature display	Breakdown notice: - none	- none
MSD87-6Z	0x108104	1093892	Outside temperature sensor, electrical: Signal fault	The diagnostic function monitors communications between the instrument cluster and the DME related to ambient temperature.	P0070	Ambient Air Temperature Sensor Circuit 'A'	Ambient Air Temperature Sensor	Electrical	The fault is recognized when the ambient temperature is not transmitted. Potential problem source(s): - Wiring harness to outside temperature sensor defective - Outside temperature sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 22 sec.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	Test data block ID 5824	N	- Wiring harness to outside temperature sensor defective - Outside temperature sensor defective	- Conduct fault diagnosis at the instrument cluster	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Incorrect temperature display	Breakdown notice: - none	- none
MSD87-6Z	0x108104	1093892	Outside temperature sensor, electrical: Signal fault	The diagnostic function monitors communications between the instrument cluster and the DME related to ambient temperature.	P110F	Ambient Air Temperature Sensor Faulty CAN Signal	Ambient Air Temperature Sensor	Signal	The fault is recognized when the ambient temperature is not transmitted. Potential problem source(s): - Wiring harness to outside temperature sensor defective - Outside temperature sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 22 sec.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	Test data block ID 5824	N	- Wiring harness to outside temperature sensor defective - Outside temperature sensor defective	- Conduct fault diagnosis at the instrument cluster	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Incorrect temperature display	Breakdown notice: - none	- none
MSD87-6Z	0x10C001	1097729	Charge-air temperature sensor, gradient: gradient too high or jump	The diagnostic function monitors the charge-air temperature for unacceptably high positive gradients and jumps.	P10B4	Charge Air Cooler Temperature Sensor Gradient Too High (Bank 1)	Charge Air Temperature Sensor Charge Air Cooler	Plausibility	The fault is recognized when the boost-air temperature rises by more than 7.6 °C within 0.5 sec. Potential problem source(s): - Loose contact - Sensor manipulation - Defective DME	1.5 sec.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	None	Y	- Loose contact - Sensor manipulation - Defective DME	- Visual examination of plug/sensor for tampering - Check sensor data/wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x10C004	1097732	Charge-air temperature sensor, gradient: offset too high	The diagnostic function monitors whether the charge-air temperature is unacceptably high during cold starts.	P10B6	Charge Air Cooler Temperature Sensor Offset (Bank 1)	Charge Air Temperature Sensor Charge Air Cooler	Plausibility	The fault is recognized when the charge-air temperature is more than 25°C above the coolant temperature, while the coolant temperature is simultaneously in the vicinity of the ambient temperature. Potential problem source(s): - Sticking sensor - Shunt current - Sensor manipulation - Defective DME	1.5 sec.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	None	N	- Sticking sensor - Shunt current - Sensor manipulation - Defective DME	- Visual examination of plug/sensor for tampering - Check sensor data/wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x10C004	1097732	Charge-air temperature sensor, gradient: offset too high	The diagnostic function monitors whether the charge-air temperature is unacceptably high during cold starts.	P10B6	Cold Start Charge Air Temperature Too High (Bank 1)	Charge Air Temperature	Cold Start	The fault is recognized when the charge-air temperature is more than 25°C above the coolant temperature, while the coolant temperature is simultaneously in the vicinity of the ambient temperature. Potential problem source(s): - Sticking sensor - Shunt current - Sensor manipulation - Defective DME	1.5 sec.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	None	N	- Sticking sensor - Shunt current - Sensor manipulation - Defective DME	- Visual examination of plug/sensor for tampering - Check sensor data/wiring harness - Replace charge-air temperature sensor - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Data configured
MSD87-6Z	0x10C00B	1097736			P007B	Charge Air Cooler Temperature Sensor Circuit Range/Performance (Bank 1)	Charge Air Temperature Sensor Charge Air Cooler	Plausibility																		
MSD87-6Z	0x10C00B	1097736			P10B4	Charge Air Cooler Temperature Sensor Gradient Too High (Bank 1)	Charge Air Temperature Sensor Charge Air Cooler	Plausibility																		
MSD87-6Z	0x10F101	1110273	Cylinder equalization above lambda, cylinder 1: cylinder-selective oxygen-sensor control, lower limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P029B	Cylinder 1 - Fuel Trim at Min Limit	Cyl.Contribution/Balance	Cyl 1	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	- None	None	Fac_lam_cyl_sel_adj_l_rng_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F102	1110274	Cylinder equalization above lambda, cylinder 1: cylinder-selective oxygen-sensor control, upper limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P029A	Cylinder 1 - Fuel Trim at Max Limit	Cyl.Contribution/Balance	Cyl 1	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	- None	None	Fac_lam_cyl_sel_adj_l_rng_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F201	1110529	Cylinder equalization above lambda, cylinder 2: cylinder-selective oxygen-sensor control, lower limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P029F	Cylinder 2 - Fuel Trim at Min Limit	Cyl.Contribution/Balance	Cyl 2	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	- None	None	Fac_lam_cyl_sel_adj_l_rng_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F202	1110530	Cylinder equalization above lambda, cylinder 2: cylinder-selective oxygen-sensor control, upper limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P029E	Cylinder 2 - Fuel Trim at Max Limit	Cyl.Contribution/Balance	Cyl 2	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	- None	None	Fac_lam_cyl_sel_adj_l_rng_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F301	1110785	Cylinder equalization above lambda, cylinder 3: cylinder-selective oxygen-sensor control, lower limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P02A3	Cylinder 3 - Fuel Trim at Min Limit	Cyl.Contribution/Balance	Cyl 3	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	- None	None	Fac_lam_cyl_sel_adj_l_rng_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F302	1110786	Cylinder equalization above lambda, cylinder 3: cylinder-selective oxygen-sensor control, upper limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P02A2	Cylinder 3 - Fuel Trim at Max Limit	Cyl.Contribution/Balance	Cyl 3	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	- None	None	Fac_lam_cyl_sel_adj_l_rng_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
			Cylinder equalization above lambda, cylinder 4: cylinder-selective oxygen-sensor control, lower limit	The diagnostic function monitors the lambda at the					The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control	This fault is logged in the control module's fault memory if it remains present for longer than			from - 10 ° to normal operating tem					- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off		Possible apparent symptoms:	Breakdown notice:	

MSD87-6Z	0x10F402	1111042	Cylinder equalization above lambda, cylinder 4: cylinder-selective oxygen-sensor control, upper limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P02A6	Cylinder 4 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 4	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	None	None	Fac_lam_cyl_sel_adj_l_mg_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F501	1111297	Cylinder equalization above lambda, cylinder 5: cylinder-selective oxygen-sensor control, lower limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P02AB	Cylinder 5 - Fuel Trim at Min Limit	Cyl Contribution/Balance	Cyl 5	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	None	None	Fac_lam_cyl_sel_adj_l_mg_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F502	1111298	Cylinder equalization above lambda, cylinder 5: cylinder-selective oxygen-sensor control, upper limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P02AA	Cylinder 5 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 5	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	None	None	Fac_lam_cyl_sel_adj_l_mg_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F601	1111553	Cylinder equalization above lambda, cylinder 6: cylinder-selective oxygen-sensor control, lower limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P02AF	Cylinder 6 - Fuel Trim at Min Limit	Cyl Contribution/Balance	Cyl 6	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	None	None	Fac_lam_cyl_sel_adj_l_mg_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x10F602	1111554	Cylinder equalization above lambda, cylinder 6: cylinder-selective oxygen-sensor control, upper limit reached	The diagnostic function monitors the lambda at the individual cylinders.	P02AE	Cylinder 6 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 6	The fault is recognized when the mixture for one cylinder must be corrected by more than +/- 15 %. Potential problem source(s): - Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: Tempe	from - 10 ° to normal operating tem	None	None	Fac_lam_cyl_sel_adj_l_mg_0-5	Y	- Defective injector - Oxygen sensor defective - Fuel pressure fluctuates or is consistently too high or too low - Defective wastegate control - Exhaust backpressure too high	- If diagnostic fault codes related to the oxygen sensor, catalytic converter or fuel system are present, repair these - Check fuel pressure - Check wastegate control	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine runs poorly	Breakdown notice: - none	- none
MSD87-6Z	0x110001	1114113	Cylinder injection cutout: pressure too low in high-pressure system	The diagnostic function monitors the high-pressure system for pressure deviations that are primarily caused by a lack of fuel.	P142E	Cylinder Injection Cut-Off, Pressure Too Low in High-Pressure System	Injection Deactivation	Pressure	The fault is recognized when the fuel pressure in the high-pressure fuel system falls below a value defined in the program map. Potential problem source(s): - Tank fuel level too low - Collateral fault	This fault is logged in the control module's fault memory if it remains present for longer than 1.2 sec.	none	Voltage condition: - - None: Tempe	Precatalyst temperature > 500°C	- None	None	none	Y	- Tank fuel level too low - Collateral fault	- No additional action, as this fault is also caused by an empty tank or other faults	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Engine power reduction	none	Possible apparent symptoms: - none	Breakdown notice: - none	- If a fuel-level monitoring error occurs then Sym0 can be entered instead of Sym3
MSD87-6Z	0x110002	1114114	Cylinder injection cutout: pressure too low in low-pressure system	The diagnostic function monitors the low-pressure fuel system for pressure deviations that are primarily caused by a lack of fuel.	P142F	Cylinder Injection Cut-Off, Pressure Too Low in Low-Pressure System	Injection Deactivation	Pressure	The fault is recognized when the fuel pressure in the low-pressure fuel system falls below a value defined in the program map. Potential problem source(s): - Tank fuel level too low - Collateral fault	This fault is logged in the control module's fault memory if it remains present for longer than 1.2 sec.	none	Voltage condition: - - None: Tempe	Precatalyst temperature > 500°C	- None	None	none	Y	- Tank fuel level too low - Collateral fault	- No additional action, as this fault is also caused by an empty tank or other faults	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Engine power reduction	none	Possible apparent symptoms: - none	Breakdown notice: - none	- If a fuel-level monitoring error occurs then Sym1 can be entered instead of Sym3
MSD87-6Z	0x110009	1114120	Cylinder injection cutout: tank fill level too low	The diagnostic function monitors whether the diagnostic fault codes 0x110001 or 0x110002 have been recognized while the lambda control also reaches a specific deviation.	P140E	Cylinder Injection Cut-Off, Fuel Level Too Low	Injection Deactivation	Low Fuel	The fault is recognized when the fault 0x110001 or 0x110002 is recognized and the lambda control rises above a value defined in the program map. Potential problem source(s): - Tank fuel level too low - Collateral fault	This fault is logged in the control module's fault memory if it remains present for longer than 1.2 sec.	none	Voltage condition: - - None: Tempe	Precatalyst temperature > 500°C	- None	None	none	Y	- Tank fuel level too low - Collateral fault	- No additional action, as this fault is also caused by an empty tank or other faults	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Engine power reduction	none	Possible apparent symptoms: - Power reduction from cylinder deactivation	Breakdown notice: - Check fuel level	- The fuel injection is deactivated to protect the catalytic converter
MSD87-6Z	0x110101	1114369	Injector, cylinder 1, activation: high-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3149	Cylinder 1 High Pressure Injector High Side Circuit Low	Injector High Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	Whether the diagnostic fault code is logged depends on engine speed	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110102	1114370	Injector, cylinder 1, activation: low-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3152	Cylinder 1 High Pressure Injector Low Side Circuit High	Injector Low Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110104	1114372	Injector, cylinder 1, activation: high-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3150	Cylinder 1 High Pressure Injector High Side Circuit High	Injector High Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110108	1114376	Injector, cylinder 1, activation: low-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3151	Cylinder 1 High Pressure Injector Low Side Circuit Low	Injector Low Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110201	1114625	Injector, cylinder 2, activation: high-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3152	Cylinder 2 High Pressure Injector High Side Circuit Low	Injector High Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110202	1114626	Injector, cylinder 2, activation: low-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3156	Cylinder 2 High Pressure Injector Low Side Circuit High	Injector Low Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110204	1114628	Injector, cylinder 2, activation: high-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3153	Cylinder 2 High Pressure Injector High Side Circuit High	Injector High Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110208	1114632	Injector, cylinder 2, activation: low-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3155	Cylinder 2 High Pressure Injector Low Side Circuit Low	Injector Low Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110301	1114881	Injector, cylinder 3, activation: high-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3195	Cylinder 3 High Pressure Injector High Side Circuit Low	Injector High Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110302	1114882	Injector, cylinder 3, activation: low-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3110	Cylinder 3 High Pressure Injector Low Side Circuit High	Injector Low Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110304	1114884	Injector, cylinder 3, activation: high-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3156	Cylinder 3 High Pressure Injector High Side Circuit High	Injector High Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110308	1114888	Injector, cylinder 3, activation: low-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3109	Cylinder 3 High Pressure Injector Low Side Circuit Low	Injector Low Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
			Injector, cylinder 4, activation: high-voltage side; short	The diagnostic function monitors electrical activation		Cylinder 4 High Pressure Injector High Side Circuit			The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be					No special EOL test - hardware dia			- Defect in wiring harness	- Check wiring harness	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off		Possible apparent symptoms:	Breakdown notice:	

MSD87-6Z	0x110402	1115138	Injector, cylinder 4, activation: low-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3114	Cylinder 4 High Pressure Injector Low Side Circuit High	Injector Low Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110404	1115140	Injector, cylinder 4, activation: high-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3159	Cylinder 4 High Pressure Injector High Side Circuit High	Injector High Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110408	1115144	Injector, cylinder 4, activation: low-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3113	Cylinder 4 High Pressure Injector Low Side Circuit Low	Injector Low Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110501	1115393	Injector, cylinder 5, activation: high-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3161	Cylinder 5 High Pressure Injector High Side Circuit Low	Injector High Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110502	1115394	Injector, cylinder 5, activation: low-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3118	Cylinder 5 High Pressure Injector Low Side Circuit High	Injector Low Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110504	1115396	Injector, cylinder 5, activation: high-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3162	Cylinder 5 High Pressure Injector High Side Circuit High	Injector High Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110508	1115400	Injector, cylinder 5, activation: low-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3117	Cylinder 5 High Pressure Injector Low Side Circuit Low	Injector Low Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110601	1115649	Injector, cylinder 6, activation: high-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3164	Cylinder 6 High Pressure Injector High Side Circuit Low	Injector High Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110602	1115650	Injector, cylinder 6, activation: low-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3122	Cylinder 6 High Pressure Injector Low Side Circuit High	Injector Low Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110604	1115652	Injector, cylinder 6, activation: high-voltage side; short circuit to positive	The diagnostic function monitors electrical activation of the specific injector.	P3165	Cylinder 6 High Pressure Injector High Side Circuit High	Injector High Side	Short to Batt	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x110608	1115656	Injector, cylinder 6, activation: low-voltage side; short circuit to ground	The diagnostic function monitors electrical activation of the specific injector.	P3121	Cylinder 6 High Pressure Injector Low Side Circuit Low	Injector Low Side	Short to Ground	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x112101	1122561	Injector, cylinder 1, activation: open circuit	The diagnostic function monitors electrical activation of the injector.	P0201	Injector Circuit/Open - Cylinder 1	Injector	Open Circuit	The fault is recognized when the voltage at the injector is > 210 V and the injector's electrical charge is < 300 µAs. Potential problem source(s): - Defect in wiring harness between DME and injector 1 - Injector 1 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Defect in wiring harness between DME and injector 1 - Injector 1 defective	- Inspect wiring harness between DME and injector 1 - Check injector 1: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: "Engine malfunction, loss of power"	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112102	1122562	Injector, cylinder 1, activation: short circuit	The diagnostic function monitors electrical activation of the injector.	P3108	Cylinder 1 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the voltage at the injector is < 50 V and the electrical charge at the injector is > 1200 µAs and the internal current monitoring conditions (current integral and charging characteristics) are not satisfied Potential problem source(s): - Injector 1 and/or 6 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 1 and/or 6 defective	- Check injectors 1 and 6: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112104	1122564	Injector, cylinder 1, activation: short circuit; high-voltage side to low-voltage side	The diagnostic function monitors electrical activation of the injector.	P3108	Cylinder 1 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the injector voltage is < 50V and the injector charge is > 1200 µAs and the conditions for internal current monitoring are present (current integral and charge characteristics allowing detection of the various short-circuit types). Potential problem source(s): - Injector 1 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 1 defective	- Check injector 1: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112108	1122568	Injector, cylinder 1, activation: open circuit with charged injector	The diagnostic function monitors electrical activation of the specific injector.	P0201	Injector Circuit/Open - Cylinder 1	Injector	Open Circuit	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x112201	1122817	Injector, cylinder 2, activation: open circuit	The diagnostic function monitors electrical activation of the injector.	P0202	Injector Circuit/Open - Cylinder 2	Injector	Open Circuit	The fault is recognized when the voltage at the injector is > 210 V and the injector's electrical charge is < 300 µAs. Potential problem source(s): - Defect in wiring harness between DME and injector 2 - Injector 2 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Defect in wiring harness between DME and injector 2 - Injector 2 defective	- Inspect wiring harness between DME and injector 2 - Check injector 2: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: "Engine malfunction, loss of power"	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112202	1122818	Injector, cylinder 2, activation: short circuit	The diagnostic function monitors electrical activation of the injector.	P3106	Cylinder 2 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the voltage at the injector is < 50 V and the electrical charge at the injector is > 1200 µAs and the internal current monitoring conditions (current integral and charging characteristics) are not satisfied Potential problem source(s): - Injector 2 and/or 5 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 2 and/or 5 defective	- Check injectors 2 and 5: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112204	1122820	Injector, cylinder 2, activation: short circuit; high-voltage side to low-voltage side	The diagnostic function monitors electrical activation of the injector.	P3106	Cylinder 2 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the injector voltage is < 50V and the injector charge is > 1200 µAs and the conditions for internal current monitoring are present (current integral and charge characteristics allowing detection of the various short-circuit types). Potential problem source(s): - Injector 2 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 2 defective	- Check injector 2: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112208	1122824	Injector, cylinder 2, activation: open circuit with charged injector	The diagnostic function monitors electrical activation of the specific injector.	P0202	Injector Circuit/Open - Cylinder 2	Injector	Open Circuit	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	No special EOL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x112301	1123073	Injector, cylinder 3, activation: open circuit	The diagnostic function monitors electrical activation of the injector.	P0203	Injector Circuit/Open - Cylinder 3	Injector	Open Circuit	The fault is recognized when the voltage at the injector is > 210 V and the injector's electrical charge is < 300 µAs. Potential problem source(s): - Defect in wiring harness between DME and injector 3 - Injector 3 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Defect in wiring harness between DME and injector 3 - Injector 3 defective	- Inspect wiring harness between DME and injector 3 - Check injector 3: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: "Engine malfunction, loss of power"	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112302	1123074	Injector, cylinder 3, activation: short circuit	The diagnostic function monitors electrical activation of the injector.	P3118	Cylinder 3 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the voltage at the injector is < 50 V and the electrical charge at the injector is > 1200 µAs and the internal current monitoring conditions (current integral and charging characteristics) are not satisfied Potential problem source(s): - Injector 3 and/or 4 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 3 and/or 4 defective	- Check injectors 3 and 4: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
			Injector, cylinder 3, activation: short circuit; high-	The diagnostic function monitors electrical activation		Cylinder 3 High Pressure Injector Low Side/High Side			The fault is recognized when the injector voltage is < 50V and the injector charge is > 1200 µAs and the conditions for internal current monitoring are present (current integral and charge characteristics allowing detection of the various short-circuit types). Potential problem source(s):	This fault is logged in the control module's fault memory						Read out test data block (ID x05B2)			- Check injector 3: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine		Possible apparent symptoms:	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver	

MSD87-6Z	0x112308	1123080	Injector, cylinder 3, activation: open circuit with charged injector	The diagnostic function monitors electrical activation of the specific injector.	P0203	Injector Circuit/Open - Cylinder 3	Injector	Open Circuit	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	No special ECL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x112401	1123329	Injector, cylinder 4, activation: open circuit	The diagnostic function monitors electrical activation of the injector.	P0204	Injector Circuit/Open - Cylinder 4	Injector	Open Circuit	The fault is recognized when the voltage at the injector is > 210 V and the injector's electrical charge is < 300 µAs. Potential problem source(s): - Defect in wiring harness between DME and injector 4 - Injector 4 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Defect in wiring harness between DME and injector 4 - Injector 4 defective	- Inspect wiring harness between DME and injector 4 - Check injector 4: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: "Engine malfunction, loss of power"	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112402	1123330	Injector, cylinder 4, activation: short circuit	The diagnostic function monitors electrical activation of the injector.	P311E	Cylinder 4 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the voltage at the injector is < 60 V and the electrical charge at the injector is > 1200 µAs and the internal current monitoring conditions (current integral and charging characteristics) are not satisfied Potential problem source(s): - Injector 3 and/or 4 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 3 and/or 4 defective	- Check injectors 3 and 4: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112404	1123332	Injector, cylinder 4, activation: short circuit, high-voltage side to low-voltage side	The diagnostic function monitors electrical activation of the injector.	P311E	Cylinder 4 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the injector voltage is < 60V and the injector charge is > 1200 µAs and the conditions for internal current monitoring are present (current integral and charge characteristics allowing detection of the various short-circuit types). Potential problem source(s): - Injector 4 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 4 defective	- Check injector 4: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112408	1123336	Injector, cylinder 4, activation: open circuit with charged injector	The diagnostic function monitors electrical activation of the specific injector.	P0204	Injector Circuit/Open - Cylinder 4	Injector	Open Circuit	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	No special ECL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x112501	1123585	Injector, cylinder 5, activation: open circuit	The diagnostic function monitors electrical activation of the injector.	P0205	Injector Circuit/Open - Cylinder 5	Injector	Open Circuit	The fault is recognized when the voltage at the injector is > 210 V and the injector's electrical charge is < 300 µAs. Potential problem source(s): - Defect in wiring harness between DME and injector 5 - Injector 5 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Defect in wiring harness between DME and injector 5 - Injector 5 defective	- Inspect wiring harness between DME and injector 5 - Check injector 5: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: "Engine malfunction, loss of power"	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112502	1123586	Injector, cylinder 5, activation: short circuit	The diagnostic function monitors electrical activation of the injector.	P312B	Cylinder 5 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the voltage at the injector is < 60 V and the electrical charge at the injector is > 1200 µAs and the internal current monitoring conditions (current integral and charging characteristics) are not satisfied Potential problem source(s): - Injector 2 and/or 5 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 2 and/or 5 defective	- Check injectors 2 and 5: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112504	1123588	Injector, cylinder 5, activation: short circuit, high-voltage side to low-voltage side	The diagnostic function monitors electrical activation of the injector.	P312B	Cylinder 5 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the injector voltage is < 60V and the injector charge is > 1200 µAs and the conditions for internal current monitoring are present (current integral and charge characteristics allowing detection of the various short-circuit types). Potential problem source(s): - Injector 5 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 5 defective	- Check injector 5: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112508	1123592	Injector, cylinder 5, activation: open circuit with charged injector	The diagnostic function monitors electrical activation of the specific injector.	P0205	Injector Circuit/Open - Cylinder 5	Injector	Open Circuit	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	No special ECL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x112601	1123841	Injector, cylinder 6, activation: open circuit	The diagnostic function monitors electrical activation of the injector.	P0206	Injector Circuit/Open - Cylinder 6	Injector	Open Circuit	The fault is recognized when the voltage at the injector is > 210 V and the injector's electrical charge is < 300 µAs. Potential problem source(s): - Defect in wiring harness between DME and injector 6 - Injector 6 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Defect in wiring harness between DME and injector 6 - Injector 6 defective	- Inspect wiring harness between DME and injector 6 - Check injector 6: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: "Engine malfunction, loss of power"	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112602	1123842	Injector, cylinder 6, activation: short circuit	The diagnostic function monitors electrical activation of the injector.	P312E	Cylinder 6 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the voltage at the injector is < 60 V and the electrical charge at the injector is > 1200 µAs and the internal current monitoring conditions (current integral and charging characteristics) are not satisfied Potential problem source(s): - Injector 1 and/or 6 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 1 and/or 6 defective	- Check injectors 1 and 6: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112604	1123844	Injector, cylinder 6, activation: short circuit, high-voltage side to low-voltage side	The diagnostic function monitors electrical activation of the injector.	P312E	Cylinder 6 High Pressure Injector Low Side/High Side Electrical	Injector Low Side/High Side	Electrical	The fault is recognized when the injector voltage is < 60V and the injector charge is > 1200 µAs and the conditions for internal current monitoring are present (current integral and charge characteristics allowing detection of the various short-circuit types). Potential problem source(s): - Injector 6 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	None	Read out test data block (ID x05B2)	N	- Injector 6 defective	- Check injector 6: Measure the resistance between the pins for the injectors. (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Engine runs poorly with power loss	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x112608	1123848	Injector, cylinder 6, activation: open circuit with charged injector	The diagnostic function monitors electrical activation of the specific injector.	P0206	Injector Circuit/Open - Cylinder 6	Injector	Open Circuit	The fault is recognized when a short circuit is present. Potential problem source(s): - Defect in wiring harness - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	No special ECL test - hardware dia	Y	N	- Defect in wiring harness - Fuel injector defective	- Check wiring harness - Replace fuel injector	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Problem resolved only after terminal switch	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x114101	1130763	Cylinder equalization above irregular running, cylinder 1: minimum diagnosis limit reached	Data content defined.	P029B	Cylinder 1 - Fuel Trim at Min Limit	Cyl Contribution/Balance	Cyl 1	none Potential problem source(s): none	none	none	Voltage condition: - None - Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounded.	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined.	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured.
MSD87-6Z	0x114102	1130764	Cylinder equalization above irregular running, cylinder 1: maximum diagnosis limit reached	Data content defined.	P029A	Cylinder 1 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 1	none Potential problem source(s): none	none	none	Voltage condition: - None - Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounded.	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined.	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured.
MSD87-6Z	0x114201	1131009	Cylinder equalization above irregular running, cylinder 2: minimum diagnosis limit reached	Data content defined.	P029F	Cylinder 2 - Fuel Trim at Min Limit	Cyl Contribution/Balance	Cyl 2	none Potential problem source(s): none	none	none	Voltage condition: - None - Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounded.	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined.	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured.
MSD87-6Z	0x114202	1131010	Cylinder equalization above irregular running, cylinder 2: maximum diagnosis limit reached	Data content defined.	P029E	Cylinder 2 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 2	none Potential problem source(s): none	none	none	Voltage condition: - None - Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounded.	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined.	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured.
MSD87-6Z	0x114301	1131265	Cylinder equalization above irregular running, cylinder 3: minimum diagnosis limit reached	Data content defined.	P02A3	Cylinder 3 - Fuel Trim at Min Limit	Cyl Contribution/Balance	Cyl 3	none Potential problem source(s): none	none	none	Voltage condition: - None - Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounded.	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined.	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured.
MSD87-6Z	0x114302	1131266	Cylinder equalization above irregular running, cylinder 3: maximum diagnosis limit reached	Data content defined.	P02A2	Cylinder 3 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 3	none Potential problem source(s): none	none	none	Voltage condition: - None - Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounded.	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined.	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured.
MSD87-6Z	0x114401	1131521	Cylinder equalization above irregular running, cylinder 4: minimum diagnosis limit reached	Data content defined.	P02A7	Cylinder 4 - Fuel Trim at Min Limit	Cyl Contribution/Balance	Cyl 4	none Potential problem source(s): none	none	none	Voltage condition: - None - Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounded.	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined.	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured.
MSD87-6Z	0x114402	1131522	Cylinder equalization above irregular running, cylinder 4: maximum diagnosis limit reached	Data content defined.	P02A6	Cylinder 4 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 4	none Potential problem source(s): none	none	none	Voltage condition: - None - Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounded.	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined.	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured.
			Cylinder equalization above irregular running,						none Potential problem source(s):			Voltage condition: - None - Temper						1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off		Possible apparent symptoms:	Breakdown notice:	

MSD87-6Z	0x114502	1131778	Cylinder equalization above irregular running, cylinder 5: maximum diagnosis limit reached	Data content defined	P02AA	Cylinder 5 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 5	none Potential problem source(s): none	none	none	Voltage condition: - None: Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounced	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured
MSD87-6Z	0x114601	1132033	Cylinder equalization above irregular running, cylinder 6: minimum diagnosis limit reached	Data content defined	P02AF	Cylinder 6 - Fuel Trim at Min Limit	Cyl Contribution/Balance	Cyl 6	none Potential problem source(s): none	none	none	Voltage condition: - None: Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounced	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured
MSD87-6Z	0x114602	1132034	Cylinder equalization above irregular running, cylinder 6: maximum diagnosis limit reached	Data content defined	P02AE	Cylinder 6 - Fuel Trim at Max Limit	Cyl Contribution/Balance	Cyl 6	none Potential problem source(s): none	none	none	Voltage condition: - None: Temper	None	- None	none	none	Y	1. Fuel flow through this injector is outside the specified range (tolerance, aging, defect) 2. Low compression at the affected cylinder (teflon ring, piston rings, valves) 3. Precatalyst on one bank melted, but cat fault is not yet debounced	Injector replacement, compression test, teflon ring analysis (a defective teflon ring will cause obvious soot accumulation on the ignition coil adjacent to the plug, caused by escaping exhaust gas), test of exhaust back-pressure	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured
MSD87-6Z	0x115D04	1137924	Injection quantity compensation, plausibility: Energy nominal value	The diagnostic function monitors whether the energy value has been coded and whether it lies within a plausible range. Incorrectly encoded data that lie within the thresholds are not recognized	P15AF	Injector Coding Energy Rated Value Implausible			The fault is recognized when the energy value of at least one injector lies above 70.8 mJ or below 52.9 mJ. Potential problem source(s): - At least one injector not encoded - Incorrect injector coding	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - None: Tempe	None	- None	steuern_ima	status_ima	N	- At least one injector not encoded - Incorrect injector coding	- Code low-flow and energy value	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	When a fault occurs the nominal energy data are automatically used (57.8 mJ)	Possible apparent symptoms: - Engine can run roughly	Breakdown notice: - none	- The diagnostic fault code can be deleted if the energy value is plausible
MSD87-6Z	0x115D08	1137928	Injection quantity compensation, plausibility: Small quantity-nominal value	The diagnostic function monitors whether the low-flow value has been coded and whether it lies within a plausible range. Incorrectly encoded data that lie within the thresholds are not recognized	P10C0	Injector Coding Small Quantity Rated Value Implausible			The fault is recognized when the low flow value of a least one injector is above 2.88 mg/stroke or below 1.55 mg/stroke. Potential problem source(s): - At least one injector not encoded - Incorrect injector coding	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - None: Tempe	None	- None	steuern_ima	status_ima	N	- At least one injector not encoded - Incorrect injector coding	- Code low-flow and energy value	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	When a fault occurs the nominal low-flow value is used automatically (2.1mg/stroke)	Possible apparent symptoms: - Engine can run roughly	Breakdown notice: - none	- The diagnostic fault code can be deleted if the low-flow value is plausible
MSD87-6Z	0x117E01	1146369			P218F	System Too Lean at Idle (Bank 1)	Fuel System	Idle																		
MSD87-6Z	0x117E02	1146370			P218B	System Too Rich at Idle (Bank 1)	Fuel System	Idle																		
MSD87-6Z	0x117E04	1146372			P217F	System Too Lean Off Idle (Bank 1)	Fuel System	Off Idle																		
MSD87-6Z	0x117E08	1146376			P217B	System Too Rich Off Idle (Bank 1)	Fuel System	Off Idle																		
MSD87-6Z	0x117F01	1146625			P218E	System Too Lean at Idle (Bank 2)	Fuel System	Idle																		
MSD87-6Z	0x117F02	1146626			P218C	System Too Rich at Idle (Bank 2)	Fuel System	Idle																		
MSD87-6Z	0x117F04	1146628			P217E	System Too Lean Off Idle (Bank 2)	Fuel System	Off Idle																		
MSD87-6Z	0x117F08	1146632			P218D	System Too Rich Off Idle (Bank 2)	Fuel System	Off Idle																		
MSD87-6Z	0x118001	1146881	Mixture control: mixture too lean	The diagnostic function monitors the lambda closed-loop mixture control.	P0171	System Too Lean (Bank 1)	Fuel System	All Load Ranges	The fault is recognized when the mixture for Bank 1 is too lean and the adaptation limit (25...30 %) is exceeded for 40 sec. Potential problem source(s): - Defect in wiring harness - Defective rail-pressure sensor - HFM defective - Leakage in induction tract - Leak in exhaust system - Catalytic converter clogged - Defective injector - Defect in high-pressure system	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Ambient temperature > -10 °C	- None	None	none	N	- Mixture too lean - A. Airflow path - HFM fault - Leakage in induction tract - B. Exhaust tract airflow path - Leak in exhaust system - One catalyst completely obstructed! C. Fuel path - Defective injection valve (mechanical) - Defective high-pressure system (pump or sensor)	- Check induction tract for leaks - Check exhaust system for leaks - Check wiring harness between DME and HFM - Check wiring harness between DME and rail-pressure sensor - Replace rail-pressure sensor - Replace HFM - Replace fuel injector - Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Misfiring	Breakdown notice: - none	- none
MSD87-6Z	0x118002	1146882	Mixture control: mixture too rich	The diagnostic function monitors the lambda closed-loop mixture control.	P0172	System Too Rich (Bank 1)	Fuel System	All Load Ranges	The fault is recognized when the mixture for Bank 1 is too rich and the system falls below the adaptation limit (25...30 %) for 40 sec. Potential problem source(s): - Crankcase ventilation defective - Defective intake-manifold pressure sensor before and behind throttle valve - Defect in evaporative emissions valve - Catalytic converter clogged - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Ambient temperature > -10 °C	- None	None	none	N	- Mixture too rich - A. Airflow path - Malfunction in crankcase ventilation (fuel vapors) - Pressure sensor fault - on both sides of throttle valve - Evaporative emissions valve not sealing (tank evaporative gases) - B. Exhaust tract airflow path - One catalyst completely obstructed! C. Fuel path - Defective injection valve (mechanical)	- Check positive crankcase ventilation system - Replace intake-manifold pressure sensor before and behind throttle valve - Replace EVAP evaporative emissions valve - Replace fuel injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Misfiring	Breakdown notice: - none	- none
MSD87-6Z	0x118004	1146884	Mixture control: mixture too lean		P0171	System Too Lean (Bank 1)	Fuel System	All Load Ranges																		
MSD87-6Z	0x118008	1146888	Mixture control: mixture too rich		P0172	System Too Rich (Bank 1)	Fuel System	All Load Ranges																		
MSD87-6Z	0x118101	1147137	Mixture control 2: mixture too lean	The diagnostic function monitors the lambda closed-loop mixture control.	P0174	System Too Lean (Bank 2)	Fuel System	All Load Ranges	The fault is recognized when the mixture for Bank 2 is too lean and the adaptation limit (25...30 %) is exceeded for 40 sec. Potential problem source(s): - HFM defective - Leakage in induction tract - Leak in exhaust system - Catalytic converter clogged - Defective injector - Defect in high-pressure system	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Ambient temperature > -10 °C	- None	None	none	N	- Mixture too lean - A. Airflow path - Pressure sensor fault - on both sides of throttle valve - B. Exhaust tract airflow path - Leak in exhaust system - One catalyst completely obstructed! C. Fuel path - Defective injection valve (mechanical)	- Visual inspection of affected components - Locate and repair leaks - Replace pressure sensors in induction tract Check plugs and electrical wires to pressure sensors in induction tract - Melted catalyst on one bank (visual inspection through sensor fittings)	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Misfiring	Breakdown notice: - none	- none
MSD87-6Z	0x118102	1147138	Mixture control 2: mixture too rich	The diagnostic function monitors the lambda closed-loop mixture control.	P0175	System Too Rich (Bank 2)	Fuel System	All Load Ranges	The fault is recognized when the mixture for Bank 2 is too rich and the system falls below the adaptation limit (25...30 %) for 40 sec. Potential problem source(s): - Crankcase ventilation defective - Defective intake-manifold pressure sensor before and behind throttle valve - Defect in evaporative emissions valve - Catalytic converter clogged - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Ambient temperature > -10 °C	- None	None	none	N	- Mixture too rich - A. Airflow path - Malfunction in crankcase ventilation (fuel vapors) - Pressure sensor fault - on both sides of throttle valve - Evaporative emissions valve not sealing (tank evaporative gases) - B. Exhaust tract airflow path - One catalyst completely obstructed! C. Fuel path - Defective injection valve (mechanical)	- Visual inspection of affected components - Locate and repair leaks - Replace pressure sensors in induction tract - Check plugs and electrical wires to pressure sensors in induction tract - Melted catalyst on one bank (visual inspection through sensor fittings)	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Range from none to poor engine performance (miss, rough idle)	Breakdown notice: - none	- none
MSD87-6Z	0x118104	1147140	Mixture control 2: mixture too lean		P0174	System Too Lean (Bank 2)	Fuel System	All Load Ranges																		
MSD87-6Z	0x118108	1147144	Mixture control 2: mixture too rich		P0175	System Too Rich (Bank 2)	Fuel System	All Load Ranges																		
MSD87-6Z	0x118201	1147393	Mixture adaptation, upper speed range: mixture at full load too rich	Fuel mixture adaptation, upper engine speed range	P2192	System Too Rich at Higher Load (Bank 1)	Fuel System	Higher Load	Engine warm, upper load and engine-speed range (>3000 rpm), steady-state operation Potential problem source(s):	The diagnostic routine runs only during lambda adaptation. If a defect arises a diagnostic fault code is logged within approximately 60 sec.	- None	Voltage condition: - - Onboard elec	Engine warmed to normal tempera	- None	NO	none	Y	Possible sources include a defective injector, opening in induction tract.	Check injectors on Bank 1. Check induction system for leaks.	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: on - CC message: ID-29	none	If a defect is present the mixture-control diagnostic fault code 2DEG will usually also be logged, and this, in turn, will trigger the MIL.	None	None
MSD87-6Z	0x118202	1147394	Mixture adaptation, upper speed range: mixture at full load too lean	Fuel mixture adaptation, upper engine speed range	P2191	System Too Lean at Higher Load (Bank 1)	Fuel System	Higher Load	Engine warm, upper load and engine-speed range (>3000 rpm), steady-state operation Potential problem source(s):	The diagnostic routine runs only during lambda adaptation. If a defect arises a diagnostic fault code is logged within approximately 60 sec.	- None	Voltage condition: - - Onboard elec	Engine warmed to normal tempera	- None	NO	none	Y	Possible sources include a defective injector, opening in induction tract.	Check injectors on Bank 1. Check induction system for leaks.	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: on - CC message: ID-29	none	- Power reduction	None	None
MSD87-6Z	0x118301	1147649	Mixture adaptation 2, upper speed range: mixture at full load too rich	Fuel mixture adaptation 2, upper engine speed range	P2194	System Too Rich at Higher Load (Bank 2)	Fuel System	Higher Load	Engine warm, upper load and engine-speed range (>3000 rpm), steady-state operation Potential problem source(s):	The diagnostic routine runs only during lambda adaptation. If a defect arises a diagnostic fault code is logged within approximately 60 sec.	- None	Voltage condition: - - Onboard elec	Engine warmed to normal tempera	- None	NO	none	Y	Possible sources include a defective injector, opening in induction tract.	Check injectors on Bank 2. Check induction system for leaks.	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: on - CC message: ID-29	none	- Power reduction	None	None
MSD87-6Z	0x118302	1147650	Mixture adaptation 2, upper speed range: mixture at full load too lean	Fuel mixture adaptation 2, upper engine speed range	P2193	System Too Lean at Higher Load (Bank 2)	Fuel System	Higher Load	Engine warm, upper load and engine-speed range (>3000 rpm), steady-state operation Potential problem source(s):	The diagnostic routine runs only during lambda adaptation. If a defect arises a diagnostic fault code is logged within approximately 60 sec.	- None	Voltage condition: - - Onboard elec	Engine warmed to normal tempera	- None	NO	none	Y	Possible sources include a defective injector, opening in induction tract.	Check injectors on Bank 2. Check induction system for leaks.	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: on - CC message: ID-29	none	- Power reduction	None	None
MSD87-6Z	0x118401	1147905	Mixture control: mixture too lean; large deviation	The diagnostic function monitors the lambda closed-loop mixture control.	P0171	System Too Lean (Bank 1)	Fuel System	All Load Ranges	The fault is recognized when the mixture for Bank 1 is too lean and the adaptation limit (30 %) is exceeded for 50 sec. Potential problem source(s): - Defective intake-manifold pressure sensor before and behind throttle valve - Leak in exhaust system - Catalytic converter clogged - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Ambient temperature > -10 °C	- None	None	none	N	- Mixture too lean - A. Airflow path - Pressure sensor fault - on both sides of throttle valve - B. Exhaust tract airflow path - Leak in exhaust system - One catalyst completely obstructed! C. Fuel path - Defective injection valve (mechanical)	- Visual inspection of affected components - Locate and repair leaks - Replace pressure sensors in induction tract - Check plugs and electrical wires to pressure sensors in induction tract - Melted catalyst on one bank (visual inspection through sensor fittings)	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine running - Bad (miss, poor idle quality)	Breakdown notice: - none	- none
MSD87-6Z	0x118402	1147906	Mixture control: mixture too rich; large deviation	The diagnostic function monitors the lambda closed-loop mixture control.	P0172	System Too Rich (Bank 1)	Fuel System	All Load Ranges	The fault is recognized when the mixture for Bank 1 is too rich and the system drops below the adaptation limit (30 %) for 50 sec. Potential problem source(s): - Crankcase ventilation defective - Defective intake-manifold pressure sensor before and behind throttle valve - Defect in evaporative emissions valve - Catalytic converter clogged - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Ambient temperature > -10 °C	- None	None	none	N	- Mixture too rich - A. Airflow path - Malfunction in crankcase ventilation (fuel vapors) - Pressure sensor fault - on both sides of throttle valve - Evaporative emissions valve not sealing (tank evaporative gases) - B. Exhaust tract airflow path - One catalyst completely obstructed! C. Fuel path - Defective injection valve (mechanical)	- Visual inspection of affected components - Locate and repair leaks - Replace pressure sensors in induction tract - Check plugs and electrical wires to pressure sensors in induction tract - Melted catalyst on one bank (visual inspection through sensor fittings)	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Misfiring	Breakdown notice: - none	- none
MSD87-6Z	0x118501	1148161	Mixture control 2: mixture too lean; large deviation	The diagnostic function monitors the lambda closed-loop mixture control.	P0174	System Too Lean (Bank 2)	Fuel System	All Load Ranges	The fault is recognized when the mixture for Bank 2 is too lean and the adaptation limit (30 %) is exceeded for 50 sec. Potential problem source(s): - Defective intake-manifold pressure sensor before and behind throttle valve - Leak in exhaust system - Catalytic converter clogged - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Ambient temperature > -10 °C	- None	None	none	N	- Mixture too lean - A. Airflow path - Pressure sensor fault - on both sides of throttle valve - B. Exhaust tract airflow path - Leak in exhaust system - One catalyst completely obstructed! C. Fuel path - Defective injection valve (mechanical)	- Visual inspection of affected components - Locate and repair leaks - Replace pressure sensors in induction tract - Check plugs and electrical wires to pressure sensors in induction tract - Melted catalyst on one bank (visual inspection through sensor fittings)	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Misfiring	Breakdown notice: - none	- none
MSD87-6Z	0x118502	1148162	Mixture control 2: mixture too rich; large deviation	The diagnostic function monitors the lambda closed-loop mixture control.	P0175	System Too Rich (Bank 2)	Fuel System	All Load Ranges	The fault is recognized when the mixture for Bank 2 is too rich and the system drops below the adaptation limit (30 %) for 50 sec. Potential problem source(s): - Crankcase ventilation defective - Defective intake-manifold pressure sensor before and behind throttle valve - Defect in evaporative emissions valve - Catalytic converter clogged - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical sys	Ambient temperature > -10 °C	- None	None	none	N	- Mixture too rich - A. Airflow path - Malfunction in crankcase ventilation (fuel vapors) - Pressure sensor fault - on both sides of throttle valve - Evaporative emissions valve not sealing (tank evaporative gases) - B. Exhaust tract airflow path - One catalyst completely obstructed! C. Fuel path - Defective injection valve (mechanical)	- Visual inspection of affected components - Locate and repair leaks - Replace pressure sensors in induction tract - Check plugs and electrical wires to pressure sensors in induction tract - Melted catalyst on one bank (visual inspection through sensor fittings)	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Misfiring	Breakdown notice: - none	- none

MSD87-6Z	0x118601	1148417	Oxygen sensor before catalytic converter, fine mixture control: exhaust gas after catalytic converter too rich	The diagnostic function monitors persistent deviation in the oxygen sensor behind catalytic converter.	P2097	Post Catalyst Fuel Trim System Too Rich (Bank 1)	Fuel System	Post Catalyst	The fault is recognized when the l component of the trim controller is less than -4 %. Potential problem source(s): - Collateral fault - Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter - Leak in exhaust/muffler assembly - Defective DME	- Pending	Terminal 15	Voltage condition: - - None: - Temp...	Engine temperature > 85°C	- None	NO	none	N	- Collateral fault - Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter - Leak in exhaust/muffler assembly - Defective DME	- If other diagnostic fault codes are logged, repair these faults first - Conduct system test for interchanged oxygen sensors in wrong mutual positions - Check wiring harness to oxygen sensors - Check exhaust/muffler system forward of oxygen sensor behind catalytic converter for leaks - Replace pre-catalyst oxygen sensor - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	HF: Content of debounce moved to this position: 1 - 2 hrs. constant operation; otherwise #11390 might become active in response to fault recognition lasting too long, which would then make fault diagnosis complicated	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x118602	1148418	Oxygen sensor before catalytic converter, fine mixture control: exhaust gas after catalytic converter too lean	The diagnostic function monitors persistent deviation in the oxygen sensor behind catalytic converter.	P2096	Post Catalyst Fuel Trim System Too Lean (Bank 1)	Fuel System	Post Catalyst	The fault is recognized when the l component of the trim controller is greater than -4 %. Potential problem source(s): - Collateral fault - Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter - Leak in exhaust/muffler assembly - Defective DME	- Pending	Terminal 15	Voltage condition: - - None: - Temp...	Engine temperature > 85°C	- None	NO	none	N	- Collateral fault - Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter - Leak in exhaust/muffler assembly - Defective DME	- If other diagnostic fault codes are logged, repair these faults first - Conduct system test for interchanged oxygen sensors in wrong mutual positions - Check wiring harness to oxygen sensors - Check exhaust/muffler system forward of oxygen sensor behind catalytic converter for leaks - Replace pre-catalyst oxygen sensor - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	HF: Content of debounce moved to this position: 1 - 2 hrs. constant operation; otherwise #11390 might become active in response to fault recognition lasting too long, which would then make fault diagnosis complicated	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x118701	1148673	Oxygen sensor before catalytic converter 2, fine mixture control: exhaust gas after catalytic converter too rich	The diagnostic function monitors persistent deviation in the oxygen sensor behind catalytic converter.	P2099	Post Catalyst Fuel Trim System Too Rich (Bank 2)	Fuel System	Post Catalyst	The fault is recognized when the l component of the trim controller is less than -4 %. Potential problem source(s): - Collateral fault - Oxygen sensor 2 forward of catalytic converter defective - Oxygen sensor 2 behind catalytic converter defective - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Leak in exhaust/muffler assembly - Defective DME	- Pending	Terminal 15	Voltage condition: - - None: - Temp...	Engine temperature > 85°C	- None	NO	none	N	- Collateral fault - Oxygen sensor 2 forward of catalytic converter defective - Oxygen sensor 2 behind catalytic converter defective - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Leak in exhaust/muffler assembly - Defective DME	- If other diagnostic fault codes are logged, repair these faults first - Conduct system test for interchanged oxygen sensors in wrong mutual positions - Check wiring harness to oxygen sensors - Check exhaust/muffler assembly upstream from post-catalyst oxygen sensor 2 for leaks - Replace pre-catalyst oxygen sensor 2 - Replace post-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	HF: Content of debounce moved to this position: 1 - 2 hrs. constant operation; otherwise #11390 might become active in response to fault recognition lasting too long, which would then make fault diagnosis complicated	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x118702	1148674	Oxygen sensor before catalytic converter 2, fine mixture control: exhaust gas after catalytic converter too lean	The diagnostic function monitors persistent deviation in the oxygen sensor behind catalytic converter.	P2098	Post Catalyst Fuel Trim System Too Lean (Bank 2)	Fuel System	Post Catalyst	The fault is recognized when the l component of the trim controller is greater than -4 %. Potential problem source(s): - Collateral fault - Oxygen sensor 2 forward of catalytic converter defective - Oxygen sensor 2 behind catalytic converter defective - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Leak in exhaust/muffler assembly - Defective DME	- Pending	Terminal 15	Voltage condition: - - None: - Temp...	Engine temperature > 85°C	- None	NO	none	N	- Collateral fault - Oxygen sensor 2 forward of catalytic converter defective - Oxygen sensor 2 behind catalytic converter defective - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Leak in exhaust/muffler assembly - Defective DME	- If other diagnostic fault codes are logged, repair these faults first - Conduct system test for interchanged oxygen sensors in wrong mutual positions - Check wiring harness to oxygen sensors - Check exhaust/muffler assembly upstream from post-catalyst oxygen sensor 2 for leaks - Replace pre-catalyst oxygen sensor 2 - Replace post-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	HF: Content of debounce moved to this position: 1 - 2 hrs. constant operation; otherwise #11390 might become active in response to fault recognition lasting too long, which would then make fault diagnosis complicated	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x118801	1148929	Oxygen sensor after catalytic converter, fine mixture control: exhaust gas after catalytic converter too rich	The diagnostic function monitors the voltage of the oxygen sensor behind the catalytic converter.	P114A	Post Catalyst Fuel Trim Via Oxygen Sensor System Too Rich (Bank 1)	Oxygen Sensor, Rear	Post Catalyst Fuel Trim	The fault is recognized when the signal from the post-catalyst oxygen sensor exceeds 0.898 V during moderate vehicle operation. Potential problem source(s): - Collateral fault - Defective wiring harness - Leak in exhaust system - Pre-catalyst or post-catalyst oxygen sensor is defective - Defective DME	The diagnostic fault code is logged when the fault remains present for longer than 4 min.	Terminal 15	Voltage condition: - - None: - Temp...	None	- None	NO	none	N	- Defect in wiring - Leak in exhaust system - Defective before catalytic converter or sensor behind catalytic converter	- If other faults are present repair these first - Check wiring harness - Check exhaust system for leaks - Replace oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x118802	1148930	Oxygen sensor after catalytic converter, fine mixture control: exhaust gas after catalytic converter too lean	The diagnostic function monitors the lambda closed-loop mixture control.	P114B	Post Catalyst Fuel Trim Via Oxygen Sensor System Too Lean (Bank 1)	Oxygen Sensor, Rear	Post Catalyst Fuel Trim	The fault is recognized when the mixture for Bank 1 is too lean and the adaptation limit of 32 % is exceeded for 50 sec. Potential problem source(s): - Wiring harness for pressure sensors on intake and engine sides of throttle valve defective - Pressure sensor on intake and engine sides of throttle valve defective - Leak in exhaust system - Catalytic converter clogged - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst...	Tamn-10 °C	- None	None	none	N	- Wiring harness for pressure sensors on intake and engine sides of throttle valve defective - Pressure sensor on intake and engine sides of throttle valve defective - Leak in exhaust system - Catalytic converter clogged - Fuel injector defective	- Check wiring harness for pressure sensors on intake and engine sides of throttle valve - Repair pressure sensors on intake and engine sides of throttle valve - Check exhaust system for leaks - Replace fuel injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Misfiring	Breakdown notice: - none	- none
MSD87-6Z	0x118901	1149185	Oxygen sensor after catalytic converter 2, fine mixture control: exhaust gas after catalytic converter too rich	The diagnostic function monitors the voltage of the oxygen sensor behind the catalytic converter.	P114C	Post Catalyst Fuel Trim Via Oxygen Sensor System Too Rich (Bank 2)	Oxygen Sensor, Rear	Post Catalyst Fuel Trim	The fault is recognized when the signal from the post-catalyst oxygen sensor 2 exceeds 0.898 V during moderate vehicle operation. Potential problem source(s): - Collateral fault - Defective wiring harness - Leak in exhaust system - Pre-catalyst or post-catalyst oxygen sensor is defective - Defective DME	The diagnostic fault code is logged when the fault remains present for longer than 4 min.	Terminal 15	Voltage condition: - - None: - Temp...	None	- None	NO	none	N	- Defect in wiring - Leak in exhaust system - Defective before catalytic converter or sensor behind catalytic converter	- If other faults are present repair these first - Check wiring harness - Check exhaust system for leaks - Replace oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x118902	1149186	Oxygen sensor after catalytic converter 2, fine mixture control: exhaust gas after catalytic converter too lean	The diagnostic function monitors the lambda closed-loop mixture control.	P114D	Post Catalyst Fuel Trim Via Oxygen Sensor System Too Lean (Bank 2)	Oxygen Sensor, Rear	Post Catalyst Fuel Trim	The fault is recognized when the mixture for Bank 2 is too lean and the adaptation limit of 32 % is exceeded for 50 sec. Potential problem source(s): - Wiring harness for pressure sensors on intake and engine sides of throttle valve defective - Pressure sensor on intake and engine sides of throttle valve defective - Leak in exhaust system - Catalytic converter clogged - Fuel injector defective	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - Electrical syst...	Tamn-10 °C	- None	None	none	N	- Wiring harness for pressure sensors on intake and engine sides of throttle valve defective - Pressure sensor on intake and engine sides of throttle valve defective - Leak in exhaust system - Catalytic converter clogged - Fuel injector defective	- Check wiring harness for pressure sensors on intake and engine sides of throttle valve - Repair pressure sensors on intake and engine sides of throttle valve - Check exhaust system for leaks - Replace fuel injector	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Misfiring	Breakdown notice: - none	- none
MSD87-6Z	0x119802	1149708	Mixture adaptation, injector ageing: cylinder bank 1: long-term adaptation too high	The diagnostic function monitors the long-term mixture adaptation (adaptation runs every 800 km to compensate for aging in injectors).	P119D	Fuel Trim, Injector Aging Long-Term Adaptation Too High (Bank 1)	Fuel System	Injector Aging	The fault is recognized when the long-term adaptation is below the 12 % deviation. Bank 1 Potential problem source(s): - Injector aging	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	none	none	Y	- Injector aging	- Replace injectors	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x119802	1150210	Mixture adaptation, injector ageing: cylinder bank 2: long-term adaptation too high	The diagnostic function monitors the long-term mixture adaptation (adaptation runs every 800 km to compensate for aging in injectors).	P119E	Fuel Trim, Injector Aging Long-Term Adaptation Too High (Bank 2)	Fuel System	Injector Aging	The fault is recognized when the long-term adaptation is below the 12 % deviation. Bank 2 Potential problem source(s): - Injector aging	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	none	none	Y	- Injector aging	- Replace injectors	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x119001	1150977	Rail-pressure sensor, electric: short circuit to positive or open circuit	The diagnosis function monitors the upper voltage limit of the rail-pressure sensor.	P0193	Fuel Rail Pressure Sensor 'A' Circuit High	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure Sensor	The fault is recognized when the voltage of the rail-pressure sensor > 4.75 V. Potential problem source(s): - Defect in wiring harness - Defective rail-pressure sensor	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: - Temp...	None	- None	NO	none	N	- Defect in wiring harness - Defective rail-pressure sensor - Could this also be a case of a defective DME???	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - The engine runs roughly, can stall in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0x119002	1150978	Rail-pressure sensor, electric: short circuit to ground	The diagnostic function monitors the rail-pressure sensor's lower voltage limit.	P0192	Fuel Rail Pressure Sensor 'A' Circuit Low	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure Sensor	The fault is recognized when the voltage of the rail-pressure sensor is < 0.4 V. Potential problem source(s): - Defect in wiring harness - Defective rail-pressure sensor	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: - Temp...	None	- None	NO	none	N	- Sensor wire has short to ground, wire is open, electrical fault in sensor	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - The engine runs roughly, can stall in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0x119201	1151489	Fuel low-pressure sensor, electric: short circuit to positive	The diagnostic function monitors the upper voltage limit of the low-pressure sensor.	P2542	Low Pressure Fuel System Sensor Circuit High			The fault is recognized when the voltage of the low-pressure sensor is > 4.6 V. Potential problem source(s): - Defect in wiring harness - Defective low-pressure sensor	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: - Temp...	None	- None	NO	none	N	- Sensor wire has short to Ubatt, wire is open, electrical fault in sensor	- Check wiring harness - Replace low-pressure sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x119202	1151490	Fuel low-pressure sensor, electrical: Short to earth or open circuit	The diagnostic function monitors the lower voltage limit of the low-pressure sensor.	P2541	Low Pressure Fuel System Sensor Circuit Low			The fault is recognized when the voltage of the low-pressure sensor is < 0.4 V. Potential problem source(s): - Defect in wiring harness - Defective low-pressure sensor	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: - Temp...	None	- None	NO	none	N	- Sensor wire has short to ground, wire is open, electrical fault in sensor	- Check wiring harness - Replace low-pressure sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x119208	1151496	Fuel low-pressure sensor, electric: signal implausible	Data content defined	P2540	Low Pressure Fuel System Sensor Circuit Range/Performance			none Potential problem source(s): none	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: - Temper...	None	- None	none	none	Y	Sensor defective and not plugged in	Check plug connection for corrosion. Conduct wiring inspection. Replace sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured
MSD87-6Z	0x11A201	1155585	Fuel low-pressure system, fuel pressure: pressure too high	The diagnostic function monitors the pressure in the low-pressure fuel system.	P008B	Low Pressure Fuel System Pressure - Too High			The fault is recognized when the actual pressure in the low-pressure fuel system is consistently above the specified pressure. Potential problem source(s): - Collateral fault - Defect in low-pressure sensor	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: - Temp...	None	3 sec. after engine on	see EKP module	The relevant measured variable mu	Y	- Collateral fault - Defect in low-pressure sensor	- Determine whether diagnostic fault codes for the fuel pump control are logged - Use IMIB to check low-pressure sensor, if the two figures deviate by more than 550 mbar then replace the low-pressure sensor - Testing operation of fuel system: If a fault is found, then repair the fault and delete the adaptation data for low-pressure fuel system control; if no fault is discovered and the fault frequency is as great as 3, then delete the adaptation data for the low-pressure fuel system control and take no additional action; if no fault is discovered and the fault frequency is > 3, then contact Technical Support	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Electric fuel pump in default mode with higher activation signal	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
				The diagnostic function monitors whether the					The fault is recognized when the actual pressure in the low-pressure fuel system is above the maximum pressure. Potential problem source(s):	The fault is logged in the fault memory if it remains		Voltage condition: - - None: - Temp...							- Determine whether diagnostic fault codes for the fuel pump control are logged - Use IMIB to check low-pressure sensor, if the two figures deviate by more than 550 mbar then replace the low-pressure sensor - Testing operation of fuel system: If a fault is found, then repair the fault and delete the adaptation data for low-pressure fuel system control; if no fault is discovered and the fault frequency is as great as 3, then delete the adaptation data for the low-pressure fuel system control and take no additional action; if no	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Electric fuel				

MSD87-6Z	0x11A204	1156588	Fuel low-pressure system, fuel pressure: minimum pressure undershot	The diagnostic function monitors whether the system is dropping below the minimum approved fuel pre-supply pressure.	P3096	Low Fuel Pressure System Minimum Pressure Fallen Below			The fault is recognized when the actual pressure in the low-pressure fuel system is below the minimum pressure. Potential problem source(s): - Collateral fault - Defect in low-pressure sensor	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None - Tempe	None	- 3 sec. after engine on	see EKP module	The relevant measured variable ma	Y	- Collateral fault - Defect in low-pressure sensor	- Determine whether diagnostic fault codes for the fuel pump control are logged - Use IM88 to check low-pressure sensor, if the two figures deviate by more than 500 mbar then replace the low-pressure sensor - Testing operation of fuel system: If a fault is found, then repair the fault and delete the adaptation data for low-pressure fuel system control; if no fault is discovered and the fault frequency is as great as 3, then delete the adaptation data for the low-pressure fuel system control and take no additional action; if no fault is discovered and the fault frequency is > 3, then contact Technical Support	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Electric fuel pump in default mode with higher activation signal	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0x11A301	1155841	Fuel high pressure after engine stop: pressure too high	The diagnostic function monitors depressurization of the high-pressure circuit when the engine is switched off.					The fault is recognized when the pressure is too high after the engine is switched off. Potential problem source(s): - Flow-control valve seizes when deactivated	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	none	Voltage condition: - - Electrical syst	None	- 4 sec. after engine stops	100 % Test of deactivation pressure	Voltage signal	Y	- Flow-control valve seizes when deactivated	- Replace high-pressure pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x11A401	1158097	Fuel high pressure on enabling of injection: pressure too low	The diagnostic function monitors pressurization in the high-pressure fuel system while the engine is starting.	P3049	Fuel Rail Pressure Enabling Injection, Pressure Too Low	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the pressure in the high-pressure system is below 10 ... 30 bar after the engine start. Potential problem source(s): - High-pressure pump defective - Defective injector - Defective electric fuel pump	The diagnostic fault code is logged when the fault persists for longer than 20 ms.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	Injector/pump leakage from supplie	Voltage signal	Y	- High-pressure pump defective - Defective injector - Defective electric fuel pump	- Measurement of presupply pressure at engine start, if presupply pressure is too low replace the electric fuel pump - Measurement of rail pressure at engine start, if rail pressure rise is too slow then replace the high-pressure pump - Replace injectors	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Loss of power	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x11A501	1158353	Fuel high-pressure system, measuring range: maximum pressure exceeded	The diagnostic function monitors the sensor's operating range.	P302E	Fuel Rail Pressure Range/Performance - Pressure Too High (Bank 1)	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the rail pressure rises above 1 250 bar. Potential problem source(s): - Defect in wiring harness - Rail pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- 15 sec. after engine on	100 % check of sensor signal	Voltage signal	N	- Signal wire shorted to UBatt	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	None at current time	Possible apparent symptoms: - none	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x11A501	1158353	Fuel high-pressure system, measuring range: maximum pressure exceeded	The diagnostic function monitors the sensor's operating range.	P303A	Fuel Rail/System Pressure Range/Performance - Pressure Too High (Bank 1)	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the rail pressure rises above 1 250 bar. Potential problem source(s): - Defect in wiring harness - Rail pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- 15 sec. after engine on	100 % check of sensor signal	Voltage signal	N	- Signal wire shorted to UBatt	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	None at current time	Possible apparent symptoms: - none	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x11A502	1158354	Fuel high-pressure system, measuring range: maximum pressure exceeded	The diagnostic function monitors the sensor's operating range.	P303A	Fuel Rail/System Pressure Range/Performance - Pressure Too High (Bank 1)	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the rail pressure rises above 1 250 bar. Potential problem source(s): - Defect in wiring harness - Rail pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- 15 sec. after engine on	100 % check of sensor signal	Voltage signal	N	- Open wire - Signal wire is shorted to ground	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	None at current time	Possible apparent symptoms: - none	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x11A504	1158356	Fuel high-pressure system, measuring range: minimum pressure undershot	The diagnostic function monitors the sensor's operating range.	P303C	Fuel Rail/System Pressure Range/Performance - Pressure Too Low (Bank 1)	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the rail pressure drops below 1 0 bar Potential problem source(s): - Defect in wiring harness - Defective rail-pressure sensor - High-pressure pump defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- 15 sec. after engine on	100 % check of sensor signal	Voltage signal	N	- Sensor failure - Overpressure and failure of pressure-relief valve	- Check wiring harness - Replace rail-pressure sensor - Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	None at current time	Possible apparent symptoms: - Loss of power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x11A701	1158865	Fuel high-pressure system, control: fuel mass outside limit value	The diagnostic function monitors the actual mass of the injected fuel and the operational integrity of the high-pressure fuel sensor.	P10ED	Fuel Rail Pressure Sensor 'X' Pressure High	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure Sensor	The fault is recognized when the rail pressure on Bank 1 deviates from the specified pressure by 20 bar or the pressure regulator varies from the zero position by - 20 bar for three seconds and the lambda control or the adaptation deviates by 10 %. Potential problem source(s): - Defect in wiring harness - Rail pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 3 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- 15 sec. after engine on	100 % check of sensor signal	Voltage signal	N	- Open wire - Signal wire shorted to UBatt	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	None at current time	Possible apparent symptoms: - Loss of power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x11A701	1158865	Fuel high-pressure system, control: fuel mass outside limit value	The diagnostic function monitors the actual mass of the injected fuel and the operational integrity of the high-pressure fuel sensor.	P32B3	Fuel Pressure Control Adaptive Fuel Volume Out of Range (Bank 1)	Fuel Regulators / Valves / Sensors	Fuel Pressure Control	The fault is recognized when the rail pressure on Bank 1 deviates from the specified pressure by 20 bar or the pressure regulator varies from the zero position by - 20 bar for three seconds and the lambda control or the adaptation deviates by 10 %. Potential problem source(s): - Defect in wiring harness - Rail pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 3 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- 15 sec. after engine on	100 % check of sensor signal	Voltage signal	N	- Open wire - Signal wire shorted to UBatt	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	None at current time	Possible apparent symptoms: - Loss of power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x11A702	1158866	Fuel high-pressure system, control: calculated fuel mass invalid	The diagnostic function monitors the actual mass of the injected fuel and the operational integrity of the high-pressure fuel sensor.	P10EE	Fuel Rail Pressure Sensor 'X' Pressure Low	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure Sensor	The fault is recognized when the rail pressure on Bank 1 deviates from the specified pressure by - 20 bar or the pressure regulator deviates from the zero position by 20 bar for three seconds and the lambda control or the adaptation deviates by 10 %. Potential problem source(s): - Defect in wiring harness - Rail pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 3 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- 15 sec. after engine on	100 % check of sensor signal	Voltage signal	N	- Signal wire is shorted to ground	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	None at current time	Possible apparent symptoms: - Stalls at low rpm when it reverts to default value	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x11A702	1158866	Fuel high-pressure system, control: calculated fuel mass invalid	The diagnostic function monitors the actual mass of the injected fuel and the operational integrity of the high-pressure fuel sensor.	P32B4	Fuel Pressure Control Calculation Adaptive Fuel Volume Implausible (Bank 1)	Fuel Regulators / Valves / Sensors	Fuel Pressure Control	The fault is recognized when the rail pressure on Bank 1 deviates from the specified pressure by - 20 bar or the pressure regulator deviates from the zero position by 20 bar for three seconds and the lambda control or the adaptation deviates by -10%. Potential problem source(s): - Defect in wiring harness - Rail pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 3 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- 15 sec. after engine on	100 % check of sensor signal	Voltage signal	N	- Signal wire is shorted to ground	- Check wiring harness - Replace rail-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	None at current time	Possible apparent symptoms: - Stalls at low rpm when it reverts to default value	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x11A501	1157377	Fuel high-pressure system, fuel pressure: pressure too high	The diagnostic function monitors the high-pressure pump.	P0088	Fuel Rail/System Pressure - Too High	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the monitored pressure deviates from the specified pressure by 30 bar for > 7 sec. Potential problem source(s): - Flow-control valve sticking open	This fault is logged in the control module's fault memory if it remains present for longer than 7 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 10 sec. after start	100 % Component check at supplie	Voltage signal	Y	- Flow-control valve sticking open	- Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Loss of power	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x11A902	1157378	Fuel high-pressure system, fuel pressure: maximum pressure exceeded	The diagnostic function monitors the high-pressure pump.	P302A	Fuel Rail Pressure, Maximum Pressure Exceeded (Bank 1)	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the monitored pressure deviates from the specified pressure by -30 bar for > 7 sec. Potential problem source(s): - Flow-control valve sticking closed or pump is defective	This fault is logged in the control module's fault memory if it remains present for longer than 7 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 10 sec. after start	100 % Component check at supplie	Voltage signal	Y	- Flow-control valve sticking closed or pump is defective	- Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Loss of power	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x11A904	1157380	Fuel high-pressure system, fuel pressure: minimum pressure undershot	The diagnostic function monitors the high-pressure pump.	P0087	Fuel Rail/System Pressure - Too Low	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the monitored pressure deviates from the specified pressure by -30 bar for > 7 sec. Potential problem source(s): - Flow-control valve sticking closed or pump is defective	This fault is logged in the control module's fault memory if it remains present for longer than 7 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 10 sec. after start	100 % Component check at supplie	Voltage signal	Y	- Flow-control valve sticking closed or pump is defective	- Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Loss of power	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x11A904	1157380	Fuel high-pressure system, fuel pressure: minimum pressure undershot	The diagnostic function monitors the high-pressure pump.	P302C	Fuel Rail Pressure, Minimum Pressure Fallen Below (Bank 1)	Fuel Regulators / Valves / Sensors	Fuel Rail Pressure	The fault is recognized when the monitored pressure deviates from the specified pressure by -30 bar for > 7 sec. Potential problem source(s): - Flow-control valve sticking closed or pump is defective	This fault is logged in the control module's fault memory if it remains present for longer than 7 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 10 sec. after start	100 % Component check at supplie	Voltage signal	Y	- Flow-control valve sticking closed or pump is defective	- Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Loss of power	Breakdown notice: - The engine reverts to the limp-home mode, continued driving possible but subject to severe restrictions, stop and wait for service assistance as soon as possible.	- none
MSD87-6Z	0x11AC01	1158145	High-pressure fuel system, cold start: Pressure too high	The diagnostic function monitors the high-pressure fuel system to determine whether the pressure levels remain as specified during the catalyst preheating phase.	P15DE	Cold Start Fuel Pressure Too High (Bank 1)	Fuel System	Cold Start	The fault is recognized when rail pressure rises above the specified figure while the catalytic converter is in its heating phase. Potential problem source(s): - Defective rail-pressure sensor - Defect in low-pressure system - High-pressure pump defective	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Onboard elect	None	- None	NO	Rail-pressure sensor voltage signal	N	- Defective rail-pressure sensor - Defect in low-pressure system - High-pressure pump defective	- Check rail-pressure sensor - Replace rail-pressure sensor - Low-pressure ECU (EKP electric fuel pump), read out diagnostic fault codes - Check low-pressure, sensor, pump - Replace high-pressure pump	- ECE emissions warning lamp: off - US emissions warning lamp: on - Electronic engine power reduction: on - CC message: on	for US only	Possible apparent symptoms: - Loss of power	Breakdown notice: The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	None
MSD87-6Z	0x11AC02	1158146	High-pressure fuel system, cold start: Pressure too low	The diagnostic function monitors the high-pressure fuel system to determine whether the pressure levels remain as specified during the catalyst preheating phase.	P15DF	Cold Start Fuel Pressure Too Low (Bank 1)	Fuel System	Cold Start	The fault is recognized when the pressure level in the high-pressure system is 3.5 MPa lower than the specified value. Potential problem source(s): - Tank empty - Defective rail-pressure sensor - Defect in low-pressure system - Defective high-pressure pump - High-pressure pump defective	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Onboard elect	None	- None	NO	Rail-pressure sensor voltage signal	N	- Tank empty - Defective rail-pressure sensor - Defect in low-pressure system - High-pressure pump defective	- Check rail-pressure sensor - Replace rail-pressure sensor - Low-pressure ECU (EKP electric fuel pump), read out diagnostic fault codes - Check low-pressure, sensor, pump, filter - Replace high-pressure pump	- ECE emissions warning lamp: off - US emissions warning lamp: on - Electronic engine power reduction: on - CC message: on	for US only	Possible apparent symptoms: - Loss of power	Breakdown notice: The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	None
MSD87-6Z	0x11B004	1159172	Fuel pump, function: emergency shutdown	The electric fuel pump is deactivated when an accident occurs.	P213F	Fuel Pump System Fault - Forced Engine Shutdown	Fuel Regulators / Valves / Sensors	Fuel Pump	The fault is recognized when the "Accident" message is present. Potential problem source(s): - Accident	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Accident	- Check ACSM	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine stalls	Breakdown notice: - none	- none
MSD87-6Z	0x11B101	1159425	Fuel pump: speed too high	The diagnostic function monitors the electric fuel pump.	P1214	Fuel Pump Speed Too High			The fault is recognized when the electric fuel pump's rotation speed is too high. Potential problem source(s): - Mechanical fault	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Mechanical fault	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x11B102	1159426	Fuel pump: speed too low	The diagnostic function monitors the electric fuel pump.	P1215	Fuel Pump Speed Too Low			The fault is recognized when the electric fuel pump's rotation speed is too low. Potential problem source(s): - Mechanical fault	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Mechanical fault	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x11B104	1159428	Fuel pump: limp-home mode	The diagnostic function monitors the electric fuel pump.	P1216	Fuel Pump Emergency Operation	Fuel Regulators / Valves / Sensors	Fuel Pump	The fault is recognized when the electric fuel pump runs in its emergency default mode. Potential problem source(s): - Mechanical fault	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Mechanical fault	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none

MSD87-6Z	0x118158	1159432	Fuel pump: overtemperature	The diagnostic function monitors the electric fuel pump.	P1217	Fuel Pump Overtemperature Condition			The fault is recognized when the electric fuel pump is too hot. Potential problem source(s): - Mechanical fault	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	750 ms	NO	CAN message	Y	- Mechanical fault	- Carry out system analysis	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x118201	1159681	Fuel low-pressure system, control: delivery-rate control outside valid range	The diagnostic function monitors pressure regulation in the low-pressure fuel system.	P10C4	Low Pressure Fuel System Delivery Rate out of Range			The fault is recognized when the actual pressure in the low-pressure fuel system is unable to remain within the specified limits when trailing the specified pressure. Potential problem source(s): - Collateral fault - Defect in low-pressure sensor	This fault is logged in the control module's fault memory if it remains present for longer than 3 sec.	none	Voltage condition: - - None - Tempe	-20 °C, < coolant temperature < 10	-10 sec, after engine off	see EKP module	The relevant measured variable ma	Y	- Collateral fault - Defect in low-pressure sensor	- Determine whether diagnostic fault codes for the fuel pump control are logged - Use IMIB to check low-pressure sensor. If the two figures deviate by more than 550 mbar then replace the low-pressure sensor - Testing operation of fuel system: If a fault is found, then repair the fault and delete the adaptation data for low-pressure fuel system control; if no fault is discovered and the fault frequency is as great as 3, then delete the adaptation data for the low-pressure fuel system control and take no additional action; if no fault is discovered and the fault frequency is > 3, then contact Technical Support	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Electric fuel pump in default mode with higher activation signal	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x118202	1159682	Fuel low-pressure system, control: delivery rate outside limit value due to ageing	The diagnostic function monitors pressure regulation in the low-pressure fuel system.	P10C5	Low Pressure Fuel System Delivery Rate out of Range due to Aging			The fault is recognized when the actual pressure in the low-pressure fuel system is unable to trail the specified pressure in the specified time. Potential problem source(s): - Collateral fault - Defect in low-pressure sensor	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	none	Voltage condition: - - None - Tempe	-20 °C, < coolant temperature < 10	-10 sec, after engine off	see EKP module	The relevant measured variable ma	Y	- Collateral fault - Defect in low-pressure sensor	- Determine whether diagnostic fault codes for the fuel pump control are logged - Use IMIB to check low-pressure sensor. If the two figures deviate by more than 550 mbar then replace the low-pressure sensor - Testing operation of fuel system: If a fault is found, then repair the fault and delete the adaptation data for low-pressure fuel system control; if no fault is discovered and the fault frequency is as great as 3, then delete the adaptation data for the low-pressure fuel system control and take no additional action; if no fault is discovered and the fault frequency is > 3, then contact Technical Support	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Electric fuel pump in default mode with higher activation signal	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0x118204	1159684	Fuel low-pressure system, control: minimum delivery rate outside limit value due to ageing	Data content defined	P10C6	Low Pressure Fuel System Delivery Rate Too Low due to Aging			Data out Potential problem source(s): - Fuel filter obstructed - Crushed fuel line - Defect in low-pressure sensor - Electric fuel pump defective	This fault is logged in the control module's fault memory if it remains present for longer than 4 sec.	none	Voltage condition: - - None - Tempe	-minus 20.25 °C, < coolant tempera	-3 sec, after engine on	see EKP module	analogous to MSD80	Y	- Fuel filter obstructed - Crushed fuel line - Defect in low-pressure sensor - Electric fuel pump defective	- Assess plausibility of signal from low-pressure sensor, i.e., compare the DME test figure (BMW tester) with the actual figure from the pressure gauge - If the pressures measured by the DME and the pressure gauge are equal, then replace the EKP - electric fuel pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Electric fuel pump in default mode with higher activation signal	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- Data configured
MSD87-6Z	0x11C101	1163521	Fuel pressure control valve: Flow rate outside limit	none	P3194	Fuel Pressure Control Bank Characteristic Curve Adaptation 1 Out of Range			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x11C102	1163522	Fuel pressure control valve: Minimum flow rate outside limit	none	P319A	Fuel Pressure Control Min. Characteristic Curve Adaptation 1 Out of Range			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x11C401	1164289	Fuel-supply control valve, activation: short circuit to positive	The diagnostic function monitors the flow-control valve's PWM control signal's upper limit value.	P0004	Fuel Volume Regulator Control Circuit High	Fuel Regulators / Valves / Sensors	Fuel Volume Regulator	The fault is recognized when the flow-control valve's PWM signal is > 95 %. Potential problem source(s): - Signal wire shorted to UBatt	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	None	N	- Signal wire shorted to UBatt	- Check wiring harness to flow-control valve in the high-pressure pump - Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x11C402	1164290	Fuel-supply control valve, activation: short circuit to ground	The diagnostic function monitors the flow-control valve's PWM control signal's upper lower value.	P0003	Fuel Volume Regulator Control Circuit Low	Fuel Regulators / Valves / Sensors	Fuel Volume Regulator	The fault is recognized when the PWM signal at the flow-control valve is < 1.5 %. Potential problem source(s): - Signal wire is shorted to ground	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	None	N	- Signal wire is shorted to ground	- Check wiring harness to flow-control valve in the high-pressure pump - Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x11C404	1164292	Fuel-supply control valve, activation: open circuit	The diagnostic function monitors the flow-control valve's signal wire for opens.	P0001	Fuel Volume Regulator Control Circuit/Open	Fuel Regulators / Valves / Sensors	Fuel Volume Regulator	The fault is recognized when the PWM signal at the flow-control valve lies between 1.5 % and 8 %. Potential problem source(s): - Open signal wire	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	None	N	- Open signal wire	- Check wiring harness to flow-control valve in the high-pressure pump - Replace high-pressure pump	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x120001	1179649	Charge-air pressure control, leakage: charge-air pressure too low	The diagnostic function monitors the pressure recorded at the boost-pressure sensor and compares it with the specified value.	P15AA	Turbocharger Leak in Supercharger System (Bank 1)			The fault is recognized when the monitored pressure is 90 hPa below the specified pressure while the wastegate's pulse-duty factor is simultaneously too high. Potential problem source(s): - Boost-pressure sensor defective - Vacuum converter for wastegate valve defective - Wastegate valve is defective (seized in open position)	This fault is logged in the control module's fault memory if it remains present for longer than 1.6 sec.	none	Voltage condition: - - None - Tempe	None	- None	steuern_systemtest_ab	status	STAT_ATLSVC_DPVOK2_WERT	N	- Boost-pressure sensor defective - Vacuum converter for wastegate valve defective - Wastegate valve is defective (seized in open position)	- Check vacuum at wastegate valve vacuum converter output side (at idle: 450 +/- 50 hPa at pulse-duty factor of 50%), for testing see test module - Check wastegate valve for stiction, see test module - Check vacuum at input to wastegate valve vacuum converter (-900 to -800 hPa is specified)	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	The most frequent fault is a leak in the vacuum sensor; the exhaust flap is a part of the vacuum system	Possible apparent symptoms: - Reduced power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- Data configured
MSD87-6Z	0x120208	1180168	Charge-air pressure control, upper value: charge-air pressure too high	The diagnostic function monitors the pressure recorded at the boost-pressure sensor and compares it with the specified value.	P0234	Turbocharger/Supercharger 'A' Overboost Condition	Supercharger Boost Pressure	Pressure	The fault is recognized when the monitored pressure is 90 hPa above the specified pressure while the wastegate's pulse-duty factor is simultaneously too low. Potential problem source(s): - Boost-pressure sensor defective - Vacuum converter for wastegate valve defective - Wastegate valve is defective (seized in closed position)	This fault is logged in the control module's fault memory if it remains present for longer than 1.6 sec.	none	Voltage condition: - - None - Tempe	None	- None	steuern_systemtest_ab	status	STAT_ATLSVC_DPVOK2_WERT	N	- Boost-pressure sensor defective - Vacuum converter for wastegate valve defective - Wastegate valve is defective (seized in closed position)	- Check vacuum at wastegate valve vacuum converter output side (at idle: 450 +/- 50 hPa at pulse-duty factor of 50%), for testing see test module - Check wastegate valve for stiction, see test module - Check vacuum at input to wastegate valve vacuum converter (-900 to -800 hPa is specified)	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	Extremely rare fault, almost always from sticking or seizure of the wastegate valve	Possible apparent symptoms: - Reduced power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- Check vacuum supply as indicated
MSD87-6Z	0x120308	1180424	Charge-air pressure control, lower value: charge-air pressure too low	The diagnostic function monitors the pressure recorded at the boost-pressure sensor and compares it with the specified value.	P0299	Turbocharger/Supercharger 'A' Underboost Condition	Supercharger Boost Pressure	Pressure	The fault is recognized when the monitored pressure is 90 hPa below the specified pressure while the wastegate's pulse-duty factor is simultaneously too high. Potential problem source(s): - Boost-pressure sensor defective - Vacuum converter for wastegate valve defective - Wastegate valve is defective (seized in open position)	This fault is logged in the control module's fault memory if it remains present for longer than 1.6 sec.	none	Voltage condition: - - None - Tempe	None	- None	steuern_systemtest_ab	status	STAT_ATLSVC_DPVOK2_WERT	N	- Boost-pressure sensor defective - Vacuum converter for wastegate valve defective - Wastegate valve is defective (seized in open position)	- Check vacuum at wastegate valve vacuum converter output side (at idle: 450 +/- 50 hPa at pulse-duty factor of 50%), for testing see test module - Check wastegate valve for stiction, see test module - Check vacuum at input to wastegate valve vacuum converter (-900 to -800 hPa is specified)	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	The most frequent fault is a leak in the vacuum sensor; the exhaust flap is a part of the vacuum system	Possible apparent symptoms: - Reduced power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x120408	1180680	Charge-air pressure control, deactivation: charge-air pressure buildup disabled	The diagnostic function monitors the control module memory for diagnostic fault codes related to the turbocharger induction sector.	P1260	Turbocharger/Supercharger Boost Control Cut-Off (Bank 1)			The fault is recognized when other faults in the induction tract or with the turbocharger are present. Potential problem source(s): - Collateral fault	This fault is logged in the control module memory immediately	none	Voltage condition: - - None - Tempe	None	- None	NO	NO	Y	- Collateral fault	- Repair the initial fault that caused the problem	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- Boost-pressure control is deactivated to protect the engine.
MSD87-6Z	0x121001	1183745	Boost pressure sensor, electrical: Short circuit to B+	The diagnostic function monitors the upper voltage limit of the boost-pressure sensor for Bank 1.	P0238	Turbocharger/Supercharger Boost Sensor 'A' Circuit High	Supercharger Boost Sensor	Electrical	The fault is recognized when the voltage of the boost-pressure sensor is > 4.75 V with engine running or > 2.85 V when the engine is not running. Potential problem source(s): - Defect in wiring harness - Charge-air pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	none	Voltage condition: - - Electrical syst	None	- None	NO	none	N	- Sensor wire has short to UBatt; wire is open, electrical fault in sensor	- Check wiring harness - Replace boost-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Fault can only be healed after terminal status change.
MSD87-6Z	0x121002	1183746	Charge-air pressure sensor, electric: short circuit to ground	The diagnostic function monitors the lower voltage limit of the boost-pressure sensor for Bank 1.	P0237	Turbocharger/Supercharger Boost Sensor 'A' Circuit Low	Supercharger Boost Sensor	Electrical	The fault is recognized when the voltage of the boost-pressure sensor is < 0.2 V. Potential problem source(s): - Defect in wiring harness - Charge-air pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	none	Voltage condition: - - Electrical syst	None	- None	NO	none	N	- Sensor wire has short to ground, wire is open, electrical fault in sensor	- Check wiring harness - Replace boost-pressure sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- Fault can only be healed after terminal status change.
MSD87-6Z	0x121208	1184264	Charge-air pressure sensor, run-on: pressure implausible	During the control module's shutdown phase the diagnostic function monitors the barometric pressure sensor, intake-manifold sensor and the pressure sensor on the air-intake side of the throttle valve to determine whether they are all measuring the same pressure.	P129A	Boost Sensor 'A' Afterrunning Diagnosis Pressure Implausible	Supercharger Boost Sensor	Afterrunning	The fault is recognized when the display for the sensor value on Bank 1 deviates by 300 mbar or -10 % during the shutdown phase. Potential problem source(s): - Defect in wiring harness - Charge-air pressure sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 2.2 sec.	none	Voltage condition: - - Electrical syst	Intake air > -10 °C	- Control mode	In post-operational shutdown phas	None	none	N	- Sensor wire with shunt current - Error in sensor measurement	- Check wiring harness - Replace boost-pressure sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x122001	1187841	Bypass blow-off valve, activation: short circuit to positive	The diagnostic function monitors the electrical connection between the DME and compressor bypass valve.	P0035	Turbocharger/Supercharger Bypass Valve 'A' Control Circuit High	Supercharger Bypass Valve	Electrical	The fault is recognized when a short circuit to positive is present during activation of the compressor bypass valve. Potential problem source(s): - Defect in wiring harness between compressor bypass valve and DME - Diverter valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	none	Voltage condition: - - Electrical syst	None	- 0.5 sec.	The dump valve for Bank 1 can be	none	N	- Defect in wiring harness between compressor bypass valve and DME - Diverter valve defective	- Disconnect compressor bypass valve and check the wiring harness - Replace compressor bypass valve	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	None
MSD87-6Z	0x122002	1187842	Bypass blow-off valve, activation: short circuit to ground	The diagnostic function monitors the electrical connection between the DME and compressor bypass valve.	P0034	Turbocharger/Supercharger Bypass Valve 'A' Control Circuit Low	Supercharger Bypass Valve	Electrical	The fault is recognized when a short circuit to ground is present during activation of compressor bypass valve. Potential problem source(s): - Defect in wiring harness between compressor bypass valve and DME	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	none	Voltage condition: - - Electrical syst	None	- 0.5 sec.	The dump valve for Bank 1 can be	none	N	- Defect in wiring harness between compressor bypass valve and DME	- Disconnect compressor bypass valve and check the wiring harness	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	None
MSD87-6Z	0x122004	1187844	Bypass blow-off valve, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and compressor bypass valve.	P0033	Turbocharger/Supercharger Bypass Valve 'A' Control Circuit	Supercharger Bypass Valve	Electrical	The fault is recognized when an open circuit is present during activation of compressor bypass valve. Potential problem source(s): - Defect in wiring harness between compressor bypass valve and DME - No power-supply voltage to compressor bypass valve - Diverter valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	none	Voltage condition: - - Electrical syst	None	- 0.5 sec.	The dump valve for Bank 1 can be	none	N	- Defect in wiring harness between compressor bypass valve and DME - No power-supply voltage to compressor bypass valve - Diverter valve defective	- Disconnect compressor bypass valve and check the wiring harness - Check power-supply voltage to compressor bypass valve - Replace compressor bypass valve	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	None
MSD87-6Z	0x123001	1191937	Wastegate valve, activation: Short circuit to B+	The diagnostic function monitors the electrical connection between the DME and the wastegate valve vacuum converter.	P0246	Turbocharger/Supercharger Wastegate Solenoid 'A' High			The fault is recognized when a short circuit to positive is present. Potential problem source(s): - The wire from the DME to the wastegate valve vacuum converter has a short circuit to positive. - Vacuum converter for wastegate valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	The wastegate valve vacuum conve	The status data for the wastegate v	N	- The wire from the DME to the wastegate valve vacuum converter has a short circuit to positive. - Vacuum converter for wastegate valve defective	- Check wire from DME to wastegate valve vacuum converter - Replace wastegate valve pressure converter	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Power loss may also be felt.	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
				The diagnostic function monitors the electrical					The fault is recognized when a short circuit to ground is present. Potential problem source(s): - The wire from the DME to the wastegate valve vacuum	This fault is logged in the control module's fault memory if it						The status data for the wastegate v							Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability	

MSD87-6Z	0x123004	1191940	Wastegate valve, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and the wastegate valve vacuum converter.	P0243	Turbocharger/Supercharger Wastegate Solenoid 'A'			The fault is recognized when an open wire is present. Potential problem source(s): - Wire from DME to wastegate valve vacuum converter is open. - Defect in electrical power supply to wastegate valve vacuum converter - Vacuum converter for wastegate valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- None	The wastegate valve vacuum conve	The status data for the wastegate v	N	- Wire from DME to wastegate valve vacuum converter is open. - Defect in electrical power supply to wastegate valve vacuum converter - Vacuum converter for wastegate valve defective	- Check wire from DME to wastegate valve vacuum converter - Check electrical power supply to wastegate valve vacuum converter - Replace wastegate valve pressure converter	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Power loss may also be felt.	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x123101	1192193	Wastegate 2, activation: Short circuit to B+	The diagnostic function monitors the electrical connection between the DME and the wastegate valve 2 vacuum converter.	P0250	Turbocharger/Supercharger Wastegate Solenoid 'B' High			The fault is recognized when a short circuit to positive is present. Potential problem source(s): - The wire from the DME to the wastegate valve 2 vacuum converter has a short circuit to positive. - Defect in vacuum converter to wastegate valve 2	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- None	Vacuum converter for wastegate va	The status data for the wastegate v	N	- The wire from the DME to the wastegate valve 2 vacuum converter has a short circuit to positive. - Defect in vacuum converter to wastegate valve 2	- Check wire from DME to wastegate valve 2 vacuum converter - Replace wastegate valve 2 pressure converter	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Power loss may also be felt.	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x123102	1192194	Wastegate 2, activation: Short to earth	The diagnostic function monitors the electrical connection between the DME and the wastegate valve 2 vacuum converter.	P0249	Turbocharger/Supercharger Wastegate Solenoid 'B' Low			The fault is recognized when a short circuit to ground is present. Potential problem source(s): - The wire from the DME to the wastegate valve 2 vacuum converter has a short circuit to ground.	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- None	Vacuum converter for wastegate va	The status data for the wastegate v	N	- The wire from the DME to the wastegate valve 2 vacuum converter has a short circuit to ground.	- Check wire from DME to wastegate valve 2 vacuum converter	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Power loss may also be felt.	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x123104	1192196	Wastegate 2, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and the wastegate valve 2 vacuum converter.	P0247	Turbocharger/Supercharger Wastegate Solenoid 'B'			The fault is recognized when an open wire is present. Potential problem source(s): - Wire from DME to wastegate valve 2 vacuum converter is open. - Defect in electrical power supply to wastegate valve 2 vacuum converter - Defect in vacuum converter for wastegate valve 2	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- None	Vacuum converter for wastegate va	The status data for the wastegate v	N	- Wire from DME to wastegate valve 2 vacuum converter is open. - Defect in electrical power supply to wastegate valve 2 vacuum converter - Defect in vacuum converter for wastegate valve 2	- Check wire from DME to wastegate valve 2 vacuum converter - Check electrical power supply to wastegate valve 2 vacuum converter - Replace wastegate valve 2 pressure converter	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Power loss may also be felt.	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x128008	1214424	Oxygen sensors before catalytic converter, mounting: mixed up	The diagnostic function monitors the lambda controller.	P0040	O2 Sensor Signals Swapped Bank 1 Sensor 1 / Bank 2 Sensor 1	Oxygen Sensor, Front	Sensors Swapped	The fault is recognized when the lambda controller on one bank is above 20 % and simultaneously below -25 % on the other bank. Potential problem source(s): - Oxygen sensors before catalytic converter interchanged.	This fault is logged in the control module's fault memory if it remains present for longer than 50 sec.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Oxygen sensors before catalytic converter interchanged.	- Inspect pre-catalyst oxygen sensor for correct installation	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128101	1212673	Oxygen sensor before catalytic converter, system check: Signal, constantly lean	The diagnostic function monitors the lambda factor's deviation from the specified value.	P2195	O2 Sensor Signal Biased/Stuck Lean (Bank 1 Sensor 1)	Oxygen Sensor, Front	Signal Check	The fault is recognized when the monitored lambda is too lean by a factor of 0.09 relative to the specified lambda excess-air factor. Potential problem source(s): - Defect in wiring harness - Oxygen sensor faulty	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Sensor contamination, hole in sensor, short circuit to positive or ground	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128201	1212929	Oxygen sensor before catalytic converter 2, system check: Signal, constantly lean	The diagnostic function monitors the lambda factor's deviation from the specified value.	P2197	O2 Sensor Signal Biased/Stuck Lean (Bank 2 Sensor 1)	Oxygen Sensor, Front	Signal Check	The fault is recognized when the monitored lambda is too lean by a factor of 0.09 relative to the specified lambda excess-air factor. Potential problem source(s): - Defect in wiring harness - Oxygen sensor faulty	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Sensor contamination, hole in sensor, short circuit to positive or ground	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128301	1213185	Oxygen sensor before catalytic converter, system check: Signal, constantly rich	The diagnostic function monitors the lambda factor's deviation from the specified value.	P2196	O2 Sensor Signal Biased/Stuck Rich (Bank 1 Sensor 1)	Oxygen Sensor, Front	Signal Check	The fault is recognized when the monitored lambda is too rich by a factor of 0.09 relative to the specified excess-air factor. Potential problem source(s): - Defect in wiring harness - Oxygen sensor faulty	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Hole in sensor, short circuit to positive or ground	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128401	1213441	Oxygen sensor before catalytic converter 2, system check: Signal, constantly rich	The diagnostic function monitors the lambda factor's deviation from the specified value.	P2198	O2 Sensor Signal Biased/Stuck Rich (Bank 2 Sensor 1)	Oxygen Sensor, Front	Signal Check	The fault is recognized when the monitored lambda is too rich by a factor of 0.09 relative to the specified excess-air factor. Potential problem source(s): - Defect in wiring harness - Oxygen sensor faulty	The diagnostic fault code is logged when specified conditions are satisfied, but a reaction period cannot be provided.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Hole in sensor, short circuit to positive or ground	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128501	1213607	Oxygen sensor before catalytic converter, in coasting/overrun mode: Signal outside limit value	The diagnostic function monitors the voltage of the signal from the pre-catalyst oxygen sensor during overrun operation.	P2297	O2 Sensor Out of Range During Deceleration (Bank 1 Sensor 1)	Oxygen Sensor, Front	Deceleration	The fault is recognized when the voltage is less than 2.9 V in the overrun phase. Potential problem source(s): - Defect in wiring harness - Oxygen sensor defective - Catalytic converter defective	The diagnostic fault code is logged when the condition remains present for over 9 seconds during overrun operation.	none	Voltage condition: - - None - Tempe	None	- 4.5 sec after operation in overrun	NO	none	N	- Catalytic converter obstructed (rich exhaust gas at sensor during overrun cutoff); oil or gasoline in exhaust gas during overrun cutoff; defective wiring - Defective pre-catalyst sensor	- Check wiring harness - Replace oxygen sensor - Replace catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128601	1213953	Oxygen sensor before catalytic converter 2, in overrun mode: Signal outside limit value	The diagnostic function monitors the voltage of the signal from the pre-catalyst oxygen sensor 2 during overrun operation.	P2298	O2 Sensor Out of Range During Deceleration (Bank 2 Sensor 1)	Oxygen Sensor, Front	Deceleration	The fault is recognized when the voltage is less than 2.9 V in the overrun phase. Potential problem source(s): - Defect in wiring harness - Oxygen sensor defective - Catalytic converter defective	The diagnostic fault code is logged when the condition remains present for over 9 seconds during overrun operation.	none	Voltage condition: - - None - Tempe	None	- 4.5 sec after operation in overrun	NO	none	N	- Visual examination of wires and plug(s) (water or corrosion in plug?) - 1a. Repeatedly disconnect plug and re-insert it FIRMLY - Electrical measurements on wires - Check catalyst (FSD bad fuel entered for other bank?) - Piston rings, injectors, positive crankcase ventilation OK? FSD fault? Then continue there. - Replace sensor wires or plug as indicated - Replace O2 sensor	- Check wiring harness - Replace oxygen sensor - Replace catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128901	1214721	Oxygen sensor before catalytic converter, dynamic response: slow response	The diagnostic function monitors the amplitude ratio of the lambda signal during forced stimulation.	P0133	O2 Sensor Circuit Slow Response (Bank 1 Sensor 1)	Oxygen Sensor, Front	Slow Response	The fault is recognized when attenuation of the amplitude ratio rises above 0.9 Potential problem source(s): - Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter	This fault is logged in the control module's fault memory if it remains present for longer than 400 sec.	Terminal 15	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter	- Check wiring harness to oxygen sensors - Replace pre-catalyst oxygen sensor - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128902	1214722	Oxygen sensor before catalytic converter, dynamics: Slow response	The diagnostic function monitors the amplitude ratio of the lambda signal during forced stimulation.	P0133	O2 Sensor Circuit Slow Response (Bank 1 Sensor 1)	Oxygen Sensor, Front	Slow Response	The fault is recognized when attenuation of the amplitude ratio rises above 0.9 Potential problem source(s): - Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter	This fault is logged in the control module's fault memory if it remains present for longer than 400 sec.	Terminal 15	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter	- Check wiring harness to oxygen sensors - Replace pre-catalyst oxygen sensor - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128A01	1214977	Oxygen sensor before catalytic converter 2, dynamic response: slow response	The diagnostic function monitors the amplitude ratio of the lambda signal during forced stimulation.	P0153	O2 Sensor Circuit Slow Response (Bank 2 Sensor 1)	Oxygen Sensor, Front	Slow Response	The fault is recognized when attenuation of the amplitude ratio rises above 0.9 Potential problem source(s): - Oxygen sensor 2 before catalytic converter defective - Oxygen sensor 2 behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter	This fault is logged in the control module's fault memory if it remains present for longer than 400 sec.	Terminal 15	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Oxygen sensor 2 before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter	- Check wiring harness to oxygen sensors - Replace pre-catalyst oxygen sensor 2 - Replace post-catalyst oxygen sensor 2	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128A02	1214978	Oxygen sensor before catalytic converter 2, dynamics: Slow response	The diagnostic function monitors the amplitude ratio of the lambda signal during forced stimulation.	P0153	O2 Sensor Circuit Slow Response (Bank 2 Sensor 1)	Oxygen Sensor, Front	Slow Response	The fault is recognized when attenuation of the amplitude ratio rises above 0.9 Potential problem source(s): - Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter	This fault is logged in the control module's fault memory if it remains present for longer than 400 sec.	Terminal 15	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Oxygen sensor before catalytic converter defective - Oxygen sensor behind catalytic converter defective - Defect in wiring harness to oxygen sensor behind catalytic converter	- Check wiring harness to oxygen sensors - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128B01	1215233	Oxygen sensor before catalytic converter, installation: sensor not connected	The diagnostic function monitors the signal from the pre-catalyst oxygen sensor and checks its plausibility against the current operating condition.	P2414	O2 Sensor Exhaust Sample Error (Bank 1 Sensor 1)	Oxygen Sensor, Front	Exhaust Sample Error	The fault is recognized when voltage at the pre-catalyst oxygen sensor is > 4.8 V (lean) under partial or full load. Potential problem source(s): - Oxygen sensor not screwed in correctly - Leak in exhaust/muffler system on engine side of oxygen sensor - Defect in wiring harness to oxygen sensor	This fault is logged in the control module's fault memory if it remains present for longer than 25 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- None	NO	none	N	- Oxygen sensor not screwed in correctly - Leak in exhaust/muffler system on engine side of oxygen sensor - Defect in wiring harness to oxygen sensor	- Check oxygen sensor for correct installation - Check exhaust/muffler system for leaks - Check wiring harness to oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128C01	1215489	Oxygen sensor before catalytic converter 2, installation: sensor not connected	The diagnostic function monitors the signal from the pre-catalyst oxygen sensor 2 and checks its plausibility against the current operating condition.	P2415	O2 Sensor Exhaust Sample Error (Bank 2 Sensor 1)	Oxygen Sensor, Front	Exhaust Sample Error	The fault is recognized when voltage at the pre-catalyst oxygen sensor 2 is > 4.8 V (lean) under partial or full load. Potential problem source(s): - Oxygen sensor not screwed in correctly - Leak in exhaust/muffler system on engine side of oxygen sensor - Defect in wiring harness to oxygen sensor	This fault is logged in the control module's fault memory if it remains present for longer than 25 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- None	NO	none	N	- Oxygen sensor not screwed in correctly - Leak in exhaust/muffler system on engine side of oxygen sensor - Defect in wiring harness to oxygen sensor	- Check oxygen sensor for correct installation - Check exhaust/muffler system for leaks - Check wiring harness to oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128E01	1216001	Oxygen sensor before catalytic converter, line fault: open circuit, Nernst line	The diagnostic function monitors oxygen sensor voltage when the oscillator is deactivated.	P2243	O2 Sensor Reference Voltage Circuit/Open (Bank 1 Sensor 1)	Oxygen Sensor, Front	Reference Voltage	The fault is recognized when the sensor voltage is less than 0.2 V. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective	This fault is logged in the control module's fault memory if it remains present for longer than 15 sec.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128E02	1216002	Oxygen sensor before catalytic converter, line fault: open circuit, virtual ground, or pump current lead	Oxygen sensor before catalytic converter, defective wiring	P112C	O2 Sensor Negative Current or Positive Current Control Circuit/Open (Bank 1 Sensor 1)	Oxygen Sensor, Front	Negative / Positive Current	Not supported	none	none	none	none	none	none	Y	N	none	none	none	none	none	none	- Data configured
									The fault is recognized when the sensor voltage is higher than 1.899 V and less than 2.1 V or less than 2.1 V in overrun mode. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME - Defective catalytic converter	The diagnostic fault code is logged when the condition remains present for over 9		Voltage condition: - - None - Tempe						- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power				

MSD87-6Z	0x128E08	1216008	Oxygen sensor before catalytic converter, line fault: open circuit, compensation line	The diagnostic function monitors sensor voltage, including in overrun phases.	P2626	O2 Sensor Pumping Current Trim Circuit/Open (Bank 1 Sensor 1)	Oxygen Sensor, Front	Pumping Current	The fault is recognized when the sensor voltage is higher than 1.899 V and less than 2.1 V or less than 2.1 V in overrun mode. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME - Defective catalytic converter (rich exhaust gas in overrun caused by oil or fuel in exhaust)	The diagnostic fault code is logged when the condition remains present for over 9 seconds during overrun operation.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME - Defective catalytic converter (rich exhaust gas in overrun caused by oil or fuel in exhaust)	- Defect in wiring harness to pre-catalyst oxygen sensor - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	HF: Check catalyst, must still be defined, possibly measure exhaust-gas pressure	Possible apparent symptoms: - none	Breakdown notice: - none	
MSD87-6Z	0x128F01	1216257	Oxygen sensor before catalytic converter 2, line fault: open circuit, Nernst line	The diagnostic function monitors oxygen sensor voltage when the oscillator is deactivated.	P2247	O2 Sensor Reference Voltage Circuit/Open (Bank 2 Sensor 1)	Oxygen Sensor, Front	Reference Voltage	The fault is recognized when the sensor voltage is less than 0.2 V. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 15 sec.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	
MSD87-6Z	0x128F02	1216258	Oxygen sensor before catalytic converter 2, line fault: open circuit, virtual ground, or pump current lead	Oxygen sensor before catalytic converter, defective wiring.	P112D	O2 Sensor Negative Current or Positive Current Control Circuit/Open (Bank 2 Sensor 1)	Oxygen Sensor, Front	Negative / Positive Current	Not supported	none	none	none	none	none	none	?	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x128F04	1216260	Oxygen sensor before catalytic converter 2, line fault: open circuit, virtual ground, or pump current lead	The diagnostic function monitors sensor voltage, including in overrun phases.	P112D	O2 Sensor Negative Current or Positive Current Control Circuit/Open (Bank 2 Sensor 1)	Oxygen Sensor, Front	Negative / Positive Current	The fault is recognized when the sensor voltage is higher than 1.899 V and less than 2.1 V or less than 2.1 V in overrun mode. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME - Defective catalytic converter (rich exhaust gas in overrun caused by oil or fuel in exhaust)	The diagnostic fault code is logged when the condition remains present for over 9 seconds during overrun operation.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME - Defective catalytic converter (rich exhaust gas in overrun caused by oil or fuel in exhaust)	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	HF: Check catalyst, must still be defined, possibly measure exhaust-gas pressure	Possible apparent symptoms: - none	Breakdown notice: - none	
MSD87-6Z	0x128F0B	1216264	Oxygen sensor before catalytic converter 2, line fault: open circuit, compensation line	The diagnostic function monitors sensor voltage, including in overrun phases.	P2629	O2 Sensor Pumping Current Trim Circuit/Open (Bank 2 Sensor 1)	Oxygen Sensor, Front	Pumping Current	The fault is recognized when the sensor voltage is higher than 1.899 V and less than 2.1 V or less than 2.1 V in overrun mode. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME - Defective catalytic converter (rich exhaust gas in overrun caused by oil or fuel in exhaust)	The diagnostic fault code is logged when the condition remains present for over 9 seconds during overrun operation.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME - Defective catalytic converter (rich exhaust gas in overrun caused by oil or fuel in exhaust)	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	HF: Check catalyst, must still be defined, possibly measure exhaust-gas pressure	Possible apparent symptoms: - none	Breakdown notice: - none	
MSD87-6Z	0x129001	1216513	Oxygen sensor before catalytic converter, signal lines: Short circuit to B+	The diagnostic function monitors the messages of the internal oxygen sensor chip.	P0132	O2 Sensor Circuit High Voltage (Bank 1 Sensor 1)	Oxygen Sensor, Front	Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	none	Voltage condition: -- None: Tempe	None	- 1 sec.	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x129002	1216514	Oxygen sensor before catalytic converter, signal lines: Short to earth	The diagnostic function monitors the messages of the internal oxygen sensor chip.	P0131	O2 Sensor Circuit Low Voltage (Bank 1 Sensor 1)	Oxygen Sensor, Front	Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	none	Voltage condition: -- None: Tempe	None	- 1 sec.	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x129101	1216769	Oxygen sensor 2, signal processing: short circuit to positive	The diagnostic function monitors the messages of the internal oxygen sensor chip.	P0152	O2 Sensor Circuit High Voltage (Bank 2 Sensor 1)	Oxygen Sensor, Front	Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	none	Voltage condition: -- None: Tempe	None	- 1 sec.	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x129102	1216770	Oxygen sensor 2, signal processing: short circuit to ground	The diagnostic function monitors the messages of the internal oxygen sensor chip.	P0151	O2 Sensor Circuit Low Voltage (Bank 2 Sensor 1)	Oxygen Sensor, Front	Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	none	Voltage condition: -- None: Tempe	None	- 1 sec.	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x129200	1217025	DME, internal fault, oxygen sensor before catalytic converter: Initialisation error	The diagnostic function monitors the period that elapses prior to initialization of the internal oxygen sensor controller.	P3024	O2 Sensor Initialization Error WRAF-IC (Bank 1 Sensor 1)	Oxygen Sensor, Front	ECM Self-Test	The fault is recognized when the time to initialization is greater than 100 sec. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 120 sec.	Terminal 15	Voltage condition: -- Electrical sup	None	- None	NO	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x129202	1217026	DME, internal fault, oxygen sensor before catalytic converter, Communication fault	The diagnostic function monitors the period that elapses prior to initialization of the internal oxygen sensor controller.	P3022	O2 Sensor Disturbed SPI Communication to WRAF-IC (Bank 1 Sensor 1)	Oxygen Sensor, Front	ECM Self-Test	The fault is recognized when a difference is detected between the two timers five times. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 120 sec.	Terminal 15	Voltage condition: -- Electrical sup	None	- None	NO	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x129301	1217281	DME, internal fault, oxygen sensor before catalytic converter 2: Initialisation error	The diagnostic function monitors the period that elapses prior to initialization of the internal oxygen sensor controller.	P3025	O2 Sensor Initialization Error WRAF-IC (Bank 2 Sensor 1)	Oxygen Sensor, Front	ECM Self-Test	The fault is recognized when the time to initialization is greater than 100 sec. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 120 sec.	Terminal 15	Voltage condition: -- Electrical sup	None	- None	NO	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x129302	1217282	DME, internal fault, oxygen sensor before catalytic converter 2: Communication fault	The diagnostic function monitors the period that elapses prior to initialization of the internal oxygen sensor controller.	P3023	O2 Sensor Disturbed SPI Communication to WRAF-IC (Bank 2 Sensor 1)	Oxygen Sensor, Front	ECM Self-Test	The fault is recognized when a difference is detected between the two timers five times. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 120 sec.	Terminal 15	Voltage condition: -- Electrical sup	None	- None	NO	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12A008	1220616	Oxygen sensors after catalytic converter, mounting: mixed up	The diagnostic function monitors the upper and lower voltage limits of the post-catalyst oxygen sensors during the active test. The active test is started when a fault is recognized during the trim controller diagnosis.	P0041	O2 Sensor Signals Swapped Bank 1 Sensor 2 / Bank 2 Sensor 2	Oxygen Sensor, Rear	Sensors Swapped	The fault is recognized when the voltage of an oxygen sensor behind catalytic converter is greater than 0.669 V while the voltage of the other oxygen sensor is simultaneously less than 0.2 V. Potential problem source(s): - Oxygen sensors behind catalytic converter interchanged	The diagnostic fault code is logged if the fault remains present longer than 300 sec. after completion of the trim controller diagnosis.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	- Oxygen sensors behind catalytic converter interchanged	- Inspect post-catalyst oxygen sensor for correct installation	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12A101	1220885	Oxygen sensor after catalytic converter, system check: Signal, constantly rich	The diagnostic function monitors the upper and lower voltage limits of the post-catalyst oxygen sensor during the active test. The active test is started when a fault is recognized during the trim controller diagnosis.	P2271	O2 Sensor Signal Biased/Stuck Rich (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Signal Check	The fault is recognized when the voltage of the oxygen sensor behind the catalytic converter is below 0.2 V (too lean). Potential problem source(s): - Oxygen sensor behind catalytic converter defective - Leak in exhaust system upstream of oxygen sensor behind catalytic converter - Defect in wiring harness to oxygen sensor behind catalytic converter	The diagnostic fault code is logged if the fault remains present longer than 300 sec. after completion of the trim controller diagnosis.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	- Oxygen sensor behind catalytic converter defective - Leak in exhaust system upstream of oxygen sensor behind catalytic converter - Defect in wiring harness to oxygen sensor behind catalytic converter	- Conduct system test for oxygen sensors in wrong mutual positions - Check wiring harness to oxygen sensor behind catalytic converter - Check exhaust/muffler system upstream from oxygen sensor behind catalytic converter for leaks - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12A102	1220886	Oxygen sensor after catalytic converter, system check: Signal, constantly lean	The diagnostic function monitors the upper and lower voltage limits of the post-catalyst oxygen sensor during the active test. The active test is started when a fault is recognized during the trim controller diagnosis.	P2270	O2 Sensor Signal Biased/Stuck Lean (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Signal Check	The fault is recognized when the voltage of the oxygen sensor behind the catalytic converter is above 0.669 V (too rich). Potential problem source(s): - Oxygen sensor behind catalytic converter defective - Leak in exhaust system upstream of oxygen sensor behind catalytic converter - Defect in wiring harness to oxygen sensor behind catalytic converter	The diagnostic fault code is logged if the fault remains present longer than 300 sec. after completion of the trim controller diagnosis.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	- Oxygen sensor behind catalytic converter defective - Leak in exhaust system upstream of oxygen sensor behind catalytic converter - Defect in wiring harness to oxygen sensor behind catalytic converter	- Conduct system test for oxygen sensors in wrong mutual positions - Check wiring harness to oxygen sensor behind catalytic converter - Check exhaust/muffler system upstream from oxygen sensor behind catalytic converter for leaks - Replace oxygen sensor behind catalytic converter - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12A201	1221121	Oxygen sensor after catalytic converter 2, system check: Signal, constantly rich	The diagnostic function monitors the upper and lower voltage limits of the post-catalyst oxygen sensor 2 during the active test. The active test is started when a fault is recognized during the trim controller diagnosis.	P2273	O2 Sensor Signal Biased/Stuck Rich (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Signal Check	The fault is recognized when the voltage of the oxygen sensor 2 behind the catalytic converter is below 0.2 V (too lean). Potential problem source(s): Oxygen sensor 2 behind catalytic converter defective - Leak in exhaust system upstream of oxygen sensor 2 behind catalytic converter - Defect in wiring harness to oxygen sensor 2 behind catalytic converter	The diagnostic fault code is logged if the fault remains present longer than 300 sec. after completion of the trim controller diagnosis.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	Oxygen sensor 2 behind catalytic converter defective - Leak in exhaust system upstream of oxygen sensor 2 behind catalytic converter - Defect in wiring harness to oxygen sensor 2 behind catalytic converter	- Conduct system test for oxygen sensors in wrong mutual positions - Check wiring harness to oxygen sensor 2 behind catalytic converter - Check exhaust/muffler system upstream from oxygen sensor 2 behind catalytic converter for leaks - Replace post-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12A202	1221122	Oxygen sensor after catalytic converter 2, system check: Signal, constantly lean	The diagnostic function monitors the upper and lower voltage limits of the post-catalyst oxygen sensor 2 during the active test. The active test is started when a fault is recognized during the trim controller diagnosis.	P2272	O2 Sensor Signal Biased/Stuck Lean (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Signal Check	The fault is recognized when the voltage of the oxygen sensor 2 behind the catalytic converter is above 0.669 V (too rich). Potential problem source(s): Oxygen sensor 2 behind catalytic converter defective - Leak in exhaust system upstream of oxygen sensor 2 behind catalytic converter - Defect in wiring harness to oxygen sensor 2 behind catalytic converter	The diagnostic fault code is logged if the fault remains present longer than 300 sec. after completion of the trim controller diagnosis.	none	Voltage condition: -- None: Tempe	Engine temperature > 85°C	- None	NO	none	N	Oxygen sensor 2 behind catalytic converter defective - Leak in exhaust system upstream of oxygen sensor 2 behind catalytic converter - Defect in wiring harness to oxygen sensor 2 behind catalytic converter	- Conduct system test for oxygen sensors in wrong mutual positions - Check wiring harness to oxygen sensor 2 behind catalytic converter - Check exhaust/muffler system upstream from oxygen sensor 2 behind catalytic converter for leaks - Replace post-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12A308	1221384	Oxygen sensor after catalytic converter, dynamic response, from rich to lean: slow response	The diagnostic function monitors the interval that elapses during the signal jump from rich to lean.	P013A	O2 Sensor Slow Response - Rich to Lean (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Slow Response	The fault is recognized when the time interval exceeds 500 ms. Potential problem source(s): - Oxygen sensor too slow owing to cooling - Oxygen sensor faulty	The diagnostic fault code is logged when the condition remains present for over 5 seconds during overrun operation.	none	Voltage condition: -- None: Tempe	Coolant temperature > 50 °C - C	- None	NO	none	N	- Excessive lag in signal change from rich to lean when overrun injection deactivation assumes operation; excessive sensor lag owing to cooling; sensor too slow owing to aging	- If possible determine whether fault has been caused by ice formation - Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
									The fault is recognized when the time interval exceeds 500 ms. Potential problem source(s): - Oxygen sensor too slow owing	The diagnostic fault code is logged when the condition remains present for over 5			Coolant temperature > 50 °C - C					- Excessive lag in signal change from rich to lean when overrun injection deactivation assumes	- If possible determine whether fault has been caused by ice formation - Check wiring harness to oxygen sensor behind	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power				

MSD87-6Z	0x12A701	1222401	Oxygen sensor after catalytic converter, signal: short circuit to positive	The diagnostic function monitors the voltage of the oxygen sensor behind the catalytic converter.	P0138	O2 Sensor Circuit High Voltage (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Electrical	The fault is recognized when the voltage is greater than 1.099 V. Potential problem source(s): - Defect in wiring harness - Oxygen sensor faulty	This fault is logged in the control module's fault memory if it remains present for longer than 15 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- Short circuit to positive	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12A801	1222657	Oxygen sensor after catalytic converter 2, signal: short circuit to positive	The diagnostic function monitors the voltage of the oxygen sensor 2 behind the catalytic converter.	P0158	O2 Sensor Circuit High Voltage (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Electrical	The fault is recognized when the voltage is greater than 1.099 V. Potential problem source(s): - Defect in wiring harness - Oxygen sensor faulty	This fault is logged in the control module's fault memory if it remains present for longer than 15 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- Short circuit to positive	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12A902	1222914	Oxygen sensor after catalytic converter, signal: short circuit to ground	The diagnostic function monitors the voltage and the resistance of the oxygen sensor behind catalytic converter.	P0137	O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Electrical	The fault is recognized when the voltage is less than 0.073 V and the resistance is less than 15 ohms. Potential problem source(s): - Defect in wiring harness - Oxygen sensor faulty	The diagnostic fault code is logged when the fault remains present for longer than 2 min.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Short circuit to ground	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12AA02	1223170	Oxygen sensor after catalytic converter 2, signal: short circuit to ground	The diagnostic function monitors the voltage and the resistance of post-catalyst oxygen sensor 2.	P0157	O2 Sensor Circuit Low Voltage (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Electrical	The fault is recognized when the voltage is less than 0.073 V and the resistance is less than 15 ohms. Potential problem source(s): - Defect in wiring harness - Oxygen sensor faulty	The diagnostic fault code is logged when the fault remains present for longer than 2 min.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Short circuit to ground	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12AB04	1223428	Oxygen sensor after catalytic converter, signal: open circuit	The diagnostic function monitors the lower and upper voltage limits of the signals from the post-catalyst oxygen sensor and the upper limit of the internal resistance.	P0136	O2 Sensor Circuit (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Electrical	The fault is recognized when the oxygen sensor voltage is less than 0.498 V and greater than 0.352 V and the resistance is greater than 65534 ohms. Potential problem source(s): - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- 120 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective	- Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12AB04	1223428	Oxygen sensor after catalytic converter, signal: open circuit	The diagnostic function monitors the lower and upper voltage limits of the signals from the post-catalyst oxygen sensor and the upper limit of the internal resistance.	P0140	O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Electrical	The fault is recognized when the oxygen sensor voltage is less than 0.498 V and greater than 0.352 V and the resistance is greater than 65534 ohms. Potential problem source(s): - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- 120 sec.	NO	none	N	Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective	Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12AC04	1223684	Oxygen sensor after catalytic converter 2, signal: open circuit	The diagnostic function monitors the lower and upper voltage limits of the signals from the post-catalyst oxygen sensor 2 and the upper limit of the internal resistance.	P0156	O2 Sensor Circuit (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Electrical	The fault is recognized when the oxygen sensor voltage is less than 0.498 V and greater than 0.352 V and the resistance is greater than 65534 ohms. Potential problem source(s): - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- 120 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective	- Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12AC04	1223684	Oxygen sensor after catalytic converter 2, signal: open circuit	The diagnostic function monitors the lower and upper voltage limits of the signals from the post-catalyst oxygen sensor 2 and the upper limit of the internal resistance.	P0160	O2 Sensor Circuit No Activity Detected (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Electrical	The fault is recognized when the oxygen sensor voltage is less than 0.498 V and greater than 0.352 V and the resistance is greater than 65534 ohms. Potential problem source(s): - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- 120 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective	- Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12AF08	1224456	Oxygen sensor after catalytic converter, trailing throttle, from rich to lean: delayed response	The diagnostic function monitors the voltage of the signal from the post-catalyst oxygen sensor during overrun operation.	P013E	O2 Sensor Delayed Response - Rich to Lean (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Delayed Response	The fault is recognized when the voltage exceeds 0.151 V during operation on overrun. Potential problem source(s): - Oxygen sensor too cold during overrun operation - Defective wiring harness - Oxygen sensor faulty	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Open wire; short to positive, sensor sticking (with aid of a power source) at U > 0.2; oxygen sensor too cold in overrun cutoff phase	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B008	1224712	Oxygen sensor after catalytic converter 2, trailing throttle, from rich to lean: delayed response	The diagnostic function monitors the voltage of the signal from the post-catalyst oxygen sensor 2 during overrun operation.	P014A	O2 Sensor Delayed Response - Rich to Lean (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Delayed Response	The fault is recognized when the voltage exceeds 0.151 V during operation on overrun. Potential problem source(s): - Oxygen sensor too cold during overrun operation - Defective wiring harness - Oxygen sensor faulty	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	none	Voltage condition: - - None - Tempe	Engine temperature > 85°C	- None	NO	none	N	- Open wire; short to positive, sensor sticking (with aid of a power source) at U > 0.2; oxygen sensor too cold in overrun cutoff phase	- Check wiring harness - Replace oxygen sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128101	1224961	Oxygen-sensor heater before catalytic converter, activation: short circuit to positive	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0032	HO2S Heater Control Circuit High (Bank 1 Sensor 1)	Oxygen Sensor, Front	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128102	1224962	Oxygen-sensor heater before catalytic converter, activation: short circuit to ground	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0031	HO2S Heater Control Circuit Low (Bank 1 Sensor 1)	Oxygen Sensor, Front	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128104	1224964	Oxygen-sensor heater before catalytic converter, activation: open circuit	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0030	HO2S Heater Control Circuit (Bank 1 Sensor 1)	Oxygen Sensor, Front	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128201	1225217	Oxygen-sensor heater before catalytic converter 2, activation: short circuit to positive	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0052	HO2S Heater Control Circuit High (Bank 2 Sensor 1)	Oxygen Sensor, Front	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective - Defective DME	- Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128202	1225218	Oxygen-sensor heater before catalytic converter 2, activation: short circuit to ground	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0051	HO2S Heater Control Circuit Low (Bank 2 Sensor 1)	Oxygen Sensor, Front	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor 2 behind catalytic converter -Oxygen sensor 2 behind catalytic converter defective - Defective DME	- Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128204	1225220	Oxygen-sensor heater before catalytic converter 2, activation: open circuit	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0050	HO2S Heater Control Circuit (Bank 2 Sensor 1)	Oxygen Sensor, Front	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor 2 behind catalytic converter -Oxygen sensor 2 behind catalytic converter defective - Defective DME	- Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128301	1225473	Oxygen-sensor heater after catalytic converter, activation: short circuit to positive	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0037	HO2S Heater Control Circuit High (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128302	1225474	Oxygen-sensor heater after catalytic converter, activation: short circuit to ground	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0037	HO2S Heater Control Circuit Low (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128304	1225476	Oxygen-sensor heater after catalytic converter, activation: open circuit	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0036	HO2S Heater Control Circuit (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective - Defective DME	Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128401	1225729	Oxygen-sensor heater after catalytic converter 2, activation: short circuit to positive	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0058	HO2S Heater Control Circuit High (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor 2 behind catalytic converter -Oxygen sensor 2 behind catalytic converter defective - Defective DME	- Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x128402	1225730	Oxygen-sensor heater after catalytic converter 2, activation: short circuit to ground	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0057	HO2S Heater Control Circuit Low (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- 0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor 2 behind catalytic converter -Oxygen sensor 2 behind catalytic converter defective - Defective DME	- Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none

MSD87-6Z	0x12B404	1225732	Oxygen-sensor heater after catalytic converter 2, activation: open circuit	The diagnostic function monitors the messages from the internal driver circuit diagnosis.	P0056	HO2S Heater Control Circuit (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Heater Electrical	The fault is recognized by the self-diagnosis. Potential problem source(s): - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective - Defective DME	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical supp...	None	0.2 sec.	NO	none	N	- Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective - Defective DME	- Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B501	1225985	Oxygen sensor heating before catalytic converter, function: Normal operating temperature not reached	The diagnostic function monitors the upper and lower temperature limits of the pre-catalyst oxygen sensor.	P0135	O2 Sensor Heater Circuit (Bank 1 Sensor 1)	Oxygen Sensor, Front	Heater Electrical	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C and the OC diagnosis is unable to detect an error. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B501	1225985	Oxygen sensor heating before catalytic converter, function: Normal operating temperature not reached	The diagnostic function monitors the upper and lower temperature limits of the pre-catalyst oxygen sensor.	P3026	O2 Sensor Temperature Measurement Operating Temperature not Reached (Bank 1 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C and the OC diagnosis is unable to detect an error. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B502	1225986	Oxygen sensor heating before catalytic converter, function: Operating temperature not reached during warm-up	The diagnostic function monitors the upper and lower temperature limits of the pre-catalyst oxygen sensor.	P005D	O2 Sensor Temperature Measurement Operating Temperature during Warmup not Reached (Bank 1 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C and the OC diagnosis is unable to detect an error. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B504	1225988	Oxygen-sensor heater before catalytic converter, function: sensor-temperature measurement in ECU failed	The diagnostic function monitors a temperature threshold to determine whether the temperature regulation within the control module is operating.	P166F	Internal Control Module Measurement Error Oxygen Sensor Heating (Bank 1 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 625 °C and the OC diagnosis is unable to detect an error. Potential problem source(s): - DME defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B601	1228241	Oxygen sensor heating before catalytic converter 2, function: Normal operating temperature not reached	The diagnostic function monitors the upper and lower temperature limits of precatalyst oxygen sensor 2.	P0155	O2 Sensor Heater Circuit (Bank 2 Sensor 1)	Oxygen Sensor, Front	Heater Electrical	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C and the OC diagnosis is unable to detect an error. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B601	1228241	Oxygen sensor heating before catalytic converter 2, function: Normal operating temperature not reached	The diagnostic function monitors the upper and lower temperature limits of precatalyst oxygen sensor 2.	P3027	O2 Sensor Temperature Measurement Operating Temperature not Reached (Bank 2 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C and the OC diagnosis is unable to detect an error. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Oxygen sensor 2 forward of catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor 2 - Replace pre-catalyst oxygen sensor 2 - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B602	1228242	Oxygen sensor heating before catalytic converter 2, function: Operating temperature not reached during warm-up	The diagnostic function monitors the upper and lower temperature limits of the pre-catalyst oxygen sensor.	P305E	O2 Sensor Temperature Measurement Operating Temperature during Warmup not Reached (Bank 2 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C and the OC diagnosis is unable to detect an error. Potential problem source(s): - Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Defect in wiring harness to pre-catalyst oxygen sensor - Oxygen sensor before catalytic converter defective - Defective DME	- Defect in wiring harness to pre-catalyst oxygen sensor - Replace pre-catalyst oxygen sensor - Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B604	1228244	Oxygen-sensor heater before catalytic converter 2, function: sensor-temperature measurement in ECU failed	The diagnostic function monitors a temperature threshold to determine whether the temperature regulation within the control module is operating.	P166F	Internal Control Module Measurement Error Oxygen Sensor Heating (Bank 2 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 625 °C and the OC diagnosis is unable to detect an error. Potential problem source(s): - DME defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B701	1228497	Oxygen-sensor heater after catalytic converter, function: internal resistance too high	The diagnostic function monitors the internal resistance of the oxygen sensor behind the catalytic converter.	P0141	O2 Sensor Heater Circuit (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Heater Electrical	The fault is recognized when the internal resistance of the post-catalyst oxygen sensor is greater than 5000 ohms. Potential problem source(s): - Oxygen sensor behind catalytic converter too strongly cooled by external factors (such as ice formation) - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective	This fault is logged in the control module's fault memory if it remains present for longer than 400 sec.	none	Voltage condition: - - None: Tempe...	Exhaust-gas temperature less tha...	None	NO	none	N	- Oxygen sensor behind catalytic converter too strongly cooled by external factors (such as ice formation) - Defect in wiring harness to oxygen sensor behind catalytic converter - Oxygen sensor behind catalytic converter defective	- If possible determine whether fault has been caused by ice formation - Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B801	1226753	Oxygen-sensor heater after catalytic converter 2, function: internal resistance too high	The diagnostic function monitors the internal resistance of oxygen sensor 2 behind the catalytic converter.	P0161	O2 Sensor Heater Circuit (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Heater Electrical	The fault is recognized when the internal resistance of the post-catalyst oxygen sensor 2 is greater than 5000 ohms. Potential problem source(s): - Oxygen sensor 2 behind catalytic converter too strongly cooled by external factors (such as ice formation) - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective	This fault is logged in the control module's fault memory if it remains present for longer than 400 sec.	none	Voltage condition: - - None: Tempe...	Exhaust-gas temperature less tha...	None	NO	none	N	- Oxygen sensor 2 behind catalytic converter too strongly cooled by external factors (such as ice formation) - Defect in wiring harness to oxygen sensor 2 behind catalytic converter - Oxygen sensor 2 behind catalytic converter defective	- If possible determine whether fault has been caused by ice formation - Check wiring harness to oxygen sensor 2 behind catalytic converter - Replace post-catalyst oxygen sensor 2	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B901	1227009	Oxygen sensor before catalytic converter, temperature: Normal operation temperature not reached	The diagnostic function monitors the upper and lower temperature limits of the pre-catalyst oxygen sensor.	P3026	O2 Sensor Temperature Measurement Operating Temperature not Reached (Bank 1 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Inadequate performance from sensor heater or Vm wire is open	- Repair the initial fault that caused the problem	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B902	1227010	Oxygen sensor before catalytic converter, temperature: Operating temperature not reached during warm-up	The diagnostic function monitors the upper and lower temperature limits of the pre-catalyst oxygen sensor.	P005D	O2 Sensor Temperature Measurement Operating Temperature during Warmup not Reached (Bank 1 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	Weak O2 sensor heater or open in wire Vm	- Repair the initial fault that caused the problem	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12B904	1227012	Oxygen sensor before catalytic converter, temperature: sensor-temperature measurement in ECU failed	The diagnostic function monitors a temperature threshold to determine whether the temperature regulation within the control module is operating.	P166F	Internal Control Module Measurement Error Oxygen Sensor Heating (Bank 1 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 625 °C. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Invalid sensor temperature - Processor chip in control module defective	- Repair the initial fault that caused the problem	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12BA01	1227265	Oxygen sensor before catalytic converter 2, temperature: Normal operating temperature not reached	The diagnostic function monitors the upper and lower temperature limits of the pre-catalyst oxygen sensor.	P3027	O2 Sensor Temperature Measurement Operating Temperature not Reached (Bank 2 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Inadequate performance from sensor heater or Vm wire is open	- Repair the initial fault that caused the problem	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12BA02	1227266	Oxygen sensor before catalytic converter 2, temperature: Operating temperature not reached during warm-up	The diagnostic function monitors the upper and lower temperature limits of the pre-catalyst oxygen sensor.	P305E	O2 Sensor Temperature Measurement Operating Temperature during Warmup not Reached (Bank 2 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 655 °C or greater than 1000 °C. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	Weak O2 sensor heater or open in wire Vm	- Repair the initial fault that caused the problem	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12BA04	1227268	Oxygen sensor before catalytic converter 2, temperature: sensor-temperature measurement in ECU failed	The diagnostic function monitors a temperature threshold to determine whether the temperature regulation within the control module is operating.	P166F	Internal Control Module Measurement Error Oxygen Sensor Heating (Bank 2 Sensor 1)	Oxygen Sensor, Front	Temperature Measurement	The fault is recognized when the temperature is less than 625 °C. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - None: Tempe...	None	- Roughly 40 sec. after engine start	NO	none	N	- Invalid sensor temperature - Processor chip in control module defective	- Repair the initial fault that caused the problem	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12BE08	1228296	Oxygen sensor after catalytic converter, dynamic response, from lean to rich: slow response	The diagnostic function monitors the interval that elapses during the signal jump from lean to rich.	P013B	O2 Sensor Slow Response - Lean to Rich (Bank 1 Sensor 2)	Oxygen Sensor, Rear	Slow Response	The fault is recognized when the time interval exceeds 500 ms. Potential problem source(s): - Oxygen sensor too slow owing to cooling - Oxygen sensor faulty	The diagnostic fault code is logged when the fault persists for longer than 5 sec. after onset of renewed acceleration (following overrun operation)	none	Voltage condition: - - None: Tempe...	Coolant temperature > 50 °C: - C...	None	NO	none	N	- Excessive lag for completion of oxygen sensor jump from lean to rich when acceleration resumes (following operation with overrun cutoff); sensor too slow owing to aging	- If possible determine whether fault has been caused by ice formation - Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12BF08	1228552	Oxygen sensor after catalytic converter 2, dynamic response, from lean to rich: slow response	The diagnostic function monitors the interval that elapses during the signal jump from lean to rich.	P013D	O2 Sensor Slow Response - Lean to Rich (Bank 2 Sensor 2)	Oxygen Sensor, Rear	Slow Response	The fault is recognized when the time interval exceeds 500 ms. Potential problem source(s): - Oxygen sensor too slow owing to cooling - Oxygen sensor faulty	The diagnostic fault code is logged when the fault persists for longer than 5 sec. after onset of renewed acceleration (following overrun operation)	none	Voltage condition: - - None: Tempe...	Coolant temperature > 50 °C: - C...	None	NO	none	N	- Excessive lag for completion of oxygen sensor jump from lean to rich when acceleration resumes (following operation with overrun cutoff); sensor too slow owing to cooling; sensor too slow owing to aging	- If possible determine whether fault has been caused by ice formation - Check wiring harness to oxygen sensor behind catalytic converter - Replace oxygen sensor behind catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x12C004	1228804	Nitrogen oxide sensor: Line disconnection	none	P2200	NOx Sensor Circuit (Bank 1 Sensor 1)	NOx Sensor	Electrical	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C008	1228808	Nitrogen-oxide sensor, electric: short circuit	none	P2122C	NOx Sensor Circuit Shorted (Bank 1)	NOx Sensor	Electrical	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C104	1229060	Nitrogen oxide sensor, binary oxygen sensor: Line disconnection	none	P122E	NOx Sensor Binary Oxygen Sensor Signal Circuit/Open (Bank 1)	NOx Sensor	Oxygen Sensor Signal Circuit	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C108	1229064	Nitrogen oxide sensor, binary oxygen sensor: Short circuit	none	P122F	NOx Sensor Binary Oxygen Sensor Signal Circuit Shorted (Bank 1)	NOx Sensor	Oxygen Sensor Signal Circuit	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C204	1229316	Nitrogen oxide sensor, linear oxygen sensor: Line disconnection	none	P121E	NOx Sensor Linear Oxygen Sensor Signal Circuit/Open (Bank 1)	NOx Sensor	Oxygen Sensor Signal Circuit	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C208	1229320	Nitrogen oxide sensor, linear oxygen sensor: Short circuit	none	P121F	NOx Sensor Linear Oxygen Sensor Signal Circuit Shorted (Bank 1)	NOx Sensor	Oxygen Sensor Signal Circuit	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C304	1229572	Nitrogen oxide sensor, heating: Activation, line disconnection	none	P2205	NOx Sensor Heater Control Circuit/Open (Bank 1 Sensor 1)	NOx Sensor	Heater Control Circuit	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C308	1229576	Nitrogen-oxide sensor, heating: activation: short circuit	none	P121C	NOx Sensor Heater Control Circuit Shorted (Bank 1)	NOx Sensor	Heater Control Circuit	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	- Data configured

MSD87-6Z	0x12C401	1229825	Nitrogen oxide sensor: Plausibility, signal activity too low	none	P2201	NOx Sensor Circuit Range/Performance (Bank 1 Sensor 1)	NOx Sensor	Plausibility	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C501	1230081	Nitrogen-oxide sensor, sensor poisoning: binary lambda signal too lean	none	P123C	NOx Sensor Signal Binary Oxygen Sensor Signal Too Lean (Bank 1)	NOx Sensor	Oxygen Sensor Signal	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C502	1230082	Nitrogen-oxide sensor, sensor poisoning: binary lambda signal too rich	none	P123D	NOx Sensor Signal Linear Oxygen Sensor Signal Too Lean (Bank 1)	NOx Sensor	Oxygen Sensor Signal	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C504	1230084	Nitrogen oxide sensor, sensor poisoning: NOx signal too low	none	P123E	NOx Sensor Signal Too Low (Bank 1)	NOx Sensor	Signal	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C601	1230337	Nitrogen oxide sensor, operating readiness: Signal not available at start	none	P124C	NOx Sensor Signal Not Available On Startup (Bank 1)	NOx Sensor	Signal	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C602	1230338	Nitrogen-oxide sensor, operational readiness: signal not available during operation	none	P124D	NOx Sensor Signal Not Available During Operation (Bank 1)	NOx Sensor	Signal	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C701	1230593	Nitrogen oxide sensor, heating: Heat output too low during starting	none	P125A	NOx Sensor Heater Control Circuit Heater Output Too Low On Startup (Bank 1)	NOx Sensor	Heater Control Circuit	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C702	1230594	Nitrogen oxide sensor, heating: Heat output too low during operation	none	P125B	NOx Sensor Heater Control Circuit Heater Output Too Low During Operation (Bank 1)	NOx Sensor	Heater Control Circuit	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C704	1230596	Nitrogen oxide sensor, heating: Supply voltage	none	P125C	NOx Sensor Heater Control Circuit Heater Supply Voltage (Bank 1)	NOx Sensor	Heater Control Circuit	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C801	1230849	Nitrogen-oxide sensor - oxygen sensor before catalytic converter: plausibility: correlation fault	none	P126A	NOx Sensor Signal / Signal Linear Oxygen Sensor Correlation (Bank 1)	NOx Sensor	Correlation	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12C901	1231105	Nitrogen-oxide sensor, adjustment: fault at start of charging phase	none	P126C	Nox Sensor Signal Error at Start of Loading (Bank 1)	NOx Sensor	Offset	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12CA01	1231361	Nitrogen-oxide sensor, trailing-throttle check: binary lambda signal too rich	none	P126E	NOx Sensor Signal Binary Oxygen Sensor Signal Too Rich During Deceleration Test (Bank 1)	NOx Sensor	Oxygen Sensor Signal during Deceleration Test	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12CA02	1231362	Nitrogen-oxide sensor, trailing-throttle check: linear lambda signal too rich	none	P126F	NOx Sensor Signal Linear Oxygen Sensor Signal Too Rich During Deceleration Test (Bank 1)	NOx Sensor	Oxygen Sensor Signal during Deceleration Test	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12CA04	1231364	Nitrogen oxide sensor, overrun test: NOx signal too low	none	P127B	NOx Sensor Signal Too Low During Deceleration Test (Bank 1)	NOx Sensor	Signal during Deceleration Test	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12CA06	1231366	Nitrogen oxide sensor, overrun test: NOx signal too high	none	P127A	NOx Sensor Signal Too High During Deceleration Test (Bank 1)	NOx Sensor	Signal during Deceleration Test	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12CB01	1231617	Nitrogen-oxide sensor, regeneration, nitrogen-oxide cat.: regeneration monitoring	none	P128A	Nox Sensor Signal Regeneration NOx Trap (Bank 1)	NOx Sensor	Signal NOx Adsorber	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12CB02	1231618	Nitrogen-oxide sensor, regeneration, nitrogen-oxide cat.: time-controlled regeneration abort	none	P128B	Nox Sensor Signal Regeneration Stop NOx Trap (Bank 1)	NOx Sensor	Signal NOx Adsorber	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12CC01	1231873	Nitrogen-oxide sensor, oxygen sensor signal after regeneration, dynamics: Binary dynamic response too low	none	P128E	NOx Sensor Binary Oxygen Sensor Signal Circuit Dynamics Too Low (Bank 1)	NOx Sensor	Dynamic Test	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x12CD01	1232129	Nitrogen-oxide sensor: self-diagnosis: limit value 1 exceeded	none	P12D4	NOx Sensor Self-Test Threshold 1 Exceeded			none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none
MSD87-6Z	0x12CD02	1232130	Nitrogen-oxide sensor: self-diagnosis: limit value 2 exceeded	none	P12D5	NOx Sensor Self-Test Threshold 2 Exceeded			none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none
MSD87-6Z	0x12CE00	1232385	Nitrogen-oxide sensor, version: incorrect	none	P12D6	NOx Sensor Version			none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none	none
MSD87-6Z	0x130001	1245185	VANOS solenoid valve, inlet, activation: short circuit to positive	The diagnostic function monitors the electrical connection between the DME and the VANOS solenoid valve on the intake side.	P2089	'A' Camshaft Position Actuator Control Circuit High (Bank 1)	Camshaft Position Actuator	Intake Electrical	The fault is recognized when a short circuit to positive is present. Potential problem source(s): - The wire from the DME to VANOS solenoid valve on the intake side has a short to positive. - Intake VANOS solenoid valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	The VANOS valve for the intake sid	The measured data for the Bank 1	N	- The wire from the DME to VANOS solenoid valve on the intake side has a short to positive. - Intake VANOS solenoid valve defective	- Check wire between DME and VANOS solenoid valve on intake side - Replace VANOS solenoid valve on intake side	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Engine difficult or impossible to start. There may also be a palpable loss of power.	Breakdown notice: - If the engine does run, the vehicle can be driven.	- none
MSD87-6Z	0x130002	1245186	VANOS solenoid valve, inlet, activation: short circuit to ground	The diagnostic function monitors the electrical connection between the DME and the VANOS solenoid valve on the intake side.	P2088	'A' Camshaft Position Actuator Control Circuit Low (Bank 1)	Camshaft Position Actuator	Intake Electrical	The fault is recognized when a short circuit to ground is present. Potential problem source(s): - The wire from the DME to VANOS solenoid valve on the intake side has a short to ground.	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	The VANOS valve for the intake sid	The measured data for the Bank 1	N	- The wire from the DME to VANOS solenoid valve on the intake side has a short to ground.	- Check wire between DME and VANOS solenoid valve on intake side	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Engine difficult or impossible to start. There may also be a palpable loss of power.	Breakdown notice: - If the engine does run, the vehicle can be driven.	- none
MSD87-6Z	0x130004	1245188	VANOS solenoid valve, inlet, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and the VANOS solenoid valve on the intake side.	P0010	'A' Camshaft Position Actuator Circuit/Open (Bank 1)	Camshaft Position Actuator	Intake Electrical	The fault is recognized when an open wire is present. Potential problem source(s): - Open circuit in wire between the DME and the intake-side VANOS solenoid valve. - Defect in power supply to VANOS intake-side solenoid valve - Intake VANOS solenoid valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	The VANOS valve for the intake sid	The measured data for the Bank 1	N	- Open circuit in wire between the DME and the intake-side VANOS solenoid valve. - Defect in power supply to VANOS intake-side solenoid valve - Intake VANOS solenoid valve defective	- Check wire between DME and VANOS solenoid valve on intake side - Check power supply to VANOS intake-side solenoid valve - Replace VANOS solenoid valve on intake side	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Engine difficult or impossible to start. There may also be a palpable loss of power.	Breakdown notice: - If the engine does run, the vehicle can be driven.	- none
MSD87-6Z	0x130108	1245448	VANOS, inlet: control fault, position not reached	The diagnostic function monitors control of the intake-side VANOS on Bank 1. The deviation between specified and actual data is monitored for the entire duration of the driving cycle.	P0012	'A' Camshaft Position - Timing Over-Retarded (Bank 1)	Camshaft Position Timing	Intake	The fault is recognized when the VANOS fails to trail the specified value within the specified period. Potential problem source(s): - Extreme contamination on or seizure at VANOS solenoid valve - Stiction or defect in VANOS assembly	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Engine temperature between 0°C	- None	steuern_anws	Test data for L4 are the ID?s 0x450	N	- Extreme contamination on or seizure at VANOS solenoid valve - Stiction or defect in VANOS assembly	- Check VANOS solenoid valve for contamination, respond to severe contamination by removing filter screen with tab - Install new solenoid valve (valve seized) - Replace VANOS unit - Always proceed step-by-step - Check system after each step (clear control module fault memory and test operation)!	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - In unfavorable case rough engine running	Breakdown notice: - none	- none
MSD87-6Z	0x130201	1245607	VANOS solenoid valve, exhaust, activation: short circuit to positive	The diagnostic function monitors the electrical connection between the DME and the VANOS solenoid valve on the exhaust side.	P2091	'B' Camshaft Position Actuator Control Circuit High (Bank 1)	Camshaft Position Actuator	Exhaust Electrical	The fault is recognized when a short circuit to positive is present. Potential problem source(s): - The wire from the DME to VANOS solenoid valve on the exhaust side has a short to positive. - Exhaust VANOS solenoid valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	The VANOS valve for the exhaust s	The measured data for the Bank 1	N	- The wire from the DME to VANOS solenoid valve on the exhaust side has a short to positive. - Exhaust VANOS solenoid valve defective	- Check wire from DME to VANOS exhaust-side solenoid valve - Replace VANOS solenoid valve on exhaust side	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Engine difficult or impossible to start. There may also be a palpable loss of power.	Breakdown notice: - If the engine does run, the vehicle can be driven.	- none
MSD87-6Z	0x130202	1245608	VANOS solenoid valve, exhaust, activation: short circuit to ground	The diagnostic function monitors the electrical connection between the DME and the VANOS solenoid valve on the exhaust side.	P2090	'B' Camshaft Position Actuator Control Circuit Low (Bank 1)	Camshaft Position Actuator	Exhaust Electrical	The fault is recognized when a short circuit to ground is present. Potential problem source(s): - The wire from the DME to VANOS solenoid valve on the exhaust side has a short to ground.	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	The VANOS valve for the exhaust s	The measured data for the Bank 1	N	- The wire from the DME to VANOS solenoid valve on the exhaust side has a short to ground.	- Check wire from DME to VANOS exhaust-side solenoid valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Engine difficult or impossible to start. There may also be a palpable loss of power.	Breakdown notice: - If the engine does run, the vehicle can be driven.	- none
MSD87-6Z	0x130203	1245700	VANOS solenoid valve, exhaust, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and the VANOS solenoid valve on the exhaust side.	P0013	'B' Camshaft Position - Actuator Circuit/Open (Bank 1)	Camshaft Position Actuator	Exhaust Electrical	The fault is recognized when an open wire is present. Potential problem source(s): - Open circuit in wire between the DME and the exhaust-side VANOS solenoid valve. - Defect in power supply to VANOS exhaust-side solenoid valve - Exhaust-side VANOS solenoid valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	The VANOS valve for the exhaust s	The measured data for the Bank 1	N	- Open circuit in wire between the DME and the exhaust-side VANOS solenoid valve. - Defect in power supply to VANOS exhaust-side solenoid valve - Exhaust-side VANOS solenoid valve defective	- Check wire from DME to VANOS exhaust-side solenoid valve - Check power supply to VANOS exhaust-side solenoid valve - Replace VANOS solenoid valve on exhaust side	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: off	none	Possible apparent symptoms: - Engine difficult or impossible to start. There may also be a palpable loss of power.	Breakdown notice: - If the engine does run, the vehicle can be driven.	- none
MSD87-6Z	0x130308	1245960	VANOS, exhaust: control fault, position not reached	The diagnostic function monitors control of the exhaust-side VANOS on Bank 1. The deviation between specified and actual data is monitored for the entire duration of the driving cycle.	P0015	'B' Camshaft Position - Timing Over-Retarded (Bank 1)	Camshaft Position Timing	Exhaust	The fault is recognized when the VANOS fails to trail the specified value within the specified period. Potential problem source(s): - Extreme contamination on or seizure at VANOS solenoid valve - Stiction or defect in VANOS assembly	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	Engine temperature between 0°C	- None	steuern_anws	Test data for L4 are the ID?s 0x450	N	- Extreme contamination on or seizure at VANOS solenoid valve - Stiction or defect in VANOS assembly	- Check VANOS solenoid valve for contamination, respond to severe contamination by removing filter screen with tab - Install new solenoid valve (valve seized) - Replace VANOS unit - Always proceed step-by-step - Check system after each step (clear control module fault memory and test operation)!	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	none	Possible apparent symptoms: - In unfavorable case rough engine running	Breakdown notice: - none	- none
MSD87-6Z	0x130801	1247233	Inlet camshaft, position monitoring: tooth jump	The diagnostic function monitors the adaptation data of the intake camshaft.	P138A	'A' Camshaft Tooth Off (Bank 1)	Camshaft	Intake Tooth Off	The fault is recognized when the adaptation value jumps by more than 10 °Camkshaft, which corresponds to one tooth. Potential problem source(s): - Incorrect timing - VANOS is defective - Adaptation data not learned correctly	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	Square-wave signal from 3 tooth ra	N	- Incorrect timing - VANOS is defective - Adaptation data not learned correctly	- Check valve timing - Check VANOS - Repeat adaptation data learning routine	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Installation fault or mechanical malfunction in camshaft drive	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x130901	1247489	Exhaust camshaft, position monitoring: tooth jump	The diagnostic function monitors the adaptation data of the exhaust camshaft.	P138C	'B' Camshaft Tooth Off (Bank 1)	Camshaft	Exhaust Tooth Off	The fault is recognized when the adaptation value jumps by more than 10 °Camkshaft, which corresponds to one tooth. Potential problem source(s): - Incorrect timing - VANOS is defective - Adaptation data not learned correctly	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	Square-wave signal from 3 tooth ra	N	- Incorrect timing - VANOS is defective - Adaptation data not learned correctly	- Check valve timing - Check VANOS - Repeat adaptation data learning routine	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Installation fault or mechanical malfunction in camshaft drive	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x130C01	1248257	Crankshaft - inlet camshaft, reference: angle difference outside limit value	The diagnostic function monitors the adaptation data of the intake camshaft.	P1384	Crankshaft / 'A' Camshaft Reference Error (Bank 1)	Crankshaft / Camshaft	Intake Reference	The fault is recognized when the adaptation data display a deviation of more than 20 °Crankshaft or 10 °Camshaft. Potential problem source(s): - Incorrect timing - VANOS maladjusted or sticking	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	Square-wave signal from 3 tooth ra	N	- Incorrect timing - VANOS maladjusted or sticking	- Check valve timing - Check reluctor ring to confirm that it is installed correctly - Check camshaft for correct VANOS position	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Installation fault or mechanical malfunction in camshaft drive	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x130D01	1248513	Crankshaft - exhaust camshaft, reference: Angle difference outside of limit value	The diagnostic function monitors the adaptation data of the exhaust camshaft.	P1386	Crankshaft / 'B' Camshaft Reference Error (Bank 1)	Crankshaft / Camshaft	Exhaust Reference	The fault is recognized when the adaptation data display a deviation of more than 20 °Crankshaft or 10 °Camshaft. Potential problem source(s): - Incorrect timing - VANOS maladjusted or sticking	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	Square-wave signal from 3 tooth ra	N	- Incorrect timing - VANOS maladjusted or sticking	- Check valve timing - Check reluctor ring to confirm that it is installed correctly - Check camshaft for correct VANOS position	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Installation fault or mechanical malfunction in camshaft drive	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x130E01	1248769	Crankshaft - inlet camshaft, synchronization: camshaft signal outside limit value	The diagnostic function monitors mutual synchronization of the intake camshaft position sensor and the crankshaft sensor when the engine is started.	P0016	Crankshaft Position - Camshaft Position Correlation (Bank 1 Sensor A)	Crankshaft / Camshaft	Intake Correlation	A fault is recognized when it is not possible to determine the precise crankshaft position based on the signals from the two sensors. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Intake camshaft sensor defective - VANOS is defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	Square-wave signal from 3 tooth ra	N	- Electromagnetic interference - Defective wiring harness - Intake camshaft sensor defective - VANOS is defective	- Check wiring harness - Check VANOS - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Start synchronization not possible on affected camshaft	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- Synchronization starts with exhaust camshaft sensor 2. If this is not successful the process continues with the exhaust camshaft sensor (1). If this is also unsuccessful then the process continues with intake camshaft sensor 2. If this is also unsuccessful then the process continues with exhaust camshaft sensor 1. Reflecting this, the diagnostic fault codes are also logged in this sequence.
MSD87-6Z	0x130F01	1249025	Crankshaft - exhaust camshaft, synchronization: camshaft signal outside limit value	The diagnostic function monitors mutual synchronization of the exhaust camshaft position sensor and the crankshaft sensor when the engine is started.	P0017	Crankshaft Position - Camshaft Position Correlation (Bank 1 Sensor B)	Crankshaft / Camshaft	Exhaust Correlation	A fault is recognized when it is not possible to determine the precise crankshaft position based on the signals from the two sensors. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Exhaust camshaft sensor defective - VANOS is defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	Square-wave signal from 3 tooth ra	N	- Electromagnetic interference - Defective wiring harness - Exhaust camshaft sensor defective - VANOS is defective	- Check wiring harness - Check VANOS - Replace sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Start synchronization not possible on affected camshaft	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- Synchronization starts with exhaust camshaft sensor 2. If this is not successful the process continues with the exhaust camshaft sensor (1). If this is also unsuccessful then the process continues with intake camshaft sensor 2. If this is also unsuccessful then the process continues with exhaust camshaft sensor 1. Reflecting this, the diagnostic fault codes are also logged in this sequence.
MSD87-6Z	0x131408	1250312			P054B	Cold Start 'B' Camshaft Position Timing Over-Retarded (Bank 1)	Camshaft Position Timing	Cold Start																	
MSD87-6Z	0x131508	1250568			P052B	Cold Start 'A' Camshaft Position Timing Over-Retarded (Bank 1)	Camshaft Position Timing	Cold Start																	
MSD87-6Z	0x138101	1278209	Exhaust flap, activation: short circuit to positive	The diagnostic function monitors the electrical connection between the DME and the electric exhaust-flap pilot valve.	P0478	Exhaust Pressure Control Valve 'A' High			The fault is recognized when a short circuit to positive is present during transmission of a control-activation signal to the exhaust flap's electric pilot valve. Potential problem source(s): - Defect in wiring harness between DME and electric exhaust-flap pilot valve - Electric exhaust-flap pilot valve is defective	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 5 sec	The exhaust-gas flap can be actived	none	N	- Defect in wiring harness between DME and electric exhaust-flap pilot valve - Electric exhaust-flap pilot valve is defective	- Disconnect electric exhaust-flap pilot valve and examine wiring harness - Replace electric exhaust-flap pilot valve	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Change in exhaust note	Breakdown notice: - none	- none
				The diagnostic function monitors the electrical					The fault is recognized when a short circuit to ground is present while a control-activation signal is being transmitted to the electric exhaust-flap pilot valve. Potential problem source(s): - Defect in wiring harness	This fault is logged in the control module's fault memory if it					The exhaust-gas flap can be actived						- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power				

MSD87-6Z	0x139104	1278212	Exhaust-flap, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and the electric exhaust-flap pilot valve.	P0475	Exhaust Pressure Control Valve 'A'			The fault is recognized when a control signal is transmitted to the electric exhaust-lap pilot valve and an open circuit is present. Potential problem source(s): - Defect in wiring harness between DME and electric exhaust-flap pilot valve - No power supply voltage at electric exhaust-flap pilot valve - Electric exhaust-flap pilot valve is defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 5 sec.	The exhaust-gas flap can be activat	none	N	- Defect in wiring harness between DME and electric exhaust-flap pilot valve - No power supply voltage at electric exhaust-flap pilot valve - Electric exhaust-flap pilot valve is defective	- Disconnect electric exhaust-flap pilot valve and examine wiring harness - Check power supply to electric exhaust-flap pilot valve - Replace electric exhaust-flap pilot valve	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Change in exhaust note	Breakdown notice: - none	- none
MSD87-6Z	0x139201	1278465	Radiator shutter, top, supply voltage, actuator: voltage fault	The diagnostic function monitors the power-supply voltage to the radiator vent slat actuator.	P303E	Controlled Upper Air Shutter Supply Voltage			The fault is recognized by the self-diagnosis. Potential problem source(s): - Radiator vent slat actuator defective	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 5 sec.	steuern_systemcheck_gf	status_systemcheck_gf	N	- Radiator vent slat actuator defective	- Measure voltage on radiator vent slat actuator (specified: 12 V). - Replace radiator vent slat actuator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine may overheat.	Breakdown notice: - Radiator vent slats can be opened by hand	- none
MSD87-6Z	0x138301	1278721	Radiator shutter, top, overtemperature, actuator: limit value exceeded	The diagnostic function monitors the temperature of the radiator vent slat actuator.	P303F	Controlled Upper Air Shutter Over Temperature			The fault is recognized by the self-diagnosis. Potential problem source(s): - Radiator vent slat actuator defective	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 5 sec.	steuern_systemcheck_gf	status_systemcheck_gf	N	- Radiator vent slat actuator defective	- Replace radiator vent slat actuator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine may overheat.	Breakdown notice: - Radiator vent slats can be opened by hand	- none
MSD87-6Z	0x139401	1278977	Radiator shutter, top, actuator internal: electrical fault	The diagnostic function monitors the radiator vent slat assembly for internal electrical malfunctions.	P304A	Controlled Upper Air Shutter Electrical			The fault is recognized by the self-diagnosis. Potential problem source(s): - Internal electrical malfunction in radiator vent flap actuator	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 5 sec.	steuern_systemcheck_gf	status_systemcheck_gf	N	- Internal electrical malfunction in radiator vent flap actuator	- Replace radiator vent slat actuator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine may overheat.	Breakdown notice: - Radiator vent slats can be opened by hand	- none
MSD87-6Z	0x139501	1279233	Radiator shutter, top, lower stop: not detected	The diagnostic function monitors whether the radiator vent slat assembly closes within a specified actuator angle of rotation.	P304B	Controlled Upper Air Shutter, Lower Stop Not Detected			The fault is recognized when the motor rotates without resistance but the vent slat fails to close to within a specific angle. Potential problem source(s): - Mechanical defect in radiator vent slat assembly (broken linkage)	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical syst	None	- 12 sec.	steuern_systemcheck_gf	status_systemcheck_gf	N	- Mechanical defect in radiator vent slat assembly (broken linkage)	- Inspect mechanical components of radiator vent slat assembly	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine may overheat.	Breakdown notice: - Radiator vent slats can be opened by hand	- none
MSD87-6Z	0x139601	1279489	Radiator shutter, top, upper stop: not detected	The diagnostic function monitors whether the assembly reaches the upper limit of its travel range (radiator vent slats open) after first repositioning to the lower extremity of its travel range (radiator vent slat closed) during the self-test.	P304C	Controlled Upper Air Shutter, Upper Stop Not Detected			The fault is recognized when the system fails to reach the upper limit of its travel range (radiator vent slat assembly open). Potential problem source(s): - Mechanical defect in radiator vent slat assembly (broken linkage)	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical syst	None	- 6 sec. after v > 30 km/h	steuern_systemcheck_gf	status_systemcheck_gf	N	- Mechanical defect in radiator vent slat assembly (broken linkage)	- Check radiator vent slat assembly for travel resistance (perform system test)	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine may overheat.	Breakdown notice: - Radiator vent slats can be opened by hand	- none
MSD87-6Z	0x138701	1279745	Radiator shutter, top, upper stop: detected too early	The diagnostic function monitors whether the radiator vent slat assembly closes within a specified angle of rotation.	P304D	Controlled Upper Air Shutter, Upper Stop Detected Too Early			The fault is recognized when it is not possible to progress through a specific rotational angle. Potential problem source(s): - Radiator vent slats physically seized (dirt, ice, snow, etc.)	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical syst	None	- 6 sec. after v > 30 km/h	steuern_systemcheck_gf	status_systemcheck_gf	N	- Radiator vent slats physically seized (dirt, ice, snow, etc.)	- Check radiator vent slat assembly for travel resistance (perform system test) - Note environmental conditions at time diagnostic fault code was logged: If the temperature was 0 °C then ice formation could be the cause - Note environmental conditions at time diagnostic fault code was logged: If the vehicle speed was > 150 km/h, wind resistance may be the problem source	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	This fault can occur when the vent slats are covered with ice or dirt. When the vehicle speed exceeds 150 km/h it is possible for the system to misinterpret slat closure as "seizure."	Possible apparent symptoms: - The engine may overheat.	Breakdown notice: - Radiator vent slats can be opened by hand	- none
MSD87-6Z	0x138901	1280257	Radiator shutter, bottom, electric: short circuit to positive	The diagnostic function monitors electric activation of the solenoid valve for the radiator vent slat assembly.	P300D	Controlled Lower Air Shutter Circuit High			The fault is recognized when a short circuit to positive is present during transmission of a control-activation signal to the radiator vent slat solenoid valve. Potential problem source(s): - Defect in wiring harness - Defect in solenoid valve for radiator vent slat assembly	This fault is logged in the control module's fault memory if it remains present for longer than 4 sec.	none	Voltage condition: - - Electrical syst	None	- None	Yes, possible using 'Steuern_gf2'	The activation process can be acce	N	- Defect in wiring harness - Defect in solenoid valve for radiator vent slat assembly	- Check wiring harness - Replace solenoid valve for radiator vent slat assembly	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x138902	1280258	Radiator shutter, bottom, electric: short circuit to ground	The diagnostic function monitors electric activation of the solenoid valve for the radiator vent slat assembly.	P300E	Controlled Lower Air Shutter Circuit Low			The fault is recognized when a short circuit to ground is present during transmission of a control-activation signal to the radiator vent slat solenoid valve. Potential problem source(s): - Wiring harness defective	This fault is logged in the control module's fault memory if it remains present for longer than 4 sec.	none	Voltage condition: - - Electrical syst	None	- None	Yes, possible using 'Steuern_gf2'	The activation process can be acce	N	- Wiring harness defective	- Check wiring harness	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x138904	1280260	Radiator shutter, bottom, electric: open circuit	The diagnostic function monitors electric activation of the solenoid valve for the radiator vent slat assembly.	P300F	Controlled Lower Air Shutter Circuit/Open			The fault is recognized when a control signal is transmitted to the radiator vent slat's solenoid valve and an open circuit is present. Potential problem source(s): - Defect in wiring harness - Defect in power supply to solenoid valve for the radiator vent slat assembly - Defect in solenoid valve for radiator vent slat assembly	This fault is logged in the control module's fault memory if it remains present for longer than 4 sec.	none	Voltage condition: - - Electrical syst	None	- None	Yes, possible using 'Steuern_gf2'	The activation process can be acce	N	- Defect in wiring harness - Defect in power supply to solenoid valve for the radiator vent slat assembly - Defect in solenoid valve for radiator vent slat assembly	- Check wiring harness - Check power supply to solenoid valve for the radiator vent slat assembly - Replace solenoid valve for radiator vent slat assembly	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x140001	1310721	Misfire, several cylinders: injection is cut out	The diagnostic function monitors whether multiple "combustion miss" malfunctions are logged in the course of a single driving cycle.	P0300	Random/Multiple Cylinder Misfire Detected	Misfire	Multiple	The fault is recognized when combustion miss is present on at least two cylinders. Potential problem source(s): - see Individual fault	see Individual fault	none	Voltage condition: - - None - Tempe	None	- None	NO	NO	Y	- see Individual fault	- see Individual fault	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - see Individual fault	Breakdown notice: - none	- none
MSD87-6Z	0x140002	1310722	Misfire, several cylinders: damaging exhaust gas after starting	The diagnostic function monitors whether multiple "combustion miss" malfunctions are logged in the course of a single driving cycle.	P0300	Random/Multiple Cylinder Misfire Detected	Misfire	Multiple	The fault is recognized when combustion miss is present on at least two cylinders. Potential problem source(s): - see Individual fault	see Individual fault	none	Voltage condition: - - None - Tempe	None	- None	NO	NO	Y	- see Individual fault	- see Individual fault	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - see Individual fault	Breakdown notice: - none	- none
MSD87-6Z	0x140004	1310724	Misfire, several cylinders: damaging exhaust gas	The diagnostic function monitors whether multiple "combustion miss" malfunctions are logged in the course of a single driving cycle.	P0300	Random/Multiple Cylinder Misfire Detected	Misfire	Multiple	The fault is recognized when combustion miss is present on at least two cylinders. Potential problem source(s): - see Individual fault	see Individual fault	none	Voltage condition: - - None - Tempe	None	- None	NO	NO	Y	- see Individual fault	- see Individual fault	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - see Individual fault	Breakdown notice: - none	- none
MSD87-6Z	0x140008	1310728	Misfire, several cylinders: sumcheck error	The diagnostic function monitors whether multiple "combustion miss" malfunctions are logged in the course of a single driving cycle.	P0300	Random/Multiple Cylinder Misfire Detected	Misfire	Multiple	The fault is recognized when combustion miss is present on at least two cylinders. Potential problem source(s): - see Individual fault	see Individual fault	none	Voltage condition: - - None - Tempe	None	- None	NO	NO	Y	- see Individual fault	- see Individual fault	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - see Individual fault	Breakdown notice: - none	- none
MSD87-6Z	0x140101	1310977	Misfire, cylinder 1: injection is cut out	The diagnostic function monitors the duration of the combustion strokes and compares them with those of the remaining cylinders by assessing the rpm signals.	P0301	Cylinder 1 Misfire Detected	Misfire	Cyl 1	The fault is recognized when the combustion stroke in a particular cylinder is slower than the combustion strokes on the other cylinders. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events are recognized within 200 crankshaft revolutions. The number depends on rpm and load factor.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Reduced engine power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x140102	1310978	Misfire, cylinder 1: damaging exhaust gas after starting	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0301	Cylinder 1 Misfire Detected	Misfire	Cyl 1	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized during the first 1000 crankshaft revolutions following the start.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140104	1310980	Misfire, cylinder 1: damaging exhaust gas	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0301	Cylinder 1 Misfire Detected	Misfire	Cyl 1	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized within 1000 crankshaft revolutions. This must proceed in 4 intervals.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140201	1311233	Misfire, cylinder 2: injection is cut out	The diagnostic function monitors the duration of the combustion strokes and compares them with those of the remaining cylinders by assessing the rpm signals.	P0302	Cylinder 2 Misfire Detected	Misfire	Cyl 2	The fault is recognized when the combustion stroke in a particular cylinder is slower than the combustion strokes on the other cylinders. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events are recognized within 200 crankshaft revolutions. The number depends on rpm and load factor.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Reduced engine power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x140202	1311234	Misfire, cylinder 2: damaging exhaust gas after starting	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0302	Cylinder 2 Misfire Detected	Misfire	Cyl 2	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized during the first 1000 crankshaft revolutions following the start.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140204	1311236	Misfire, cylinder 2: damaging exhaust gas	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0302	Cylinder 2 Misfire Detected	Misfire	Cyl 2	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized within 1000 crankshaft revolutions. This must proceed in 4 intervals.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140301	1311489	Misfire, cylinder 3: injection is cut out	The diagnostic function monitors the duration of the combustion strokes and compares them with those of the remaining cylinders by assessing the rpm signals.	P0303	Cylinder 3 Misfire Detected	Misfire	Cyl 3	The fault is recognized when the combustion stroke in a particular cylinder is slower than the combustion strokes on the other cylinders. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events are recognized within 200 crankshaft revolutions. The number depends on rpm and load factor.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Reduced engine power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x140302	1311490	Misfire, cylinder 3: damaging exhaust gas after starting	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0303	Cylinder 3 Misfire Detected	Misfire	Cyl 3	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized during the first 1000 crankshaft revolutions following the start.	none	Voltage condition: - - Electrical syst	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none

MSD87-6Z	0x140304	1311492	Misfire, cylinder 3: damaging exhaust gas	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0303	Cylinder 3 Misfire Detected	Misfire	Cyl 3	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized within 1000 crankshaft revolutions. This must proceed in 4 intervals.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140401	1311745	Misfire, cylinder 4: injection is cut out	The diagnostic function monitors the duration of the combustion strokes and compares them with those of the remaining cylinders by assessing the rpm signals.	P0304	Cylinder 4 Misfire Detected	Misfire	Cyl 4	The fault is recognized when the combustion stroke in a particular cylinder is slower than the combustion strokes on the other cylinders. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events are recognized within 200 crankshaft revolutions. The number depends on rpm and load factor.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Reduced engine power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x140402	1311746	Misfire, cylinder 4: damaging exhaust gas after starting	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0304	Cylinder 4 Misfire Detected	Misfire	Cyl 4	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized during the first 1000 crankshaft revolutions following the start.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140404	1311748	Misfire, cylinder 4: damaging exhaust gas	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0304	Cylinder 4 Misfire Detected	Misfire	Cyl 4	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized within 1000 crankshaft revolutions. This must proceed in 4 intervals.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140501	1312001	Misfire, cylinder 5: injection is cut out	The diagnostic function monitors the duration of the combustion strokes and compares them with those of the remaining cylinders by assessing the rpm signals.	P0305	Cylinder 5 Misfire Detected	Misfire	Cyl 5	The fault is recognized when the combustion stroke in a particular cylinder is slower than the combustion strokes on the other cylinders. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events are recognized within 200 crankshaft revolutions. The number depends on rpm and load factor.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Reduced engine power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x140502	1312002	Misfire, cylinder 5: damaging exhaust gas after starting	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0305	Cylinder 5 Misfire Detected	Misfire	Cyl 5	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized during the first 1000 crankshaft revolutions following the start.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140504	1312004	Misfire, cylinder 5: damaging exhaust gas	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0305	Cylinder 5 Misfire Detected	Misfire	Cyl 5	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized within 1000 crankshaft revolutions. This must proceed in 4 intervals.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140601	1312257	Misfire, cylinder 6: injection is cut out	The diagnostic function monitors the duration of the combustion strokes and compares them with those of the remaining cylinders by assessing the rpm signals.	P0306	Cylinder 6 Misfire Detected	Misfire	Cyl 6	The fault is recognized when the combustion stroke in a particular cylinder is slower than the combustion strokes on the other cylinders. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events are recognized within 200 crankshaft revolutions. The number depends on rpm and load factor.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Reduced engine power	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x140602	1312258	Misfire, cylinder 6: damaging exhaust gas after starting	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0306	Cylinder 6 Misfire Detected	Misfire	Cyl 6	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized during the first 1000 crankshaft revolutions following the start.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x140604	1312260	Misfire, cylinder 6: damaging exhaust gas	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0306	Cylinder 6 Misfire Detected	Misfire	Cyl 6	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized within 1000 crankshaft revolutions. This must proceed in 4 intervals.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Defect in mixture formation - Defect in ignition system - Mechanical defect - Defective DME	- Conduct fault diagnosis using the 'Combustion miss' test module	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Combustion miss may be noticed.	Breakdown notice: - none	- none
MSD87-6Z	0x142002	1318914	Misfire: tank fill level too low	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0313	Misfire Detected With Low Fuel	Misfire	Low Fuel	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Tank fuel level too low	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized within 1000 crankshaft revolutions. This must proceed in 4 intervals.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Tank fuel level too low	- Check fuel level	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Supplementary information always provided when combustion miss of any kind is detected during operation in the fuel reserve range.	Possible apparent symptoms: - none	Breakdown notice: - none	- The diagnostic fault code is logged to avoid extensive fault diagnosis.
MSD87-6Z	0x142002	1318914	Misfire: tank fill level too low	The diagnostic function monitors the duration of the combustion strokes by processing the rpm signals.	P0313	Misfire Detected With Low Fuel	Misfire	Low Fuel	The fault is recognized when one combustion stroke is too slow owing to combustion miss. Potential problem source(s): - Tank fuel level too low	The diagnostic fault code is logged when a specific number of combustion miss events, with their negative effects on exhaust emissions, are recognized within 1000 crankshaft revolutions. This must proceed in 4 intervals.	none	Voltage condition: - - Electrical sys	Coolant temperature > -20 °C	- None	NO	NO	Y	- Tank fuel level too low	- Check fuel level	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Supplementary information always provided when combustion miss of any kind is detected during operation in the fuel reserve range.	Possible apparent symptoms: - none	Breakdown notice: - none	- The diagnostic fault code is logged to avoid extensive fault diagnosis.
MSD87-6Z	0x143002	1320010	Irregular-operation measurement: measuring error, crankshaft sensor	The diagnostic function monitors the plausibility of the signals from the sensor rotor/ring.	P0370	Timing Reference High Resolution Signal 'A'	Crankshaft Position Sensor	Signal	The fault is recognized when all of the teeth on the rotor/ring wheel are no longer being detected. Potential problem source(s): - Crankshaft sensor defective - Increment wheel defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	None	- None	NO	NO	Y	- Crankshaft sensor defective - Increment wheel defective	- Inspect rotor/ring for damage - Replace crankshaft sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x143101	1323265	Rough running, stratified-charge operation: increased rough running in stratified-charge operation	Rough running, stratified-charge mode					Stratified-charge operation	Varies according to rpm	none	none	<70 °C	none	NO	none	Y	Combustion miss	- If no customer complaints regarding rough running, miss or increased fuel consumption are received, then no action is required - If customer complaint is present: Identify the problem cylinder and replace its spark plug and injector.	none	-	none	none	- Data configured
MSD87-6Z	0x150102	1376514	Ignition, cylinder 1: combustion duration too short	The diagnostic function monitors the spark duration.	P1301	Ignition Monitoring Cylinder 1 Spark Duration Too Short			The fault is recognized when the spark duration = 0 ms. Potential problem source(s): - Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the spark duration is = 0 ms in 10 consecutive ignition events.	none	Voltage condition: - - None: Tempe	Engine temperature above 0 °C	- None	None	none	N	- Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	- Check voltage supply - Inspect spark plug for damage - Check ignition coil for damage - Install spark plug and coil on cylinder with no malfunction - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Fault is recognized when combustion duration ZK = 0 ms	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x150202	1376770	Ignition, cylinder 2: combustion duration too short	The diagnostic function monitors the spark duration.	P1302	Ignition Monitoring Cylinder 2 Spark Duration Too Short			The fault is recognized when the spark duration = 0 ms. Potential problem source(s): - Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the spark duration is = 0 ms in 10 consecutive ignition events.	none	Voltage condition: - - None: Tempe	Engine temperature above 0 °C	- None	None	none	N	- Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	- Check voltage supply - Inspect spark plug for damage - Check ignition coil for damage - Install spark plug and coil on cylinder with no malfunction - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Fault is recognized when combustion duration ZK = 0 ms	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x150302	1377026	Ignition, cylinder 3: combustion duration too short	The diagnostic function monitors the spark duration.	P1303	Ignition Monitoring Cylinder 3 Spark Duration Too Short			The fault is recognized when the spark duration = 0 ms. Potential problem source(s): - Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the spark duration is = 0 ms in 10 consecutive ignition events.	none	Voltage condition: - - None: Tempe	Engine temperature above 0 °C	- None	None	none	N	- Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	- Check voltage supply - Inspect spark plug for damage - Check ignition coil for damage - Install spark plug and coil on cylinder with no malfunction - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Fault is recognized when combustion duration ZK = 0 ms	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x150402	1377282	Ignition, cylinder 4: combustion duration too short	The diagnostic function monitors the spark duration.	P1304	Ignition Monitoring Cylinder 4 Spark Duration Too Short			The fault is recognized when the spark duration = 0 ms. Potential problem source(s): - Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the spark duration is = 0 ms in 10 consecutive ignition events.	none	Voltage condition: - - None: Tempe	Engine temperature above 0 °C	- None	None	none	N	- Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	- Check voltage supply - Inspect spark plug for damage - Check ignition coil for damage - Install spark plug and coil on cylinder with no malfunction - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Fault is recognized when combustion duration ZK = 0 ms	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x150502	1377538	Ignition, cylinder 5: combustion duration too short	The diagnostic function monitors the spark duration.	P1305	Ignition Monitoring Cylinder 5 Spark Duration Too Short			The fault is recognized when the spark duration = 0 ms. Potential problem source(s): - Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the spark duration is = 0 ms in 10 consecutive ignition events.	none	Voltage condition: - - None: Tempe	Engine temperature above 0 °C	- None	None	none	N	- Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	- Check voltage supply - Inspect spark plug for damage - Check ignition coil for damage - Install spark plug and coil on cylinder with no malfunction - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Fault is recognized when combustion duration ZK = 0 ms	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x150602	1377794	Ignition, cylinder 6: combustion duration too short	The diagnostic function monitors the spark duration.	P1306	Ignition Monitoring Cylinder 6 Spark Duration Too Short			The fault is recognized when the spark duration = 0 ms. Potential problem source(s): - Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the spark duration is = 0 ms in 10 consecutive ignition events.	none	Voltage condition: - - None: Tempe	Engine temperature above 0 °C	- None	None	none	N	- Defective spark plug - Power-supply voltage defect - Defective ignition coil - Defective DME	- Check voltage supply - Inspect spark plug for damage - Check ignition coil for damage - Install spark plug and coil on cylinder with no malfunction - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Fault is recognized when combustion duration ZK = 0 ms	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x151001	1380353	Ignition timing adjustment in idle, cold start ignition timing too early	The diagnostic function monitors actual force efficiency level in comparison to the specified force efficiency level while the catalyst is in its heating phase	P050B	Cold Start Ignition Timing Performance	Ignition Timing	Cold Start	The fault is recognized when the integrated difference between specified and actual efficiency rises above a threshold defined in the program map Potential problem source(s): Poor fuel quality	none	none	Voltage condition: - None: Tempe	none	none	NO	None	Y	Poor fuel quality	Check fuel	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: None	Breakdown notice: None	None
MSD87-6Z	0x151101	1380609	Ignition timing adjustment at partial load, cold start: ignition timing too early	The diagnostic function monitors actual force efficiency level in comparison to the specified force efficiency level while the catalyst is in its heating phase	P136A	Cold Start Ignition Timing Performance Off Idle	Ignition Timing	Cold Start	The fault is recognized when the integrated difference between specified and actual efficiency rises above a threshold defined in the program map Potential problem source(s): Poor fuel quality	none	none	Voltage condition: - None: Tempe	none	none	NO	None	Y	Poor fuel quality	Check fuel	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: None	Breakdown notice: None	None
									The fault is recognized when the spark duration = 0 ms on all cylinders.			Voltage condition: - - None: Tempe								- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off				

MSD87-6Z	0x156101	1401089	Ignition coil, cylinder 1, activation: short circuit to positive	The diagnostic function monitors the time for current rise at the ignition coil.	P2301	Ignition Coil 'A' Primary Control Circuit High	Ignition Coil	A Primary Circuit	The fault is recognized when the coil has no ohmic or inductive resistance owing to short circuit, allowing current to build more quickly and to higher levels. Potential problem source(s): - Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the fault is detected in 13 consecutive ignition events.	none	Voltage condition: - - None: Tempe	None	None	None	none	N	- Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	- Check voltage supply - Inspect spark plug for damage - Check ignition coil for damage - Install spark plug and coil on cylinder with no malfunction - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Internal diagnosis within control modules	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x156201	1401345	Ignition coil, cylinder 2, activation: short circuit to positive	The diagnostic function monitors the time for current rise at the ignition coil.	P2304	Ignition Coil 'B' Primary Control Circuit High	Ignition Coil	B Primary Circuit	The fault is recognized when the coil has no ohmic or inductive resistance owing to short circuit, allowing current to build more quickly and to higher levels. Potential problem source(s): - Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the fault is detected in 13 consecutive ignition events.	none	Voltage condition: - - None: Tempe	None	None	None	none	N	- Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	- Check wiring harness - Check ignition coil for damage - Replace ignition coil on malfunctioning cylinder by interchanging it with one from another cylinder - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Internal diagnosis within control modules	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x156301	1401601	Ignition coil, cylinder 3, activation: short circuit to positive	The diagnostic function monitors the time for current rise at the ignition coil.	P2307	Ignition Coil 'C' Primary Control Circuit High	Ignition Coil	C Primary Circuit	The fault is recognized when the coil has no ohmic or inductive resistance owing to short circuit, allowing current to build more quickly and to higher levels. Potential problem source(s): - Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the fault is detected in 13 consecutive ignition events.	none	Voltage condition: - - None: Tempe	None	None	None	none	N	- Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	- Check wiring harness - Check ignition coil for damage - Replace ignition coil on malfunctioning cylinder by interchanging it with one from another cylinder - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Internal diagnosis within control modules	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x156401	1401857	Ignition coil, cylinder 4, activation: short circuit to positive	The diagnostic function monitors the time for current rise at the ignition coil.	P2310	Ignition Coil 'D' Primary Control Circuit High	Ignition Coil	D Primary Circuit	The fault is recognized when the coil has no ohmic or inductive resistance owing to short circuit, allowing current to build more quickly and to higher levels. Potential problem source(s): - Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the fault is detected in 13 consecutive ignition events.	none	Voltage condition: - - None: Tempe	None	None	None	none	N	- Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	- Check wiring harness - Check ignition coil for damage - Replace ignition coil on malfunctioning cylinder by interchanging it with one from another cylinder - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Internal diagnosis within control modules	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x156501	1402113	Ignition coil, cylinder 5, activation: short circuit to positive	The diagnostic function monitors the time for current rise at the ignition coil.	P2313	Ignition Coil 'E' Primary Control Circuit High	Ignition Coil	E Primary Circuit	The fault is recognized when the coil has no ohmic or inductive resistance owing to short circuit, allowing current to build more quickly and to higher levels. Potential problem source(s): - Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the fault is detected in 13 consecutive ignition events.	none	Voltage condition: - - None: Tempe	None	None	None	none	N	- Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	- Check wiring harness - Check ignition coil for damage - Replace ignition coil on malfunctioning cylinder by interchanging it with one from another cylinder - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Internal diagnosis within control modules	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x156601	1402369	Ignition coil, cylinder 6, activation: short circuit to positive	The diagnostic function monitors the time for current rise at the ignition coil.	P2316	Ignition Coil 'F' Primary Control Circuit High	Ignition Coil	F Primary Circuit	The fault is recognized when the coil has no ohmic or inductive resistance owing to short circuit, allowing current to build more quickly and to higher levels. Potential problem source(s): - Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	The diagnostic fault code is logged when the fault is detected in 13 consecutive ignition events.	none	Voltage condition: - - None: Tempe	None	None	None	none	N	- Short circuit to Terminal 1 in power supply - Defective ignition coil - Defective DME	- Check wiring harness - Check ignition coil for damage - Replace ignition coil on malfunctioning cylinder by interchanging it with one from another cylinder - Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No	Internal diagnosis within control modules	Possible apparent symptoms: - Ignition miss and hard starting can occur.	Breakdown notice: - none	- none
MSD87-6Z	0x160001	1441793	Crankshaft sensor, signal: no signal	The diagnostic function monitors whether a signal is being received from the crankshaft sensor.	P0335	Crankshaft Position Sensor 'A' Circuit	Crankshaft Position Sensor	Electrical	The fault is recognized when the crankshaft sensor fails to transmit signals but signals are still being received from the camshaft position sensors. Potential problem source(s): - Defect in wiring harness - Crankshaft sensor defective - Crankshaft sensor in incorrect position	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 60-2 tooth	N	- Defect in wiring harness - Crankshaft sensor defective - Crankshaft sensor in incorrect position	- Check wiring harness - Inspect installation of crankshaft sensor - Replace crankshaft sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Total loss of crankshaft signal	Possible apparent symptoms: - Reduced performance - Poor starting characteristics	Breakdown notice: - none	- none
MSD87-6Z	0x160002	1441794	Crankshaft sensor, signal: implausible	The diagnostic function monitors whether the signal from the crankshaft sensor is being received with interruptions.	P0336	Crankshaft Position Sensor 'A' Circuit Range/Performance	Crankshaft Position Sensor	Plausibility	The fault is recognized when the signals from the crankshaft sensor are being received with interruptions. Potential problem source(s): - Defect in wiring harness - Crankshaft sensor defective - Crankshaft sensor in incorrect position	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 60-2 tooth	N	- Defect in wiring harness - Crankshaft sensor defective - Crankshaft sensor in incorrect position	- Check wiring harness - Inspect installation of crankshaft sensor - Replace crankshaft sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Sporadic loss of crankshaft signal	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x160101	1442049	Crankshaft sensor, synchronization: malfunction	The diagnostic function monitors whether the synchronization gap is detected in the correct position.	P1398'	Crankshaft Position Sensor Signal Synchronization Error	Crankshaft Position Sensor	Synchronization	The fault is recognized when the synchronization gap is not detected or is detected in the incorrect position. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Crankshaft sensor defective - Increment wheel defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 60-2 tooth	N	- Electromagnetic interference - Defective wiring harness - Crankshaft sensor defective - Increment wheel defective	- Check wiring harness - Replace crankshaft sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Incorrect tooth number at gap with loss of synchronization	Possible apparent symptoms: - Reduced performance - poor idle operation	Breakdown notice: - none	- none
MSD87-6Z	0x160201	1442305	Crankshaft-sensor signal, tooth error: number of teeth incorrect	The diagnostic function monitors the number of teeth on the reluctor ring.	P0370	Timing Reference High Resolution Signal 'A'	Crankshaft Position Sensor	Signal	The fault is recognized when more or less than 58 teeth are detected. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Crankshaft sensor defective - Increment wheel defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 60-2 tooth	N	- Electromagnetic interference - Defective wiring harness - Crankshaft sensor defective - Increment wheel defective	- Check wiring harness - Replace crankshaft sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Incorrect number of teeth per revolution	Possible apparent symptoms: - Reduced performance - poor idle operation	Breakdown notice: - none	- none
MSD87-6Z	0x160301	1442561	Crankshaft-sensor signal, gap error: tooth time implausible	The diagnostic function monitors the duration of the period between two teeth.	P0370	Timing Reference High Resolution Signal 'A'	Crankshaft Position Sensor	Signal	The fault is recognized when the segment period of a tooth is too long or too short. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Crankshaft sensor defective - Increment wheel defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 60-2 tooth	N	- Electromagnetic interference - Defective wiring harness - Crankshaft sensor defective - Increment wheel defective	- Check wiring harness - Replace crankshaft sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Tooth time outside expected window	Possible apparent symptoms: - Reduced performance - poor idle operation	Breakdown notice: - none	- none
MSD87-6Z	0x160402	1442818	Crankshaft sensor, segment adaptation: limit value exceeded	Tolerances are allowed for the teeth and tooth intervals on the reluctor ring. The diagnostic function recognizes these variations and corrects for them.	P1396	Crankshaft Position Sensor Segment Timing Plausibility	Crankshaft Position Sensor	Signal	The fault is recognized when the adaptation function can no longer compensate for deviations. Potential problem source(s): - Crankshaft sensor defective - Increment wheel defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sys	None	None	NO	NO	Y	- Crankshaft sensor defective - Increment wheel defective	- Inspect reluctor ring for damage - Replace crankshaft sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x162001	1449985	Inlet-camshaft sensor, synchronization: malfunction	The diagnostic function monitors the plausibility of the signals from the intake-side cam shaft.	P1380	Camshaft Position Sensor Signal 'A' Synchronization Error (Bank 1)	Camshaft Position Sensor	Intake Synchronization	The fault is recognized when the signals deviate too far from the expected value. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Intake camshaft sensor defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 3 tooth ne	N	- Electromagnetic interference - Defective wiring harness - Intake camshaft sensor defective	- Check wiring harness - Check sensor to confirm that it is installed correctly - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Flank pattern does not match stored pattern.	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x162101	1450241	Inlet-camshaft sensor, electric: no signal	The diagnostic function determines whether signals from the intake-side camshaft are present.	P0340	Camshaft Position Sensor 'A' Circuit (Bank 1 or Single Sensor)	Camshaft Position Sensor	Intake Electrical	The fault is recognized when no signals are received from the intake-side camshaft although other signals indicate that the engine is running. Potential problem source(s): - Defect in wiring harness - Intake camshaft sensor defective - Gap too large	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 3 tooth ne	N	- Defect in wiring harness - Intake camshaft sensor defective - Gap too large	- Check wiring harness - Check sensor to confirm that it is installed correctly - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Total loss of camshaft signal	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x162201	1450497	Inlet-camshaft sensor, function: segment-time error	The diagnostic function monitors the minimum segment period on the intake camshaft.	P1300	Camshaft Position Sensor 'A' Segment Timing Error (Bank 1)	Camshaft Position Sensor	Intake Signal	The fault is recognized when the segment period is too short. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Intake camshaft sensor defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 3 tooth ne	N	- Electromagnetic interference - Defective wiring harness - Intake camshaft sensor defective	- Check wiring harness - Check sensor to confirm that it is installed correctly - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Signal interference	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x163101	1454337	Exhaust-camshaft sensor, synchronization: malfunction	The diagnostic function monitors the plausibility of the signals from the exhaust camshaft.	P1382	Camshaft Position Sensor Signal 'B' Synchronization Error (Bank 1)	Camshaft Position Sensor	Exhaust Synchronization	The fault is recognized when the signals deviate too far from the expected value. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Exhaust camshaft sensor defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 3 tooth ne	N	- Electromagnetic interference - Defective wiring harness - Exhaust camshaft sensor defective	- Check wiring harness - Check sensor to confirm that it is installed correctly - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Flank pattern does not match stored pattern.	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x163201	1454593	Exhaust-camshaft sensor, electric: no signal	The diagnostic function determines whether signals from the exhaust camshaft are present.	P0365	Camshaft Position Sensor 'B' Circuit (Bank 1)	Camshaft Position Sensor	Exhaust Electrical	The fault is recognized when no signals are received from the exhaust camshaft although other signals indicate that the engine is running. Potential problem source(s): - Defect in wiring harness - Exhaust camshaft sensor defective - Gap too large	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 3 tooth ne	N	- Defect in wiring harness - Exhaust camshaft sensor defective - Gap too large	- Check wiring harness - Check sensor to confirm that it is installed correctly - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Total loss of camshaft signal	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x163301	1454849	Exhaust-camshaft sensor, function: segment-time error	The diagnostic function monitors the minimum segment period on the exhaust camshaft.	P130A	Camshaft Position Sensor 'B' Segment Timing Error (Bank 1)	Camshaft Position Sensor	Exhaust Signal	The fault is recognized when the segment period is too short. Potential problem source(s): - Electromagnetic interference - Defective wiring harness - Exhaust camshaft sensor defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	None	NO	Square-wave signal from 3 tooth ne	N	- Electromagnetic interference - Defective wiring harness - Exhaust camshaft sensor defective	- Check wiring harness - Check sensor to confirm that it is installed correctly - Replace sensor	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: none	Signal interference	Possible apparent symptoms: - Reduced performance - Poor starting characteristics - Engine can stall	Breakdown notice: - none	- none
MSD87-6Z	0x168001	1474561	Knock-sensor signal 1, signal: engine noise above limit value	The diagnostic function monitors the knock sensor for cylinders 1 and 2.	P0328	Knock/Combustion Vibration Sensor 1 Circuit High (Bank 1 or Single Sensor)	Knock Sensor	Sensor 1	The fault is recognized when the signal voltage consistently exceeds 4.8 V. Potential problem source(s): - Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	The diagnostic fault code is logged when the fault remains present for more than 20 crankshaft revolutions.	Terminal 15	Voltage condition: - - None: Tempe	None	- 1 - 3 sec.	NO	none	N	- Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	- Loose screw on knock sensor - Check wiring harness between knock sensor and DME - Replace knock sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x168002	1474562	Knock-sensor signal 1, signal: engine noise below limit value	The diagnostic function monitors the knock sensor for cylinders 1 and 2.	P0327	Knock/Combustion Vibration Sensor 1 Circuit Low (Bank 1 or Single Sensor)	Knock Sensor	Sensor 1	The fault is recognized when the signal voltage consistently below 0.06 V. Potential problem source(s): - Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	The diagnostic fault code is logged when the fault remains present for more than 20 crankshaft revolutions.	Terminal 15	Voltage condition: - - None: Tempe	None	- 1 - 3 sec.	NO	none	N	- Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	- Loose screw on knock sensor - Check wiring harness between knock sensor and DME - Replace knock sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
									The fault is recognized when the knock signal is implausible for the current operating point. (Static evaluation, so no threshold value) Potential problem source(s):	The diagnostic fault code is		Voltage condition: - - None: Tempe								- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on				

MSD87-6Z	0x168101	1474817	Knock-sensor signal 2, signal: engine noise above limit value	The diagnostic function monitors the knock sensor for cylinders 3 and 4.	P1328	Knock/Combustion Vibration Sensor 2 Circuit High (Bank 1)	Knock Sensor	Sensor 2	The fault is recognized when the signal voltage consistently exceeds 4.8 V. Potential problem source(s): - Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	The diagnostic fault code is logged when the fault remains present for more than 20 crankshaft revolutions.	Terminal 15	Voltage condition: - - None - Tempe	None	- 1 - 3 sec.	NO	none	N	- Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	- Loose screw on knock sensor - Check wiring harness between knock sensor and DME - Replace knock sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x168102	1474818	Knock-sensor signal 2, signal: engine noise below limit value	The diagnostic function monitors the knock sensor for cylinders 3 and 4.	P1327	Knock/Combustion Vibration Sensor 2 Circuit Low (Bank 1)	Knock Sensor	Sensor 2	The fault is recognized when the signal voltage is consistently below 0.06 V. Potential problem source(s): - Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	The diagnostic fault code is logged when the fault remains present for more than 20 crankshaft revolutions.	Terminal 15	Voltage condition: - - None - Tempe	None	- 1 - 3 sec.	NO	none	N	- Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	- Loose screw on knock sensor - Check wiring harness between knock sensor and DME - Replace knock sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x168108	1474824	Knock-sensor signal 2, signal: implausible	The diagnostic function monitors the knock sensor for cylinders 3 and 4.	P1398	Knock/Combustion Vibration Sensor 2 Circuit Range/Performance (Bank 1)	Knock Sensor	Sensor 2	The fault is recognized when the knock signal is implausible for the current operating point. (Static evaluation, so no threshold value) Potential problem source(s): - Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	The diagnostic fault code is logged when the fault remains present for more than 20 crankshaft revolutions.	Terminal 15	Voltage condition: - - None - Tempe	None	- 1 - 3 sec.	NO	none	N	- Loose screw on knock sensor - Defect in wiring harness between DME and knock sensor	- Loose screw on knock sensor - Check wiring harness between knock sensor and DME - Replace knock sensor	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - Reduced power	Breakdown notice: - none	- none
MSD87-6Z	0x180001	1572865	Catalytic converter: efficiency below limit value	The diagnostic function monitors the ability of the catalytic converter to store oxygen.	P0420	Catalyst System Efficiency Below Threshold (Bank 1)	Catalyst	Efficiency	The fault is recognized when the catalyst diagnosis value rises above 0.92. Potential problem source(s): - Catalytic converter defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > 70 °C - - C	None	NO	none	Y	- Catalytic converter defective	- If diagnostic fault codes related to the oxygen sensor are logged, then a secondary fault is present - Visual inspection of catalyst for mechanical damage - Check exhaust system for leaks - If the fault is continuously present or has multiple log entries respond by replacing the catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Because diagnosis relies on assessment of the post-catalyst oxygen sensor, following logging of a diagnostic fault code the exhaust system must be inspected for leaks and sealed if any leakage is found (without additional repair).	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x180002	1572866	Catalytic converter: faulty	The diagnostic function monitors the ability of the catalytic converter to store oxygen.	P0420	Catalyst System Efficiency Below Threshold (Bank 1)	Catalyst	Efficiency	The fault is recognized when the catalyst diagnosis value rises above 0.92. Potential problem source(s): - Catalytic converter defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > 70 °C - - C	None	NO	none	Y	- Catalytic converter defective	- If diagnostic fault codes related to the oxygen sensor are logged, then a secondary fault is present - Visual inspection of catalyst for mechanical damage - Check exhaust system for leaks - If the fault is continuously present or has multiple log entries respond by replacing the catalytic converter	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Because diagnosis relies on assessment of the post-catalyst oxygen sensor, following logging of a diagnostic fault code the exhaust system must be inspected for leaks and sealed if any leakage is found (without additional repair).	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x180009	1572872	Catalytic converter: Efficiency below limit value (not validated)	The diagnostic function monitors the catalyst's ability to store oxygen, but can still not validate the affected bank. Therefore the pre-diagnosis, for fault location 0x180001_Bank 1.	P0420	Catalyst System Efficiency Below Threshold (Bank 1)	Catalyst	Efficiency	The fault is recognized when the catalyst diagnosis value rises above 0.92. Potential problem source(s): - Initial diagnostic fault code prior to 0x180001_Bank 1 - Catalytic converter defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syste	Coolant temperature > 70 °C - Calc	none	NO	None	Y	- Initial diagnostic fault code prior to 0x180001_Bank 1 - Catalytic converter defective	- Initial diagnostic fault code prior to 0x180001_Bank 1, process this	MY10: no MY11: - ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	Because diagnosis relies on assessment of the post-catalyst oxygen sensor, following logging of a diagnostic fault code the exhaust system must be inspected for leaks and sealed if any leakage is found (without additional repair).	Possible apparent symptoms: None	Breakdown notice: None	None
MSD87-6Z	0x180101	1573121	Catalytic converter 2: efficiency below limit value	The diagnostic function monitors the ability of the catalytic converter to store oxygen.	P0430	Catalyst System Efficiency Below Threshold (Bank 2)	Catalyst	Efficiency	The fault is recognized when the catalyst diagnosis value rises above 0.92. Potential problem source(s): - Catalyst 2 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > 70 °C - - C	None	NO	none	Y	- Catalyst 2 defective	- If diagnostic fault codes related to the oxygen sensor are logged, then a secondary fault is present - Visual inspection of catalyst for mechanical damage - Check exhaust system for leaks - If the fault is continuously present or has multiple log entries respond by replacing catalytic converter 2	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Because diagnosis relies on assessment of the post-catalyst oxygen sensor, following logging of a diagnostic fault code the exhaust system must be inspected for leaks and sealed if any leakage is found (without additional repair).	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x180102	1573122	Catalytic converter 2: faulty	The diagnostic function monitors the ability of the catalytic converter to store oxygen.	P0430	Catalyst System Efficiency Below Threshold (Bank 2)	Catalyst	Efficiency	The fault is recognized when the catalyst diagnosis value rises above 0.92. Potential problem source(s): - Catalyst 2 defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	Coolant temperature > 70 °C - - C	None	NO	none	Y	- Catalyst 2 defective	- If diagnostic fault codes related to the oxygen sensor are logged, then a secondary fault is present - Visual inspection of catalyst for mechanical damage - Check exhaust system for leaks - If the fault is continuously present or has multiple log entries respond by replacing catalytic converter 2	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Because diagnosis relies on assessment of the post-catalyst oxygen sensor, following logging of a diagnostic fault code the exhaust system must be inspected for leaks and sealed if any leakage is found (without additional repair).	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x180108	1573128	Catalytic converter 2: Efficiency below limit value (not validated)	The diagnostic function monitors the catalyst's ability to store oxygen, but can still not validate the affected bank. Therefore the pre-diagnosis, for fault location 0x180001_Bank 2.	P0430	Catalyst System Efficiency Below Threshold (Bank 2)	Catalyst	Efficiency	The fault is recognized when the catalyst diagnosis value rises above 0.92. Potential problem source(s): - Initial entry for diagnostic fault code 0x180001_Bank 2 - Catalytic converter defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syste	Coolant temperature > 70 °C - Calc	none	NO	None	Y	- Initial entry for diagnostic fault code 0x180001_Bank 2 - Catalytic converter defective	- Initial entry fault for 0x180001_Bank 2, process this	MY10: no MY11: - ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	Because diagnosis relies on assessment of the post-catalyst oxygen sensor, following logging of a diagnostic fault code the exhaust system must be inspected for leaks and sealed if any leakage is found (without additional repair).	Possible apparent symptoms: None	Breakdown notice: None	None
MSD87-6Z	0x180201	1573377	Cat.-conv. conversion in stratified-charge mode: efficiency, catalytic converter, below limit value	none	P140F	Catalyst Conversion in Stratified Mode Efficiency Below Threshold (Bank 1)			none	none	none	none	- None	- None	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x180301	1573633	Cat.-conv. conversion 2 in stratified-charge mode: efficiency, catalytic converter 2, below limit value	none	P141F	Catalyst Conversion in Stratified Mode Efficiency Below Threshold (Bank 2)			none	none	none	none	- None	- None	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x180401	1573889	Nitrogen oxide catalytic converter: Efficiency below limit	none	P2000	NOx Adsorber Efficiency Below Threshold (Bank 1)	NOx Adsorber	Efficiency	none	none	none	none	- None	- None	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x190001	1638401	DMTL solenoid valve, activation: short circuit to positive	The diagnostic function monitors the electrical connection between the DME and the DMTL solenoid valve.	P2420	Evaporative Emission System Switching Valve Control Circuit High	EVAP System	Switching Valve	The fault is recognized when a control signal is transmitted to the DMTL solenoid valve and a short circuit to positive is present. Potential problem source(s): - Defect in wiring harness - DMTL defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	none	Voltage condition: - - Electrical syst	None	- 0.5 sec.	Yes, possible with 'Activate DMTL v	Activate DMTL valve' provides the	N	- Defect in wiring harness - DMTL defective	- Check wiring harness - Replace DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only installed in US vehicles.	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x190002	1638402	DMTL solenoid valve, activation: short circuit to ground	The diagnostic function monitors the electrical connection between the DME and the DMTL solenoid valve.	P2419	Evaporative Emission System Switching Valve Control Circuit Low	EVAP System	Switching Valve	The fault is recognized when a control signal is transmitted to the DMTL solenoid valve and a short circuit to ground is present. Potential problem source(s): - Wiring harness defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	none	Voltage condition: - - Electrical syst	None	- 0.5 sec.	Yes, possible with 'Activate DMTL v	Activate DMTL valve' provides the	N	- Wiring harness defective	- Check wiring harness	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only installed in US vehicles.	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x190004	1638404	DMTL solenoid valve, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and the DMTL solenoid valve.	P2418	Evaporative Emission System Switching Valve Control Circuit/Open	EVAP System	Switching Valve	The fault is recognized when a control signal is transmitted to the DMTL solenoid valve and an open circuit is present. Potential problem source(s): - Defect in wiring harness - Defect in power supply to DMTL - DMTL defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	none	Voltage condition: - - Electrical syst	None	- 0.5 sec.	Yes, possible with 'Activate DMTL v	Activate DMTL valve' provides the	N	- Defect in wiring harness - Defect in power supply to DMTL - DMTL defective	- Check wiring harness - Check voltage supply to DMTL - Replace DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only installed in US vehicles.	Possible apparent symptoms: - none	Breakdown notice: - none	- On E7X versions the power-supply voltage is from Terminal 30gz, which is controlled by the CAS. If the battery is severely discharged the CAS may deactivate this Terminal 30gz, leading to this diagnostic fault code entry.
MSD87-6Z	0x190201	1639913	Fuel tank ventilation system and purge air system, micro leak, Leak greater than 1.0 mm	The diagnostic function monitors the DMTL module pump's electrical current draw within a time window.	P0442	Evaporative Emission System Leak Detected (small leak)	EVAP System	Leak Detection	The fault is recognized when the correct current value is not obtained within a time window defined in the program map. Potential problem source(s): - Leakage > 1 mm in tank EVAP vent system	The diagnostic fault code is logged when the fault remains present for more than 20 crankshaft revolutions. - DMTL operational check - Driving distance > 200 m, during which the vehicle speed must exceed 15 km/h at least once	none	Voltage condition: - - 10.95 V < else	Ambient temperature between 1.5	None	Function test DMTL	none	Y	- Leakage > 1 mm in tank EVAP vent system	- If diagnostic fault codes for the DMTL are logged, then clear the control module fault memory - Carry out DMTL operational test (see: 'Condition for logging diagnostic fault code') - If it is possible to reproduce the fault with the DMTL operational test then look for a leak in the EVAP vent system	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	Installed only in US and Korean vehicles (alternate learning-routine version).	Possible apparent symptoms: - none	Breakdown notice: - none	- Operational testing on the DMTL (Diagnostic Module Tank Leakage) can only be carried out provided that no faults related to the DMTL have been logged. The conditions for fault detection apply to the function test, but not to diagnosis in the course of normal operation.
MSD87-6Z	0x190302	1639170	Fuel tank ventilation system and purge air system, micro-leak, Leak greater than 0.5 mm	The diagnostic function monitors the DMTL module pump's electrical current draw within a time window.	P0456	Evaporative Emission System Leak Detected (very small leak)	EVAP System	Leak Detection	The fault is recognized when the current fails to reach a specified reference value within a time window defined in the program map. Potential problem source(s): - Leakage > 0.5 mm in tank EVAP vent system	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - 10.95 V < else	Ambient temperature between 1.5	None	Function test DMTL	none	Y	- Leakage > 0.5 mm in tank EVAP vent system	- If diagnostic fault codes for the DMTL are logged, then clear the control module fault memory - Perform DMTL operational test - If it is possible to reproduce the fault with the DMTL operational test then look for a leak in the EVAP vent system	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Installed only in US and Korean vehicles (alternate learning-routine version).	Possible apparent symptoms: - none	Breakdown notice: - none	- Operational testing on the DMTL (Diagnostic Module Tank Leakage) can only be carried out provided that no faults related to the DMTL have been logged. The conditions for fault detection apply to the function test, but not to diagnosis in the course of normal operation.
MSD87-6Z	0x190401	1639425	DMTL, system fault: pump current too high during reference measurement	The diagnostic function monitors the DMTL pump's current draw.	P1449	Diagnostic Module Tank Leakage (DM-TL) Pump Current Too High	EVAP System	Pump Current	The fault is recognized when the current draw exceeds 40 mA. Potential problem source(s): - DMTL (leakage diagnosis pump) defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - 10.95 V < else	Ambient temperature between 1.5	None	Function test DMTL	none	Y	- DMTL (leakage diagnosis pump) defective	- If diagnostic fault codes for the DMTL are logged, then clear the control module fault memory - Perform DMTL operational test - If the fault can be reproduced with the DMTL operational test, then replace the DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Installed only in US and Korean vehicles (alternate learning-routine version).	Possible apparent symptoms: - none	Breakdown notice: - none	- Operational testing on the DMTL (Diagnostic Module Tank Leakage) can only be carried out provided that no faults related to the DMTL have been logged. The conditions for fault detection apply to the function test, but not to diagnosis in the course of normal operation.
MSD87-6Z	0x190402	1639426	DMTL, system fault: pump current too low during reference measurement	The diagnostic function monitors the DMTL pump's current draw.	P1448	Diagnostic Module Tank Leakage (DM-TL) Pump Current Too Low	EVAP System	Pump Current	The fault is recognized when the current draw falls below 15 mA. Potential problem source(s): - DMTL (leakage diagnosis pump) defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - 10.95 V < else	Ambient temperature between 1.5	None	Function test DMTL	none	Y	- DMTL (leakage diagnosis pump) defective	- If diagnostic fault codes for the DMTL are logged, then clear the control module fault memory - Perform DMTL operational test - If the fault can be reproduced with the DMTL operational test, then replace the DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Installed only in US and Korean vehicles (alternate learning-routine version).	Possible apparent symptoms: - none	Breakdown notice: - none	- Operational testing on the DMTL (Diagnostic Module Tank Leakage) can only be carried out provided that no faults related to the DMTL have been logged. The conditions for fault detection apply to the function test, but not to diagnosis in the course of normal operation.
MSD87-6Z	0x190404	1639428	DMTL, system fault: short due to current fluctuations during reference measurement	The diagnostic function monitors the DMTL pump's current draw during specified time periods.	P1434	Diagnostic Module Tank Leakage (DM-TL)	EVAP System	Pump Current	The fault is recognized when the current fluctuation exceeds 1 mA during a time window defined in the program map. Potential problem source(s): - DMTL (heater) defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - 10.95 V < else	Ambient temperature between 1.5	None	Function test DMTL	none	Y	- DMTL (heater) defective	- If diagnostic fault codes for the DMTL are logged, then clear the control module fault memory - Perform DMTL operational test - If the fault can be reproduced with the DMTL operational test, then replace the DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Installed only in US and Korean vehicles (alternate learning-routine version).	Possible apparent symptoms: - none	Breakdown notice: - none	- Operational testing on the DMTL (Diagnostic Module Tank Leakage) can only be carried out provided that no faults related to the DMTL have been logged. The conditions for fault detection apply to the function test, but not to diagnosis in the course of normal operation.
MSD87-6Z	0x190408	1639432	DMTL, system fault: pump current reaches limit value during valve test	The diagnostic function monitors the pump's current draw during the DMTL solenoid valve's switching process.	P1447	Diagnostic Module Tank Leakage (DM-TL) Pump Current Too High during Switching Solenoid Test	EVAP System	Pump Current	The fault is recognized when the current drops by less than 2 mA. Potential problem source(s): - DMTL (DMTL solenoid valve) defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - 10.95 V < else	Ambient temperature between 1.5	None	Function test DMTL	none	Y	- DMTL (DMTL solenoid valve) defective	- If diagnostic fault codes for the DMTL are logged, then clear the control module fault memory - Perform DMTL operational test - If the fault can be reproduced with the DMTL operational test, then replace the DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Installed only in US and Korean vehicles (alternate learning-routine version).	Possible apparent symptoms: - none	Breakdown notice: - none	- Operational testing on the DMTL (Diagnostic Module Tank Leakage) can only be carried out provided that no faults related to the DMTL have been logged. The conditions for fault detection apply to the function test, but not to diagnosis in the course of normal operation.
MSD87-6Z	0x190501	1639681	DMTL, heating, activation: short circuit to positive	The diagnostic function monitors the electrical connection between the DME and the DMTL heater.	P240C	Evaporative Emission System Leak Detection Pump Heater Control Circuit High	EVAP System	DMTL Heater	The fault is recognized when a control signal is transmitted to the DMTL heater and a short circuit to positive is present. Potential problem source(s): - Defect in wiring harness - DMTL defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - Electrical syst	None	- 5 sec.	Yes, possible with 'Activate DMTL v	Activate DMTL valve' provides the	N	- Defect in wiring harness - DMTL defective	- Check wiring harness - Replace DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only installed in US vehicles.	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x190502	1639682	DMTL, heating, activation: short circuit to ground	The diagnostic function monitors the electrical connection between the DME and the DMTL heater.	P240B	Evaporative Emission System Leak Detection Pump Heater Control Circuit Low	EVAP System	DMTL Heater	The fault is recognized when a control signal is transmitted to the DMTL heater and a short circuit to ground is present. Potential problem source(s): - Wiring harness defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - Electrical syst	None	- 5 sec.	Yes, possible with 'Activate DMTL v	Activate DMTL valve' provides the	N	- Wiring harness defective	- Check wiring harness	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only installed in US vehicles.	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x190504	1639684	DMTL, heating, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and the DMTL heater.	P240A	Evaporative Emission System Leak Detection Pump Heater Control Circuit/Open	EVAP System	DMTL Heater	The fault is recognized when a control signal is transmitted to the DMTL heater and an open circuit is present. Potential problem source(s): - Defect in wiring harness - Defect in power supply to DMTL - DMTL defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - Electrical syst	None	- 5 sec.	Yes, possible with 'Activate DMTL v	Activate DMTL valve' provides the	N	- Defect in wiring harness - Defect in power supply to DMTL - DMTL defective	- Check wiring harness - Check voltage supply to DMTL - Replace DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only installed in US vehicles.	Possible apparent symptoms: - none	Breakdown notice: - none	- On E7X versions the power-supply voltage is from Terminal 30gz, which is controlled by the CAS. If the battery is severely discharged the CAS may deactivate this Terminal 30gz, leading to this diagnostic fault code entry.
									The fault is recognized when a control signal is transmitted to the leakage diagnosis pump and a short circuit to positive is present. Potential problem source(s):									Using 'DMTL module system check'			- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off				

MSD87-6Z	0x190702	1840194	DMTL leak diagnosis pump, activation: Short circuit to earth	The diagnostic function monitors the electrical connection between the DME and the leakage diagnosis pump.	P2401	Evaporative Emission System Leak Detection Pump Control Circuit Low	EVAP System	Pump	The fault is recognized when a control signal is transmitted to the leakage diagnosis pump and a short circuit to ground is present. Potential problem source(s): - Wiring harness defective	The diagnostic fault code is logged when the fault persists for longer than 500 ms.	none	Voltage condition: - - Electrical syst	None	- None	Yes, possible with 'Activate DMTL	Using 'DMTL module system check	N	- Wiring harness defective	- Check wiring harness	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only installed in US vehicles.	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x190704	1840196	DMTL leak diagnosis pump, activation: Line disconnection	The diagnostic function monitors the electrical connection between the DME and the leakage diagnosis pump.	P2400	Evaporative Emission System Leak Detection Pump Control Circuit/Open	EVAP System	Pump	The fault is recognized when a control signal is transmitted to the leakage diagnosis pump and an open circuit is present. Potential problem source(s): - Defect in wiring harness - Defect in power supply to DMTL - DMTL defective	The diagnostic fault code is logged when the fault persists for longer than 500 ms.	none	Voltage condition: - - Electrical syst	None	- None	Yes, possible with 'Activate DMTL	Using 'DMTL module system check	N	- Defect in wiring harness - Defect in power supply to DMTL - DMTL defective	- Check wiring harness - Check voltage supply to DMTL - Replace DMTL	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only installed in US vehicles.	Possible apparent symptoms: - none	Breakdown notice: - none	- On E7X versions the power-supply voltage is from Terminal 30gr, which is controlled by the CAS. If the battery is severely discharged the CAS may deactivate this Terminal 30gr, leading to this diagnostic fault code entry.
MSD87-6Z	0x190F04	1842244	Tank-venting system, function: function test, end of line	The diagnostic function monitors the flow through the fuel tank's EVAP vent line.	P110E	Internal Code (Service/End-of-Line Test)	End of Line Test	NICHT INS SUMMARY TABLE!	The fault is recognized when the flow to the EVAP evaporative emission valve is reduced. Potential problem source(s): - Tank evaporative emissions valve seizes in closed position - Obstruction in line between tank and intake manifold	This fault is logged in the control module's fault memory if it remains present for longer than 30 sec.	none	Voltage condition: - - Electrical syst	Coolant temperature > 71 °C	- Ac	- 180 sec.	TEV Check	none	Y	- Tank evaporative emissions valve seizes in closed position -Obstruction in line between tank and intake manifold	- Conduct fault diagnosis with the 'EVAP evaporative emissions valve' test module	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	US only	Possible apparent symptoms: - Possible rough running from engine - Possible emission of fuel vapors, because no activated charcoal filter purge	Breakdown notice: - none	- none
MSD87-6Z	0x190F08	1842248	Tank-venting system, function: function test	The diagnostic function monitors the flow through the fuel tank's EVAP vent line.	P0440	Evaporative Emission System	EVAP System	Flow Check	The fault is recognized when the flow to the EVAP evaporative emission valve is reduced. Potential problem source(s): - Tank evaporative emissions valve seizes in closed position - Obstruction in line between tank and intake manifold	This fault is logged in the control module's fault memory if it remains present for longer than 30 sec.	none	Voltage condition: - - Electrical syst	Coolant temperature > 71 °C	- Ac	- 180 sec.	TEV Check	none	Y	- Tank evaporative emissions valve seizes in closed position -Obstruction in line between tank and intake manifold	- Conduct fault diagnosis with the 'EVAP evaporative emissions valve' test module	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	US only	Possible apparent symptoms: - Possible rough running from engine - Possible emission of fuel vapors, because no activated charcoal filter purge	Breakdown notice: - none	- none
MSD87-6Z	0x191001	1842497	Tank-venting valve, activation: short circuit to positive	The diagnostic function monitors the electrical connection between the DME and the EVAP evaporative emissions valve.	P0459	Evaporative Emission System Purge Control Valve 'A' Circuit High	EVAP System	Valve	The fault is recognized when a control signal is transmitted to the EVAP evaporative emissions valve and a short circuit to positive is present. Potential problem source(s): - Defect in wiring harness between DME and EVAP evaporative emissions valve - Fuel tank ventilation valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 0.5 sec.	TEV Check	none	N	- Defect in wiring harness between DME and EVAP evaporative emissions valve - Fuel tank ventilation valve defective	- Disconnect evaporative emissions valve and check wiring harness - Replace EVAP evaporative emissions valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - In extreme cases the engine will be hard or impossible to start.	Breakdown notice: - Attempt to release excess pressure from the tank by carefully opening the fuel filler cap. Then attempt a restart.	- none
MSD87-6Z	0x191002	1842498	Tank-venting valve, activation: short circuit to ground	The diagnostic function monitors the electrical connection between the DME and the EVAP evaporative emissions valve.	P0458	Evaporative Emission System Purge Control Valve 'A' Circuit Low	EVAP System	Valve	The fault is recognized when a control signal is transmitted to the EVAP evaporative emissions valve and a short circuit to ground is present. Potential problem source(s): - Defect in wiring harness between DME and EVAP evaporative emissions valve - Fuel tank ventilation valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 0.5 sec.	TEV Check	none	N	- Defect in wiring harness between DME and EVAP evaporative emissions valve - Fuel tank ventilation valve defective	- Disconnect evaporative emissions valve and check wiring harness - Replace EVAP evaporative emissions valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - In extreme cases the engine will be hard or impossible to start.	Breakdown notice: - Attempt to release excess pressure from the tank by carefully opening the fuel filler cap. Then attempt a restart.	- none
MSD87-6Z	0x191004	1842500	Tank-venting valve, activation: open circuit	The diagnostic function monitors the electrical connection between the DME and the EVAP evaporative emissions valve.	P0444	Evaporative Emission System Purge Control Valve 'A' Circuit Open	EVAP System	Valve	The fault is recognized when a control-activation signal is transmitted to the EVAP evaporative emission valve and the circuit is open. Potential problem source(s): - Defect in wiring harness between DME and EVAP evaporative emissions valve - No voltage supply to EVAP evaporative emissions valve - Fuel tank ventilation valve defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 0.5 sec.	TEV Check	none	N	- Defect in wiring harness between DME and EVAP evaporative emissions valve - No voltage supply to EVAP evaporative emissions valve - Fuel tank ventilation valve defective	- Disconnect evaporative emissions valve and check wiring harness - Check power-supply voltage to EVAP evaporative emissions valve - Replace EVAP evaporative emissions valve	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Engine difficult or impossible to start.	Breakdown notice: - Attempt to release excess pressure from the tank by carefully opening the fuel filler cap. Then attempt a restart.	- none
MSD87-6Z	0x193001	1650689	Fuel level sensor, left, signal: Short circuit to B+ or line disconnection	The fault is first stored in the junction box electronics and then relayed to the DME.	P0463	Fuel Level Sensor 'A' Circuit High	Fuel Level Sensor	Electrical	-- Potential problem source(s): --	--	none	Voltage condition: - - None: Tempe	None	- 21 sec.	after Terminal 15 on	None	none	N	- -	- The fault repair is implemented in 'Fuel gauge'.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- With the JPE Terminal 15 is adequate to trigger entry of a fault code, with the DME the engine must also be running.
MSD87-6Z	0x193002	1650690	Fuel level sensor, left, signal: Short circuit to earth	The fault is first stored in the junction box electronics and then relayed to the DME.	P0462	Fuel Level Sensor 'A' Circuit Low	Fuel Level Sensor	Electrical	-- Potential problem source(s): --	--	none	Voltage condition: - - None: Tempe	None	- 21 sec.	after Terminal 15 on	None	none	N	- -	- The fault repair is implemented in 'Fuel gauge'.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- With the JPE Terminal 15 is adequate to trigger entry of a fault code, with the DME the engine must also be running.
MSD87-6Z	0x193008	1650696	Fuel level sensor, left, signal: CAN value implausible	The fault is first stored in the junction box electronics and then relayed to the DME.	P1407	Fuel Level Signal 1	Fuel Level Sensor	Signal	-- Potential problem source(s): --	--	none	Voltage condition: - - None: Tempe	None	- 21 sec.	after Terminal 15 on	None	none	N	- -	- The fault repair is implemented in 'Fuel gauge'.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- With the JPE Terminal 15 is adequate to trigger entry of a fault code, with the DME the engine must also be running.
MSD87-6Z	0x193101	1650945	Fuel level sensor, right, signal: Short circuit to B+ or line disconnection	The fault is first stored in the junction box electronics and then relayed to the DME.	P2068	Fuel Level Sensor 'B' Circuit High	Fuel Level Sensor	Electrical	-- Potential problem source(s): --	--	none	Voltage condition: - - None: Tempe	None	- 21 sec.	after Terminal 15 on	None	none	N	- -	- The fault repair is implemented in 'Fuel gauge'.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- With the JPE Terminal 15 is adequate to trigger entry of a fault code, with the DME the engine must also be running.
MSD87-6Z	0x193102	1650946	Fuel level sensor, right, signal: Short circuit to earth	The fault is first stored in the junction box electronics and then relayed to the DME.	P2067	Fuel Level Sensor 'B' Circuit Low	Fuel Level Sensor	Electrical	-- Potential problem source(s): --	--	none	Voltage condition: - - None: Tempe	None	- 21 sec.	after Terminal 15 on	None	none	N	- -	- The fault repair is implemented in 'Fuel gauge'.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- With the JPE Terminal 15 is adequate to trigger entry of a fault code, with the DME the engine must also be running.
MSD87-6Z	0x193108	1650952	Fuel level sensor, right, signal: CAN value implausible	The fault is first stored in the junction box electronics and then relayed to the DME.	P1408	Fuel Level Signal 2	Fuel Level Sensor	Signal	-- Potential problem source(s): --	--	none	Voltage condition: - - None: Tempe	None	- 21 sec.	after Terminal 15 on	None	none	N	- -	- The fault repair is implemented in 'Fuel gauge'.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- With the JPE Terminal 15 is adequate to trigger entry of a fault code, with the DME the engine must also be running.
MSD87-6Z	0x193208	1651208	Tank fill level, plausibility: implausible in relation to consumption value	The diagnostic function monitors whether the fuel quantity extracted from the tank corresponds to the injected fuel quantity.	P144B	Fuel Level / Fuel Consumption Correlation	Fuel Level	Correlation	The diagnostic fault code is logged when the fuel level calculated by the DME deviates too starkly from the instrument cluster's fuel level. Potential problem source(s): - Defective fuel-level sensor - Frequent refueling with quantities of less than 5 liters (as with rental vehicles)	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- 21 sec.	after Terminal 15 on	None	none	Y	- Defective fuel-level sensor - Frequent refueling with quantities of less than 5 liters (as with rental vehicles)	- Collateral fault when diagnostic fault codes for fuel level sensor are logged - Ask customer if less than 5 liters of fuel has been added a number of times - Fill tank and determine how the fuel gauge responds, conduct fault diagnosis in "Fuel gauge."	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - If the fuel-level sensor is defective then the gauge reading will not reflect the actual amount of fuel in the tank and a vehicle breakdown can result.	Breakdown notice: - Refuel	- none
MSD87-6Z	0x1A0001	1703937	Exhaust-gas recirculation valve, activation: electric	Activation of exhaust-gas recirculation valve	P0487	EGR Throttle Control Circuit 'A' /Open	EGR System	Valve	EGR valve test Engine must be running EGR valve must be under current	200 ms	Terminal 15	none	none	none	none	none	N	Problem with voltage supply, short in wiring, driver circuit controlling EGR is defective	1) Check engine management fuses (5 fuses in INE-Box in the EBOX), 2) Check wires for mutual shorts (5-1, 5-2), 3) Replace DME	0	Driver circuit self-diagnosis	none	none	- Data configured
MSD87-6Z	0x1A0201	1704449	Exhaust-gas recirculation valve, control deviation: setpoint value not reached	none					none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x1A0202	1704450	Exhaust-gas recirculation valve, control deviation: starting position not reached	none					none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x1A0301	1704705	Exhaust-gas recirculation valve, adaptation: adaptation conditions not fulfilled	none					none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x1A0302	1704706	Exhaust-gas recirculation valve, adaptation: lower adaptation value outside valid range	none					none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x1A0304	1704708	Exhaust-gas recirculation valve, adaptation: upper position not reached	none					none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x1A0308	1704712	Exhaust-gas recirculation valve, adaptation: upper adaptation value outside valid range	none					none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x1A1001	1708033	Exhaust-gas recirculation sensor, electric: short circuit to positive or open circuit	none	P0406	EGR Sensor 'A' Circuit High	EGR System	Sensor 1	none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x1A1002	1708034	Exhaust-gas recirculation sensor, electric: short circuit to ground	none	P0405	EGR Sensor 'A' Circuit Low			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x1A2001	1712129	Electric fan, activation: short circuit to positive	The diagnostic function monitors the wire between the electric fan and the DME.	P0692	Fan 1 Control Circuit High	Cooling System	Fan 1	The fault is recognized when a short circuit to positive is present. Potential problem source(s): - Defect in wiring harness - Electric fan defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - - Electrical syst	Ambient temperature > -20 °C	- 5 sec.		steuern_a_leufter	N	N	- Defect in wiring harness - Electric fan defective	- Check wiring harness between DME and electric fan - Unplug electric fan and then measure resistance on electric fan between power-supply voltage (Pin 2) and activation (Pin 4) terminals. If the resistance is less than 10 ohms respond by replacing the electric fan	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	An inoperative E fan can also cause the engine to overheat.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none
MSD87-6Z	0x1A2002	1712130	Electric fan, activation: short circuit to ground	The diagnostic function monitors the wire between the electric fan and the DME.	P0691	Fan 1 Control Circuit Low	Cooling System	Fan 1	The fault is recognized when the short circuit to ground is present. Potential problem source(s): - Defect in wiring harness - Electric fan defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - - Electrical syst	Ambient temperature > -20 °C	- 11 sec.		steuern_a_leufter	N	N	- Defect in wiring harness - Electric fan defective	- Check wiring harness between DME and electric fan - Unplug electric fan and then measure resistance on electric fan between ground (Pin 1) and activation (Pin 4) terminals. If the resistance is less than 10 ohms respond by replacing the electric fan	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	An inoperative E fan can also cause the engine to overheat.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none
MSD87-6Z	0x1A2004	1712132	Electric fan, activation: open circuit	The diagnostic function monitors the wire between the electric fan and the DME.	P0480	Fan 1 Control Circuit	Cooling System	Fan 1	The fault is recognized when the electric fan has no power supply. Potential problem source(s): - Defect in wiring harness - Cutoff relay for electric fan defective - Electric fan defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - - Electrical syst	Ambient temperature > -20 °C	- 5 sec.		steuern_a_leufter	N	N	- Defect in wiring harness - Cutoff relay for electric fan defective - Electric fan defective	- Check wiring harness between DME and electric fan - Check power-supply voltage to electric fan - Unplug electric fan and then measure resistance on electric fan between power-supply voltage (Pin 2) and activation (Pin 4) terminals. If the resistance is greater than 1 ohm respond by replacing the electric fan. Check wiring harness to electric fan cutoff relay. - Replace electric fan cutoff relay.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	An inoperative E fan can also cause the engine to overheat.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none
MSD87-6Z	0x1A2108	1712392	Electric fan, self-diagnosis, stage 1: minor fan fault	The diagnostic function monitors the electric fan's rotation speed.	P14C0	Fan 1 Mechanical or Hardware Defect	Cooling System	Fan 1	The fault is recognized when unit fails to reach the specified rotation rate within the specified period. Potential problem source(s): - Electric fan electronics defective - Fan shows resistance to rotation	The fault is logged when it is detected 2 times within 30 seconds.	Terminal 15	Voltage condition: - - Electrical syst	Ambient temperature > -20 °C	- None		steuern_a_leufter	N	N	- Electric fan electronics defective - Fan shows resistance to rotation	- Check electric fan for resistance to rotation (unplug fan to avoid injury hazard) - Transmit trigger voltage of at least 15 % to electric fan, if the diagnostic fault code is logged again then replace the electric fan	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Error debounce L4: The fault is logged when it is detected 2 times within 150 seconds.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none
MSD87-6Z	0x1A2308	1712904	Electric fan, self-diagnosis, stage 2: fan fault with potential danger to fan	The diagnostic function monitors the electric fan's rotation speed.	P14C0	Fan 1 Mechanical or Hardware Defect	Cooling System	Fan 1	The fault is recognized when unit fails to reach the specified rotation rate within the specified period. Potential problem source(s): - Electric fan electronics defective - Fan shows resistance to rotation	The fault is logged when it is detected 2 times within 30 seconds.	Terminal 15	Voltage condition: - - Electrical syst	Ambient temperature > -20 °C	- None		steuern_a_leufter	N	N	- Electric fan electronics defective - Fan shows resistance to rotation	- Check electric fan for resistance to rotation (unplug fan to avoid injury hazard) - Transmit trigger voltage of at least 15 % to electric fan, if the diagnostic fault code is logged again then replace the electric fan	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Error debounce L4: The fault is logged when it is detected 2 times within 150 seconds.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none

MSD87-6Z	0x1A2408	1713160	Electric fan, self-diagnosis, stage 3: fan fault with restricted motor function	The diagnostic function monitors the electric fan's rotation speed.	P14C0	Fan 1 Mechanical or Hardware Defect	Cooling System	Fan 1	The fault is recognized when the electric fan fails to turn. Potential problem source(s): - Electric fan electronics defective - Fan is seized	The fault is logged when it is detected 2 times within 30 seconds.	Terminal 15	Voltage condition: -- Electrical sys	Ambient temperature > -20 °C	- None	steuern_e_lüfter	N	N	- Electric fan electronics defective - Fan is seized	- Check electric fan for resistance to rotation (unplug fan to avoid injury hazard) - Transmit trigger voltage of at least 15 % to electric fan, if the diagnostic fault code is logged again then replace the electric fan	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Yellow propeller symbol in instrument cluster Condition: Before fan fault 3 is logged, first the engine temperature must have been < 90°C and fan demand (PWM signal) < 30%.	Error debounce L4: The fault is logged when it is detected 2 times within 150 seconds.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none
MSD87-6Z	0x1A2508	1713416	Electric fan, self-diagnosis, stage 4: serious fan fault	The diagnostic function monitors the switching processes in the electric fan's electronic circuitry.	P14C0	Fan 1 Mechanical or Hardware Defect	Cooling System	Fan 1	The fault is recognized when the switching processes are implausible. Potential problem source(s): - Collateral fault caused by seized fan - Fault in electronic fan control	The fault is logged when it is detected 2 times within 30 seconds.	Terminal 15	Voltage condition: -- Electrical sys	Ambient temperature > -20 °C	- None	steuern_e_lüfter	N	N	- Collateral fault caused by seized fan - Fault in electronic fan control	- If no collateral fault is present then replace the electric fan	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Red propeller symbol in instrument cluster	Error debounce L4: The fault is logged when it is detected 2 times within 150 seconds.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - The electric fan has failed, no vehicle operation should be attempted.	- none
MSD87-6Z	0x1A2601	1713665	Electric fan cutoff relay, activation: Short circuit to B+	The diagnostic function monitors the wire between the electric fan cutoff relay and the DME.	P144E	Fan Safety Relay Circuit High			The fault is recognized when a short circuit to positive is present. Potential problem source(s): - Defect in wiring harness - Cutoff relay for electric fan defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: -- None: Temp	None	- None	steuern_e_lüfter	N	N	- Defect in wiring harness - Cutoff relay for electric fan defective	- Check wiring harness between DME and electric fan cutoff relay - Check electric fan cutoff relay: Apply activation signal to electric fan, it should be possible to hear the relay switching	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	An inoperative E fan can also cause the engine to overheat.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none
MSD87-6Z	0x1A2602	1713666	Electric fan cutoff relay, activation: Short circuit to earth	The diagnostic function monitors the wire between the electric fan cutoff relay and the DME.	P144D	Fan Safety Relay Circuit Low			The fault is recognized when a short circuit to ground is present. Potential problem source(s): - Defect in wiring harness - Cutoff relay for electric fan defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: -- None: Temp	None	- None	steuern_e_lüfter	N	N	- Defect in wiring harness - Cutoff relay for electric fan defective	- Check wiring harness between DME and electric fan cutoff relay - Check electric fan cutoff relay: Apply activation signal to electric fan, it should be possible to hear the relay switching	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	An inoperative E fan can also cause the engine to overheat.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none
MSD87-6Z	0x1A2604	1713668	Electric fan cutoff relay, activation: Line disconnection	The diagnostic function monitors the wire between the electric fan cutoff relay and the DME.	P144C	Fan Safety Relay Circuit			The fault is recognized when the electric fan has no power supply. Potential problem source(s): - Open circuit	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: -- None: Temp	None	- None	steuern_e_lüfter	N	N	- Open circuit	- Check wiring harness between DME and electric fan cutoff relay - Check electric fan cutoff relay: Apply activation signal to electric fan, it should be possible to hear the relay switching	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	An inoperative E fan can also cause the engine to overheat.	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- none
MSD87-6Z	0x1A2708	1713928	Electric fan cutoff relay, plausibility: Fault when the relay is switched on and off	The diagnostic function monitors the electric fan cutoff relay to determine whether it is open.	P144F	Fan Safety Relay Circuit Range/Performance			The fault is recognized when the cutoff relay fails to disconnect the electric fan from the electrical system following the fan's shutdown phase Potential problem source(s): - Cutoff relay for electric fan defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: -- None: Temp	None	- None	steuern_e_lüfter	N	N	- Cutoff relay for electric fan defective	- Check electric fan cutoff relay: Apply activation signal to electric fan, it should be possible to hear the relay switching	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat, breakdown in extreme cases	Breakdown notice: - Probably not possible to activate electric fan, continued driving at reduced power possible.	- Data configured
MSD87-6Z	0x1B0004	1769476	Vehicle speed, signal: no signal	The diagnostic function monitors the speed signal.	P0500	Vehicle Speed Sensor 'A'	Vehicle Speed Sensor	Electrical	The fault is recognized when no speed signal is received. Potential problem source(s): - ETX, DSC fails to transmit a speed signal, or defect in wiring harness between DME and DSC - FD1: ICM fails to transmit a speed signal	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: -- Electrical sys	None	- 100 ms	None	none	N	- ETX: DSC fails to transmit a speed signal, or defect in wiring harness between DME and DSC - FD1: ICM fails to transmit a speed signal	- Process fault for wheelspeed sensors	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	This defect location applies only to the CAN fault. Active only when an active hardware signal fault (12111) is present.	Possible apparent symptoms: - When malfunction occurs the vehicle may not have a speedometer signal	Breakdown notice: - none	- none
MSD87-6Z	0x1B0108	1769736	Vehicle speed, plausibility: signal implausible	The diagnostic function monitors the plausibility of the speed signal.	P0503	Vehicle Speed Sensor 'A' Intermittent/Erratic/High	Vehicle Speed Sensor	Electrical	The fault is recognized when the speed signal is 0 km/h although other operating conditions indicate that the vehicle is moving. Potential problem source(s): L4 Wheelspeed sensor at left front, wire or EHB3 is defective L6 FlexRay bus fault, ICMQL, DSC, wheelspeed sensors	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: -- Electrical sys	None	- None	None	none	Y	- L4 Wheelspeed sensor at left front, wire or EHB3 is defective - L6 FlexRay bus fault, ICMQL, DSC, wheelspeed sensors	- Process fault for wheelspeed sensors	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1B2002	1777666	EWS anti-tampering protection: no starting value programmed	The diagnostic function determines whether a start value is programmed.	P1667	EWS (Electronic Immobilizer) Start Value not yet Programmed			The fault is recognized when no start value has been programmed. Potential problem source(s): - No start value yet programmed.	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	none	N	- No start value yet programmed.	- Program start value	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Start data can only be programmed at the factory	Possible apparent symptoms: - None, as this fault occurs only on new units	Breakdown notice: - none	- none
MSD87-6Z	0x1B2008	1777672	EWS anti-tampering protection: expected response implausible	The diagnostic function monitors whether the saved secret between CAS and DME matches.	P16CF	EWS (Electronic Immobilizer) Implausible Response			The fault is recognized when the saved secret between CAS and DME does not match. Potential problem source(s): - Content of telegram transmitted by CAS is not as expected	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	none	N	- Content of telegram transmitted by CAS is not as expected	- Replace CAS/EWS and DME/DDE	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	New control modules can only be calibrated at the factory: the control modules were mutually switched	Possible apparent symptoms: - Starter turns, engine fails to start	Breakdown notice: - none	- none
MSD87-6Z	0x1B2101	1777921	Interface EWS-DME: hardware fault	The diagnostic function monitors whether CAS bus communications include errors related to the EWS electronic immobilizer telegrams.	P165A	EWS (Electronic Immobilizer) Interface to ECM, Hardware Error			The fault is recognized when an EMW telegram contains errors related to transmission on the wire. Potential problem source(s): - Signal interference on wire D_EWS	E7X: This fault is logged in the control module's fault memory if it remains present for longer than 30 sec. F01: This fault is logged in the control module's fault memory if it remains present for longer than 90 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	CAS bus telegram	N	- Signal interference on wire D_EWS	- Check wiring harness - Check DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - In extreme cases starter turns but engine fails to start	Breakdown notice: - none	- none
MSD87-6Z	0x1B2102	1777922	Interface EWS-DME: frame fault	The diagnostic function monitors whether CAS bus communications include errors related to the EWS electronic immobilizer telegrams.	P1660	EWS (Electronic Immobilizer) Telegram Error			The fault is recognized when the telegram structure contains an error. Potential problem source(s): - Telegram structure not as expected	E7X: This fault is logged in the control module's fault memory if it remains present for longer than 30 sec. F01: This fault is logged in the control module's fault memory if it remains present for longer than 90 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	CAS bus telegram	N	- Telegram structure not as expected	- Continue problem diagnosis with CAS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - In extreme cases starter turns but engine fails to start	Breakdown notice: - none	- none
MSD87-6Z	0x1B2104	1777924	Interface EWS-DME: timeout	The diagnostic function monitors whether CAS bus communications include errors related to the EWS electronic immobilizer telegrams.	P1661	Timeout EWS (Electronic Immobilizer)-Telegram			The fault is registered when a time limit violation is detected during transmission of a telegram. Potential problem source(s): - Wiring harness defect, wire D_EWS - Defective CAS - Defective DME	E7X: This fault is logged in the control module's fault memory if it remains present for longer than 30 sec. F01: This fault is logged in the control module's fault memory if it remains present for longer than 90 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	CAS bus telegram	N	- Wiring harness defect, wire D_EWS - Defective CAS - Defective DME	- Check D_EWS wire	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - In extreme cases starter turns but engine fails to start	Breakdown notice: - none	- none
MSD87-6Z	0x1B2108	1777928	Interface EWS-DME: checksum fault	The diagnostic function monitors whether CAS bus communications include errors related to the EWS electronic immobilizer telegrams.	P165B	EWS (Electronic Immobilizer) Interface to ECM, Checksum Error			The diagnostic fault code is logged when the telegram has a checksum error. Potential problem source(s): - Telegram structure not as expected	E7X: This fault is logged in the control module's fault memory if it remains present for longer than 30 sec. F01: This fault is logged in the control module's fault memory if it remains present for longer than 90 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	CAS bus telegram	N	- Telegram structure not as expected	- Continue problem diagnosis with CAS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - In extreme cases starter turns but engine fails to start	Breakdown notice: - none	- none
MSD87-6Z	0x1B2201	1778177	DME, internal fault, EWS data: no available memory possibility	The diagnostic function monitors whether the stored information for the EWS contains errors.	P165C	EWS (Electronic Immobilizer) Data, No Available Storage Possibility			The fault is recognized when no memory is available for the EWS electronic immobilizer synchronization. Potential problem source(s): - No memory capacity available for EWS immobilizer synchronization.	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	none	N	- No memory capacity available for EWS immobilizer synchronization	- Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - None, because fault occurs only during EWS synchronization, and this is possible only at the factory	Breakdown notice: - none	- none
MSD87-6Z	0x1B2202	1778178	DME, internal fault, EWS data: fault-activation-code storage	The diagnostic function monitors whether the stored information for the EWS contains errors.	P165D	EWS (Electronic Immobilizer) Data, Faulty Release Code Storage			The fault is recognized when a fault is present in the enable code memory. Potential problem source(s): - Enable code memory defective	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	none	N	- Enable code memory defective	- Replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - None, because fault occurs only during EWS synchronization, and this is possible only at the factory	Breakdown notice: - none	- none
MSD87-6Z	0x1B2204	1778180	DME, internal fault, EWS data: starting value destroyed: 2- from 3-selection failed	The diagnostic function monitors whether the stored information for the EWS contains errors.	P1668	EWS (Electronic Immobilizer) Start Value Destroyed			The fault is recognized when an error is present in the SecretKey memory. Potential problem source(s): - SecretKey memory defect	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	none	N	- SecretKey memory defect	- Replace DME, if fault occurs repeatedly	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Starter turns, engine fails to start	Breakdown notice: - none	- none
MSD87-6Z	0x1B2208	1779184	DME, internal fault, EWS data: checksum fault	The diagnostic function monitors whether the stored information for the EWS contains errors.	P166E	EWS (Electronic Immobilizer) Data, Checksum Error			The fault is recognized when the checksums for the EWS data contents contain errors. Potential problem source(s): - Fault in checksum for EWS data content	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	none	N	- Fault in checksum for EWS data content	- Replace DME, if fault occurs repeatedly	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1B2302	1779434	Message, EWS-DME, incorrect: frame fault	The diagnostic function monitors whether CAS bus communications include errors related to the EWS electronic immobilizer telegrams.	U1186	Message Monitoring EWS (Electronic Immobilizer) - Frame Error			The fault is recognized when an error is present in an EWS telegram. Potential problem source(s): - Telegram structure not as expected	E7X: This fault is logged in the control module's fault memory if it remains present for longer than 30 sec. F01: This fault is logged in the control module's fault memory if it remains present for longer than 90 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	CAN bus telegrams	N	- Telegram structure not as expected	- Continue problem diagnosis with CAS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - In extreme cases starter turns but engine fails to start	Breakdown notice: - none	- none
MSD87-6Z	0x1B2304	1779436	Message, EWS-DME, incorrect: timeout	The diagnostic function monitors whether CAS bus communications include errors related to the EWS electronic immobilizer telegrams.	U0167	Lost Communication With Vehicle Immobilizer Control Module			The error is recognized when the messages are not received. Potential problem source(s): - Messages are not received	E7X: This fault is logged in the control module's fault memory if it remains present for longer than 30 sec. F01: This fault is logged in the control module's fault memory if it remains present for longer than 90 sec.	Terminal 15	Voltage condition: -- None: Temp	None	- None	NO	CAN bus telegrams	N	- Messages are not received	- Conduct fault diagnosis on CAS and/or gateway	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - In extreme cases starter turns but engine fails to start	Breakdown notice: - none	- none
MSD87-6Z	0x1B3001	1781761	Exhaust-gas temperature sensor, electric: short circuit to positive or open circuit	Exhaust-gas temperature sensor, signal					Engine running	1 sec.	Terminal 15	none	none	After start the engine runs at a high	none	none	N	Short to battery voltage or wiring disconnected	none	1) Inspection of wiring harness 2) Sensor replacement	none	none	none	- Data configured
MSD87-6Z	0x1B3002	1781762	Exhaust-gas temperature sensor, electric: short circuit to ground	Exhaust-gas temperature sensor, signal					Diagnosis always runs.	1 sec.	Terminal 15	none	none	none	none	none	N	Short to ground	none	1) Inspection of wiring harness 2) Sensor replacement	none	none	none	- Data configured
MSD87-6Z	0x1B5001	1789953	Monitoring, terminal 15: wake-up line, short circuit to positive	The diagnostic function monitors Terminal 15.	P1580	Terminal 15 Sense Circuit High	Terminal 15 / 87	Electrical	The fault is recognized when a short circuit to positive is present. Potential problem source(s): - Short circuit to positive	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: -- Electrical sys	None	- 2.2 sec.	NO	CAN message	Y	- Short circuit to positive	- Check Terminal 15	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1B5002	1789954	Monitoring, terminal 15: wake-up line, short circuit to ground	The diagnostic function monitors Terminal 15.	P1581	Terminal 15 Sense Circuit Low	Terminal 15 / 87	Electrical	The fault is recognized when a short circuit to ground is present. Potential problem source(s): - Short circuit to ground	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: -- Electrical sys	None	- 2.2 sec.	NO	CAN message	Y	- Short circuit to ground	- Check Terminal 15	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none

MSD87-6Z	0x185004	1789956	Monitoring, terminal 15: no message from CAS or message incorrect	The diagnostic function monitors the message from the CAS.	P1582	Terminal 15 Sense Circuit CAS Error			The fault is recognized when the message from the CAS is missing or contains errors. Potential problem source(s): - CAS fault	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - Electrical syst	None	2.2 sec.	NO	CAN message	Y	- CAS fault	- Check CAS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x185008	1789960	Monitoring, terminal 15: signal, wake-up line implausible in relation to message, CAS terminal status	The diagnostic function monitors Terminal 15.	P1583	Terminal 15 Sense Circuit Range/Performance			The fault is recognized when an open wire is detected. Potential problem source(s): - CAS fault - Open circuit, wire	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - Electrical syst	None	2.2 sec.	NO	CAN message	Y	- CAS fault - Open circuit, wire	- CAS - Check Terminal 15	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No / incorrect key	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x185101	1790209	Terminal 15_3_line from CAS, electrical: Short circuit to B+	The diagnostic function monitors Terminal 15-3.	P1580	Terminal 15 Sense Circuit High	Terminal 15 / 87	Electrical	The fault is recognized when a short circuit is present between Terminal 15-3 and Terminal 15. Potential problem source(s): - Short circuit to Terminal 15	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - Electrical syst	None	2.2 sec.	NO	CAN message	Y	- Short circuit to Terminal 15	- Check Terminal 15-3	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x185102	1790210	Terminal 15_3_line from CAS, electrical: Short circuit to earth or line disconnection	The diagnostic function monitors Terminal 15-3.	P1581	Terminal 15 Sense Circuit Low	Terminal 15 / 87	Electrical	The fault is recognized when a short circuit is present from Terminal 15-3 to ground or the wire from Terminal 15-3 is open. Potential problem source(s): - Short circuit to ground - Open circuit, wire	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - Electrical syst	None	2.2 sec.	NO	CAN message	Y	- Short circuit to ground - Open circuit, wire	- Check Terminal 15-3	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x186008	1794056	Brake-light switch, plausibility: signal implausible	The diagnostic function monitors the signals from the brake light switch to confirm that they are present and to evaluate their plausibility.	P0571	Brake Switch 'A' Circuit	Brake Switch	Electrical	The fault is recognized when both signals from the brake light switch are implausible. Potential problem source(s): - The brakelight switch is sticking or has an intermittent open contact. - The signal wire is defective.	If another signal is received the diagnostic fault code will be logged when the brake pedal is depressed. The diagnostic fault code will be logged after 40 sec. if the wires are open.	Terminal 15	Voltage condition: - Electrical syst	None	500 ms	none	none	N	- The brakelight switch is sticking or has an intermittent open contact. - The signal wire is defective.	- Determine whether foreign matter (contamination) is obstructing the brake light switch. - Check wiring harness - Replace brake light switch	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	The switch is also evaluated by the other control modules.	Possible apparent symptoms: - none	Breakdown notice: - none	- None
MSD87-6Z	0x187008	1798152	Brake-light test switch, plausibility: signal implausible	The diagnostic function monitors the signals from the brake light switch to confirm that they are present and to evaluate their plausibility.	P0703	Brake Switch 'B' Circuit			The fault is recognized when both signals from the brake light switch are implausible. Potential problem source(s): - The brakelight switch is sticking or has an intermittent open contact. - The signal wire is defective.	If another signal is received the diagnostic fault code will be logged when the brake pedal is depressed. The diagnostic fault code will be logged after 40 sec. if the wires are open.	Terminal 15	Voltage condition: - Electrical syst	None	500 ms	none	none	N	- The brakelight switch is sticking or has an intermittent open contact. - The signal wire is defective.	- Determine whether foreign matter (contamination) is obstructing the brake light switch. - Check wiring harness - Replace brake light switch	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	The switch is also evaluated by the other control modules.	Possible apparent symptoms: - none	Breakdown notice: - none	- None
MSD87-6Z	0x189004	1806340	Engine switch-off time: timeout or invalidity value	The diagnostic function monitors whether the "Engine off time" message is present.	P1551	External Engine Off Timer Plausibility	Engine Off Timer, External	Electrical	The fault is recognized when the "Engine off time" message is not present Potential problem source(s): - CAN defective - Transmitting control module is defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - Battery voltag	Engine shutdown temperature > 8	None	None	none	Y	- CAN defective - Transmitting control module is defective	- Check CAN signal	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - none	Breakdown notice: - none	- None
MSD87-6Z	0x189008	1806344	Engine switch-off time: signal implausible	The diagnostic function monitors the time with the engine off by checking plausibility against the drop in engine temperature.	P1515	External Engine Off Timer Range/Performance	Engine Off Timer, External	Electrical	The fault is recognized when measured engine downtime deviates from the calculated time. Potential problem source(s): - Instrument cluster is transmitting incorrect system time, stems from a reset, disconnected battery, etc. - Defective instrument cluster - Defective DME	The diagnostic fault code is logged when the fault remains present for longer than 2 min.	none	Voltage condition: - Electrical syst	Engine temperature at engine shu	Time with engine off less than 12	NO	NO	Y	- Instrument cluster is transmitting incorrect system time, stems from a reset, disconnected battery, etc. - Defective instrument cluster - Defective DME	- Determine whether a reset has been executed, the battery been disconnected, or other undervoltage diagnostic fault codes have been logged - Conduct fault diagnosis at instrument cluster - Replace DME, if yes, under what conditions or with what previous tests	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x189008	1806344	Engine switch-off time: signal implausible	The diagnostic function monitors the time with the engine off by checking plausibility against the drop in engine temperature.	P2610	ECM/PCM Engine Off Timer Performance	Engine Off Timer, External	Electrical	The fault is recognized when measured engine downtime deviates from the calculated time. Potential problem source(s): - Instrument cluster is transmitting incorrect system time, stems from a reset, disconnected battery, etc. - Defective instrument cluster - Defective DME	The diagnostic fault code is logged when the fault remains present for longer than 2 min.	none	Voltage condition: - Electrical syst	Engine temperature at engine shu	Time with engine off less than 12	NO	NO	Y	- Instrument cluster is transmitting incorrect system time, stems from a reset, disconnected battery, etc. - Defective instrument cluster - Defective DME	- Determine whether a reset has been executed, the battery been disconnected, or other undervoltage diagnostic fault codes have been logged - Conduct fault diagnosis at instrument cluster - Replace DME, if yes, under what conditions or with what previous tests	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x189104	1806556	Engine switch-off time: Signal implausible	The diagnostic function monitors the time with the engine off by checking plausibility against the drop in engine temperature.	P2610	ECM/PCM Engine Off Timer Performance	Engine Off Timer, External	Electrical	The fault is recognized when measured engine downtime deviates from the calculated time. Potential problem source(s): - Instrument cluster is transmitting incorrect system time, stems from a reset, disconnected battery, etc. - Defective instrument cluster - Defective DME	The diagnostic fault code is logged when the fault remains present for longer than 2 min.	none	Voltage condition: - Electrical syst	Engine temperature at engine shu	Time with engine off less than 12	NO	NO	Y	- Instrument cluster is transmitting incorrect system time, stems from a reset, disconnected battery, etc. - Defective instrument cluster - Defective DME	- Determine whether a reset has been executed, the battery been disconnected, or other undervoltage diagnostic fault codes have been logged - Conduct fault diagnosis at instrument cluster - Replace DME, if yes, under what conditions or with what previous tests	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x189208	1806856	Engine switch-off time: Signal after overrun implausible	The diagnostic function compares the DME's internal timer with the timer in the instrument cluster. A fault is recognized when the two timers deviate while the engine is running or when the ignition is on during the ECU shutdown phase.					The fault is recognized when the internal timers in the DME and instrument cluster display a mutual deviation of roughly ten seconds while the control modules are in the shutdown phase. Potential problem source(s): - Collateral fault resulting from fault memory entries in the DME and/or instrument cluster	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - Voltage in onbo	Engine shutdown temperature > 85	none	NO	None	Y	- Collateral fault resulting from fault memory entries in the DME and/or instrument cluster	- Because this is a collateral fault, start by resolving issues related to other faults logged in the DME or instrument cluster; no additional action will be needed with these kinds of faults	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - none	Breakdown notice: None	None
MSD87-6Z	0x189308	1807112	Engine switch-off time: Signal implausible during engine operation	The diagnostic function compares the internal timers of the DME and the instrument cluster while the engine is running.					The fault is recognized when the internal timers in the DME and instrument cluster display a mutual deviation of roughly ten seconds while the engine is running. Potential problem source(s): - Collateral fault resulting from fault memory entries in the DME and/or instrument cluster	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - Voltage in onbo	none	5 sec. after Terminal 15 on	NO	None	N	- Collateral fault resulting from fault memory entries in the DME and/or instrument cluster	- Because this is a collateral fault, start by resolving issues related to other faults logged in the DME or instrument cluster; no additional action will be needed with these kinds of faults	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - none	Breakdown notice: None	None
MSD87-6Z	0x189408	1807388	Engine switch-off time: Signal in overrun implausible	The diagnostic function compares the internal timers in the DME and instrument cluster when the ignition is on while the control modules are in their shutdown phase.					The fault is recognized when the internal timers in the DME and instrument cluster display a mutual deviation of roughly ten seconds while the control modules are in the shutdown phase. Potential problem source(s): - Collateral fault resulting from fault memory entries in the DME and/or instrument cluster	This fault is logged in the control module fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - Voltage in onbo	Engine shutdown temperature > 80	Engine off time less than value from	NO	None	Y	- Collateral fault resulting from fault memory entries in the DME and/or instrument cluster	- Because this is a collateral fault, start by resolving issues related to other faults logged in the DME or instrument cluster; no additional action will be needed with these kinds of faults	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - none	Breakdown notice: None	None
MSD87-6Z	0x189508	1807624	Engine switch-off time, plausibility: Time to short in correlation to engine-coolant cooling	The diagnostic function monitors the time that the engine requires to cool.	P15E8	External Engine Off Timer Engine Off Time Too Short in Correlation to Cooling-Down Of Engine Coolant	Engine Off Timer, External	Correlation	The fault is recognized when the engine has cooled too quickly after a specific period of time. Potential problem source(s): - Collateral fault resulting from malfunction in registering engine temperature	This fault is logged in the control module fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - Voltage in onbo	Engine shutdown temperature > 80	Engine off time greater than value	NO	None	Y	- Collateral fault resulting from malfunction in registering engine temperature	- Because this is a collateral fault, start by resolving issues related to other faults logged in the DME related to engine temperature monitoring; no additional action will be needed with these kinds of faults	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	US only	Possible apparent symptoms: - none	Breakdown notice: None	None
MSD87-6Z	0x189608	1807880	Engine switch-off time, plausibility: Time to long in correlation to engine-coolant cooling	The diagnostic function monitors the time that the engine requires to cool.	P15E9	External Engine Off Timer Engine Off Time Too Long in Correlation to Cooling-Down Of Engine Coolant	Engine Off Timer, External	Correlation	The fault is recognized when the engine has cooled too slowly after a specific period of time. Potential problem source(s): - Collateral fault resulting from malfunction in registering engine temperature	The diagnostic fault code is logged when the fault remains present for longer than 2 min.	none	Voltage condition: - Voltage in onbo	Engine shutdown temperature > 78	Time with engine off less than 12	NO	None	Y	- Collateral fault resulting from malfunction in registering engine temperature	- Because this is a collateral fault, start by resolving issues related to other faults logged in the DME related to engine temperature monitoring; no additional action will be needed with these kinds of faults	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	US only	Possible apparent symptoms: - none	Breakdown notice: None	None
MSD87-6Z	0x18A008	1810440	Cruise control, signal: signal implausible	none	P1576	Multifunction Steering Wheel (MFL) Interface, Bit Error			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x18A108	1810696	Cruise control, switch, multifunction steering wheel: faulty	none	P1563	Multifunction Steering Wheel (MFL) Rocker Switch Defective			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0x18AF08	1814280	Accelerator-pedal module and brake pedal, plausibility, pedal values implausible	The diagnostic function monitors operation of the accelerator and the brake pedal.	P2299	Brake Pedal Position / Accelerator Pedal Position Incompatible			The fault is recognized when the accelerator pedal and the brake pedal have been depressed simultaneously for a specific period. Potential problem source(s): - Operator error: Continuous, simultaneous pressure on accelerator and brake pedal - Sticking accelerator pedal	This fault is logged in the control module's fault memory if it remains present for longer than 1.5 sec.	none	Voltage condition: - None: Temp	None	- None	NO	Accelerator pedal value; Brake pre	N	- Operator error: Continuous, simultaneous pressure on accelerator and brake pedal - Sticking accelerator pedal	- Visual inspection and activation check on accelerator pedal module - Ask customer about driving habits (two-foot driver)	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Can lead to substantially less accelerator response when the brake is depressed simultaneously. Accelerator pedal restriction is canceled immediately as soon as operation of both pedals ceases.	Breakdown notice: - none	- none
MSD87-6Z	0x1C0001	1835059	Engine-oil pressure control, dynamic: pressure fluctuations	Engine-oil pressure control, dynamic	P159E	Engine Oil Pressure Control, Dynamic, Pressure Fluctuations			Commercial vehicle >0, Tmot > - 10 °C, Terminal 15, jump-start disabled	0.2	Terminal 15	none	~ 10 °C	none	Jump in specified pressure, specifi	Oil pressure signal integrated over	Y	Stiction in solenoid valve or pump control plunger.	Replace solenoid valve as test	NO	none	none	none	- Data configured
MSD87-6Z	0x1C0101	1835265	Engine oil pressure control, static: Engine oil pressure too high, emergency operation	Closed-loop engine-oil pressure control, static	P159F	Engine Oil Pressure Control, Static, Switchover To Limp Home Operation Because Engine Oil Pressure Too High in Map Operation			Commercial vehicle >0, Tmot > - 10 °C, Terminal 15, jump-start disabled	0.2	Terminal 15	none	~ 10 °C	none	Jump in specified pressure, specifi	Analogous to oil pressure signal	N	Indication of problem (oil pressure too high) in KFR operation	No assignment to a component	NO	none	none	none	- Data configured
MSD87-6Z	0x1C0102	1835266	Engine oil pressure control, static: oil pressure too low, emergency operation	Closed-loop engine-oil pressure control, static	P15A0	Engine Oil Pressure Control, Static, Switchover To Limp Home Operation Because Engine Oil Pressure Too Low in Map Operation			Commercial vehicle >0, Tmot > - 10 °C, Terminal 15, jump-start disabled	0.2	Terminal 15	none	~ 10 °C	none	Jump in specified pressure, specifi	Analogous to oil pressure signal	N	Indication of problem (oil pressure too low) in KFR operation	No assignment to a component	NO	none	none	none	- Data configured
MSD87-6Z	0x1C0201	1835521	Oil-pressure regulating valve, activation: short circuit to positive	Oil-pressure control valve, activation	P15EC	Engine Oil Pressure Control Valve Circuit High			Monitored at: 10 % PWM + Control activation PWM to oil pump < 94 % PWM (idle)	1 sec.	Terminal 15	Voltage in onboard electrical syster	none	0.5 sec.	none	PWM of 0 % -100 %	N	Wire is shorted to positive, or a short to positive is present in the component.	1. Check wiring Repair if defective If wiring is OK proceed to check component	none	none	none	none	- Data configured
MSD87-6Z	0x1C0202	1835522	Oil-pressure regulating valve, activation: short circuit to ground	Oil-pressure control valve, activation	P15EB	Engine Oil Pressure Control Valve Circuit Low			Monitored at: 10 % PWM + Control activation PWM to oil pump < 94 % PWM (idle)	1 sec.	Terminal 15	Voltage in onboard electrical syster	none	0.5 sec.	none	PWM of 0 % -100 %	N	Short circuit to ground in wire or component.	1. Check wiring Repair if defective If wiring is OK proceed to check component	none	none	none	none	- Data configured
MSD87-6Z	0x1C0204	1835524	Oil-pressure regulating valve, activation: open circuit	Oil-pressure control valve, activation	P15EA	Engine Oil Pressure Control Valve Circuit/Open			Monitored at: 10 % PWM + Control activation PWM to oil pump < 94 % PWM (idle)	1 sec.	Terminal 15	Voltage in onboard electrical syster	none	0.5 sec.	none	PWM of 0 % -100 %	N	Open circuit	1. Check wiring Repair if defective If wiring is OK proceed to check component	none	none	none	none	- Data configured
MSD87-6Z	0x1C0301	1835777	Oil-pressure regulating valve, mechanical: sticks in fully energized position (minimum oil pressure)	Engine oil-pressure control, mechanical	P15A1	Engine Oil Pressure Control, Mechanical, Solenoid Valve Sticking In Fully Energized Position (Minimum Oil Pressure)			Commercial vehicle >0 + Stored operating coordinate reached (depends on NKW+Tmot)	0.2	Terminal 15	none	~ 10 °C	none	Jump in specified pressure, specifi	Analogous to oil pressure signal	N	Solenoid valve hanging in full-current position (flow from P to A) PVE Physically lock solenoid valve in position	Replace solenoid valve.	Yes, if it allows oil pressure to drop to unacceptable level	none	none	none	- Data configured
MSD87-6Z	0x1C0302	1835778	Oil-pressure regulating valve, mechanical: sticks in non-energized position (maximum oil pressure)	Engine oil-pressure control, mechanical	P15A2	Engine Oil Pressure Control, Mechanical, Solenoid Valve Sticking In De-Energized Position (Maximum Oil Pressure)			Commercial vehicle >0 + Stored operating coordinate reached (depends on NKW+Tmot)	0.2	Terminal 15	none	~ 10 °C	none	Jump in specified pressure, specifi	Analogous to oil pressure signal	N	Solenoid valve hangs at no-current position (circuit from A to T closed) PVE: Mechanically lock solenoid valve	Replace solenoid valve.	NO	none	none	none	- Data configured
MSD87-6Z	0x1C2001	1843201	Oil pump, mechanical: Oil pressure too high	Engine oil pump, mechanical: Engine oil pressure	P15A3	Engine Oil Pressure Too High			Commercial vehicle >0 + Stored operating coordinate reached (depends on NKW+Tmot)	0.2	Terminal 15	none	~ 10 °C	none	Jump in specified pressure, specifi	Analogous to oil pressure signal	N	Pump control plunger is seizing.	Replace oil pump.	NO	none	none	none	- Data configured
MSD87-6Z	0x1C2002	1843202	Oil pump, mechanical: Oil pressure too low	Engine oil pump, mechanical: Engine oil pressure	P0524	Engine Oil Pressure Too Low			Commercial vehicle >0 + Stored operating coordinate reached (depends on NKW+Tmot)	0.2	Terminal 15	none	~ 10 °C	none	Jump in specified pressure, specifi	Analogous to oil pressure signal	N	Pump control plunger is seizing.	Replace oil pump.	Yes, if it allows oil pressure to drop to unacceptable level	none	none	none	- Data configured
															Jump in specified pressure, specifi									

MSD87-6Z	0x1C3002	1847298	Engine-oil pressure sensor, electric: short circuit to ground or open circuit	Engine-oil-pressure sensor, signal	P0522	Engine Oil Pressure Sensor/Switch 'A' Low			Signal monitoring, oil pressure data	2 sec.	Terminal 15	Voltage in onboard electrical system > 10 °C	none	Jump in specified pressure, specific	Analogous to oil pressure signal	N	Sensor wire shorted to ground or open circuit in wire	1) Perform electrical check on sensor wire and power-supply wires 2) Visual inspection of plug-in contacts (on component and DME side) 3) Replace sensor	No message currently available!	none	none	none	- Data configured
MSD87-6Z	0x1C3101	1847693	Engine-oil pressure sensor; plausibility: pressure too high before starting	Engine oil-pressure sensor, plausibility	P15A6	Engine Oil Pressure Too High Before Start			MX9HC, Terminal 15, the barometric pressure sensor must not be malfunctioning	0,2	Terminal 15	none	none	Minimum deactivation time over Tri	Jump in specified pressure, specific	Analogous to oil pressure signal	N	Pressure indicated by oil pressure sensor it too high	Replace oil pressure sensor	NO	none	none	none	- Data configured
MSD87-6Z	0x1C3102	1847554	Engine-oil pressure sensor; plausibility: pressure too low before starting	Engine oil-pressure sensor, plausibility	P15A7	Engine Oil Pressure Too Low Before Start			MX9HC, Terminal 15, the barometric pressure sensor must not be malfunctioning	0,2	Terminal 15	none	none	Minimum deactivation time over Tri	Jump in specified pressure, specific	Analogous to oil pressure signal	N	Pressure indicated by oil pressure sensor is too low	Replace oil pressure sensor	NO	none	none	none	- Data configured
MSD87-6Z	0x1C3104	1847556	Engine-oil pressure sensor; plausibility: Line disconnection, GND	The diagnostic function monitors the oil pressure.	P0521	Engine Oil Pressure Sensor/Switch 'A' Range/Performance			The fault is recognized when the oil pressure falls to fluctuate by more than 12 hPa for more than 2.5 sec., and lies within a range extending from 11000 hPa to 14000 hPa. Potential problem source(s): - Electrical defect / oil-pressure sensor	The diagnostic fault code is logged when the fault remains present for longer than 2.5 sec.	Terminal 15	Voltage condition: : Voltage in onbo	none	none	Yes+	None	N	- Electrical defect / oil-pressure sensor	- Check ground wire - Replace oil pressure sensor	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: Fuel consumption roughly 5% higher	Breakdown notice: None	None
MSD87-6Z	0x1C3108	1847560	Engine-oil pressure sensor, plausibility: signal hangs	Engine oil-pressure sensor, plausibility	P0521	Engine Oil Pressure Sensor/Switch 'A' Range/Performance			Commercial vehicle =0	0,2	Terminal 15	none	> 10 °C	none	Jump in specified pressure, specific	Analogous to oil pressure signal	N	Oil pressure signal seized	Replace oil pressure sensor	NO	none	none	none	- Data configured
MSD87-6Z	0x1C3204	1847612	Engine-oil pressure switch: open circuit or switch sticking	The diagnostic function monitors switching of the oil pressure switch when the engine is shut down.	P0520	Engine Oil Pressure Sensor/Switch 'A' Circuit			The fault is recognized when the oil-pressure switch fails to ground when the engine is switched off. Potential problem source(s): - Oil pressure switch defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: : - Electrical syst	-80 °C < engine oil temperature or	- 3 sec. after engine off	None	none	N	- Oil pressure switch defective	- Check wiring harness between DME and oil-pressure switch - Replace oil-pressure switch	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Possible display in the MMI will vary according to whether the switch seizes while open or closed.	Oil pressure cannot be monitored if switch is defective.	Possible apparent symptoms: - none	Breakdown notice: - none	- The fault is only recognized and the diagnostic fault code logged after the engine is switched off.
MSD87-6Z	0x1C4002	1851394	Engine-oil level: too low	The diagnostic function monitors the engine oil level.	P250F	Engine Oil Level Too Low	Engine Oil Level	Level	The fault is recognized when the oil level is too low. Potential problem source(s): - Insufficient engine oil	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: : - Electrical syst	None	- Approximately 2.5 min. after engi	None	none	Y	- Insufficient engine oil	- Add 1 liter of engine oil	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: CC message 'Engine oil level'	After topping up oil allow engine to idle roughly 3 minutes while warmed to normal temperature.	Possible apparent symptoms: - none	Breakdown notice: - Add 1 liter of engine oil	- none
MSD87-6Z	0x1C4102	1851650	Engine-oil level: too low	The diagnostic function monitors the engine oil level.	P250F	Engine Oil Level Too Low	Engine Oil Level	Level	The fault is recognized when the oil level is too low. Potential problem source(s): - Insufficient engine oil	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: : - Electrical syst	None	- Approximately 2.5 min. after engi	None	none	Y	- Insufficient engine oil	- Add 1 liter of engine oil	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: CC message 'Engine oil level'	After topping up oil allow engine to idle roughly 3 minutes while warmed to normal temperature.	Possible apparent symptoms: - none	Breakdown notice: - Add 1 liter of engine oil	- Data configured
MSD87-6Z	0x1C5001	1855489	Oil-condition sensor: temperature measurement	The diagnostic function monitors the oil condition sensor.	P1586	Engine Oil Quality Sensor Temperature Measurement	Engine Oil Quality Sensor	Temperature	The fault is recognized when the oil condition sensor's self-diagnosis recognizes a temperature error. Potential problem source(s): - Oil condition sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	None	none	N	- *- Oil condition sensor defective	- Replace oil condition sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1C5002	1855490	Oil-condition sensor: level measurement	The diagnostic function monitors the oil condition sensor.	P1587	Engine Oil Quality Sensor Level Measurement	Engine Oil Quality Sensor	Level	The fault is recognized when the oil condition sensor's self-diagnosis recognizes a level error. Potential problem source(s): - Oil condition sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	None	none	N	- *- Oil condition sensor defective	- Replace oil condition sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1C5004	1855492	Oil-condition sensor: communication fault	The diagnostic function monitors the oil condition sensor.	P1521	Engine Oil Quality Sensor Communication Error	Engine Oil Quality Sensor	Communication	The fault is recognized when the oil condition sensor's self-diagnosis recognizes a communications error. Potential problem source(s): - Open circuit in BSD between oil condition sensor and DME - Oil condition sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	None	none	N	- Open circuit in BSD between oil condition sensor and DME - Oil condition sensor defective	- Check BSD between oil condition sensor and DME - Replace oil condition sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1C5008	1855496	Oil-condition sensor: permittivity fault	The diagnostic function monitors the oil condition sensor.	P1584	Engine Oil Quality Sensor Permittivity Error			The fault is recognized when the oil condition sensor's self-diagnosis recognizes a permittivity error. Potential problem source(s): - Water in engine oil	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	None	none	N	- Water in engine oil	- This fault code entry is for information purposes only. - Delete stored fault codes, no additional action required	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	In the past water accumulation in the engine oil could produce inaccurate measurements. This issue is resolved!	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1C5104	1855748	Oil-condition sensor, communication: no communication	The diagnostic function monitors communications between the oil condition sensor and the DME.	P252A	Engine Oil Quality Sensor Circuit	Engine Oil Quality Sensor	Electrical	The fault is recognized when communications are interrupted. Potential problem source(s): - Open circuit in BSD between oil condition sensor and DME - Oil condition sensor defective	This fault is logged in the control module's fault memory if it remains present for longer than 120 sec.	Terminal 15	Voltage condition: : - Electrical syst	None	- None	None	none	N	- Open circuit in BSD between oil condition sensor and DME - Oil condition sensor defective	- Check BSD between oil condition sensor and DME - Replace oil condition sensor	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Oil level measurement is not available in the instrument cluster	Breakdown notice: - none	- none
MSD87-6Z	0x1D2008	1908744	Map thermostat, mechanical: jammed open	The diagnostic function monitors the rise in engine temperature (coolant temperature at engine discharge fitting).	P0128	Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature)	Thermostat	Functional Check	A fault is recognized when the engine temperature is below 81 °C when the test is executed. Because the test time is defined by the temperature model, it is also determined by the model's input variables (air mass, ambient temperature). Potential problem source(s): - Defect in wiring harness - Characteristic map thermostat defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: : - Electrical syst	Ambient temperature > -10 °C: -	- None	NO	none	Y	- Defect in wiring harness - Characteristic map thermostat defective	- Check wiring harness for short to ground - Replace map-controlled thermostat	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: none	MIL ON in US versions only	Possible apparent symptoms: - The output of the interior heater may be reduced.	Breakdown notice: - none	- When the engine is heated from external sources, such as an auxiliary heater, diagnosis errors can result.
MSD87-6Z	0x1D2204	1909252	Map thermostat, activation: Line disconnection	The diagnostic function monitors the electrical connection between the DME and the map-controlled thermostat.	P0597	Thermostat Heater Control Circuit/Open	Thermostat	Electrical	The fault is recognized when an open wire is present. Potential problem source(s): - Defect in wiring harness between DME and map-controlled thermostat - No voltage supply to map-controlled thermostat - Characteristic map thermostat defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: : - Electrical syst	None	- 3 sec.	The map-controlled thermostat can	none	N	- Defect in wiring harness between DME and map-controlled thermostat - No voltage supply to map-controlled thermostat - Characteristic map thermostat defective	- Check wiring harness - Check power-supply voltage to map-controlled thermostat - Replace map-controlled thermostat	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No external display	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1D2301	1909505	Map thermostat, activation: Short circuit to B+	The diagnostic function monitors the electrical connection between the DME and the map-controlled thermostat.	P0599	Thermostat Heater Control Circuit High	Thermostat	Electrical	The fault is recognized when a short circuit to positive is present. Potential problem source(s): - Defect in wiring harness between DME and map-controlled thermostat - Characteristic map thermostat defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: : - Electrical syst	None	- 3 sec.	The map-controlled thermostat can	none	N	- Defect in wiring harness between DME and map-controlled thermostat - Characteristic map thermostat defective	- Check wiring harness - Replace map-controlled thermostat	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: No external display	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1D2402	1909762	Map thermostat, activation: Short circuit to earth	The diagnostic function monitors the electrical connection between the DME and the map-controlled thermostat.	P0598	Thermostat Heater Control Circuit Low	Thermostat	Electrical	The fault is recognized when a short circuit to ground is present. Potential problem source(s): - Defect in wiring harness between DME and program map thermostat	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: : - Electrical syst	None	- 3 sec.	The map-controlled thermostat can	none	N	- Defect in wiring harness between DME and program map thermostat	- Unplug map-controlled thermostat and check the wiring harness	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1D3901	1915137	Electronic transmission control (EGS): signal evaluation (turbine speed): Invalid signal content	The diagnostic function monitors the signal content					The fault is recognized when the signal content is invalid Potential problem source(s): - The EGS transmits signals with invalid content	The diagnostic fault code is logged when the error is recognized in 10 consecutive messages.	none	Voltage condition: : None: Temperc	none	none	NO	CAN signal content	Y	- The EGS transmits signals with invalid content	- Check EGS	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: None	Breakdown notice: None	The fault source is in the EGS. Check fault memory in EGS
MSD87-6Z	0x1D3A01	1915393	Electronic transmission control (EGS): signal evaluation (output speed): Invalid signal content	The diagnostic function monitors the signal content					The fault is recognized when the signal content is invalid Potential problem source(s): - The EGS transmits signals with invalid content	The diagnostic fault code is logged when the error is recognized in 10 consecutive messages.	none	Voltage condition: : None: Temperc	none	none	NO	CAN signal content	Y	- The EGS transmits signals with invalid content	- Check EGS	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: None	Breakdown notice: None	The fault source is in the EGS. Check fault memory in EGS
MSD87-6Z	0x1D3B01	1915649	Electronic transmission control (EGS): signal evaluation (gear information): Invalid signal content	The diagnostic function monitors the signal content					The fault is recognized when the signal content is invalid Potential problem source(s): - The EGS transmits signals with invalid content	The diagnostic fault code is logged when the error is recognized in 10 consecutive messages.	none	Voltage condition: : None: Temperc	none	none	NO	CAN signal content	Y	- The EGS transmits signals with invalid content	- Check EGS	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: None	Breakdown notice: None	The fault source is in the EGS. Check fault memory in EGS
MSD87-6Z	0x1D3C01	1915905	Electronic transmission control (EGS): signal evaluation (status, gear shift): Invalid signal content	The diagnostic function monitors the signal content					The fault is recognized when the signal content is invalid Potential problem source(s): - The EGS transmits signals with invalid content	The diagnostic fault code is logged when the error is recognized in 10 consecutive messages.	none	Voltage condition: : None: Temperc	none	none	NO	CAN signal content	Y	- The EGS transmits signals with invalid content	- Check EGS	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: None	Breakdown notice: None	The fault source is in the EGS. Check fault memory in EGS
MSD87-6Z	0x1E0001	1966081	Idle-speed control: speed too high	The diagnostic function monitors the idle speed when the engine is warmed to normal operating temperature.	P0507	Idle Control System RPM Higher Than Expected	Idle Speed Control	RPM	The fault is recognized when the actual rpm exceeds the specified rpm by more than 100 rpm. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: : - Electrical syst	Engine temperature > 72°C	- Depends on engine temperature	None	Test data block 1: - Comparison of	N	- Collateral fault	- If other faults are present repair these	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - Elevated idle speed	Breakdown notice: - none	- none
									The fault is recognized when the actual rpm drops below the specified rpm by more than 100							Test data block 1: - Comparison of							

MSD87-6Z	0x1E0101	1296337	Idle speed control, cold start: Engine speed too high	The diagnostic function monitors the idle speed during the catalytic converter's warmup phase.	P1592	Cold Start Idle Air Control System RPM Higher Than Expected (Bank 1)	Idle Speed Control	Cold Start RPM	The fault is recognized when the actual engine speed exceeds the specified engine speed during the catalyst heating phase. The level of the relevant violation is defined by the program map. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - Electrical sup	Engine temperature > -10 °C	- 10 sec. to 25 sec.	None	Test data block 1: - Comparison of IN		- Collateral fault	- If other faults are present repair these	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - Higher idle speed during the catalyst heating phase	Breakdown notice: - none	- none
MSD87-6Z	0x1E0102	1296338	Idle speed control, cold start: Engine speed too low	The diagnostic function monitors the idle speed during the catalytic converter's warmup phase.	P1561	Cold Start Idle Air Control System RPM Lower Than Expected (Bank 1)	Idle Speed Control	Cold Start RPM	The fault is recognized when the actual engine speed falls below the specified engine speed during the catalyst heating phase. The level of the relevant low-end violation is defined by the program map. Potential problem source(s): - Collateral fault	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	none	Voltage condition: - - Electrical sup	Engine temperature > -10 °C	- 10 sec. to 25 sec.	None	Test data block 1: - Comparison of IN		- Collateral fault	- If other faults are present repair these	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	US only	Possible apparent symptoms: - In extreme cases the engine may stall.	Breakdown notice: - none	- none
MSD87-6Z	0x1E5008	1298588	Torque monitoring: plausibility	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Regarding actual torque in this case)					The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from mixture formation - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 7 sec.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	NO	Y	- Collateral fault from mixture formation - Defective DME	- If faults related to mixture formation are present, repair these first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL OFF EML OFF	Brief torque limitation	- none	Possible apparent symptoms: - Possible reduction in power	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x1E5201	1987073	Engine-speed limitation with vehicle stationary: idle speed too high for too long	DME, internal fault: RPM governor monitoring function					Control module monitor Currently defined rpm limit is exceeded and injection is still active	480 ms	Terminal 15	Voltage in onboard electrical syster	none	480 ms	none	none	Y	Internal control-module fault	Replace DME	MIL OFF EML ON CC: Reduced power; engine malfunction Reset, rpm limited to 1300 rpm	RPM governor monitor	none	none	- Data configured
MSD87-6Z	0x1F0001	2031617	DME, internal fault, RAM: RAM chip	Deleted (replaced by mon_3 SYM_1 if computer monitor is installed. This is always the case in production vehicles.)	P0604	Internal Control Module Random Access Memory (RAM) Error	ECM/TCM	RAM	none Potential problem source(s): none	none	none	Voltage condition: - None: Temper	None	- None	none	none	N	Internal control-module fault	Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Deleted (replaced by mon_3 SYM_1 if computer monitor is installed. This is always the case in production vehicles.)	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured
MSD87-6Z	0x1F0002	2031618	DME, internal fault, RAM: safety computer RAM	Deleted (replaced by mon_3 SYM_1 if computer monitor is installed. This is always the case in production vehicles.)	P0604	Internal Control Module Random Access Memory (RAM) Error	ECM/TCM	RAM	none Potential problem source(s): none	none	none	Voltage condition: - None: Temper	None	- None	none	none	N	Internal control-module fault	Replace DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Deleted (replaced by mon_3 SYM_1 if computer monitor is installed. This is always the case in production vehicles.)	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured
MSD87-6Z	0x1F0101	2031673	DME, internal fault, checksum: boot software	The diagnostic function monitors the DME's flash memory.	P16A0	Internal Control Module Memory Check Sum Error in Boot Software	ECM/TCM	Checksum	The fault is detected by the DME self-test. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	none	Y	- DME defective	- Determine whether diagnostic fault code is logged after the following procedure. If yes, then replace the DME - Clear control module fault memory - Turn off ignition and allow vehicle to fully assume sleep mode - Ignition on - Read fault code memory	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1F0102	2031674	DME, internal fault, checksum: application software	The diagnostic function monitors the DME's flash memory.	P16A1	Internal Control Module Memory Check Sum Error in Application Software	ECM/TCM	Checksum	The fault is detected by the DME self-test. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	none	Y	- DME defective	- Determine whether diagnostic fault code is logged after the following procedure. If yes, then replace the DME - Clear control module fault memory - Turn off ignition and allow vehicle to fully assume sleep mode - Ignition on - Read fault code memory	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1F0104	2031676	DME, internal fault, checksum: data area	The diagnostic function monitors the DME's flash memory.	P16A2	Internal Control Module Memory Check Sum Error in Data	ECM/TCM	Checksum	The fault is detected by the DME self-test. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	none	Y	- DME defective	- Determine whether diagnostic fault code is logged after the following procedure. If yes, then replace the DME - Clear control module fault memory - Turn off ignition and allow vehicle to fully assume sleep mode - Ignition on - Read fault code memory	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1F0201	2032129	DME, internal fault, NVMY checksum: NVMY check	The diagnostic function monitors the DME's flash memory.	P16A3	Internal Control Module Non-Volatile Memory (NVMY) Error	ECM/TCM	NVMY	The fault is detected by the DME self-test. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: Tempe	None	- None	NO	none	Y	- DME defective	- Determine whether diagnostic fault code is logged after the following procedure. If yes, then replace the DME - Clear control module fault memory - Turn off ignition and allow vehicle to fully assume sleep mode - Ignition on - Read fault code memory	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1F0304	2032388	DME, internal fault, knock-sensor chip: timeout, SPI bus	The diagnostic function monitors the knock sensor chip in the DME.	P16A4	Internal Control Module Knock Sensor Module Error	ECM	Knock Sensor	The fault is detected by the DME self-test. Potential problem source(s): - DME defective	The fault is logged in the control module's fault memory after it is detected 10 times.	none	Voltage condition: - - None: Tempe	None	- None	NO	none	Y	- DME defective	- Determine whether diagnostic fault code is logged after the following procedure. If yes, then replace the DME - Clear control module fault memory - Turn off ignition and allow vehicle to fully assume sleep mode - Ignition on - Read fault code memory	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: off - CC message: off	No knock control available. Performance loss as engine reverts to operation in safe range.	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1F0404	2032644	DME, internal fault, multiple-output-stage chip: timeout, SPI bus	The diagnostic function monitors the knock sensor chip in the DME.	P16A5	Control Module Multiple Output Stage SPI-Bus Communication Error	ECM	Multiple Output Stage	The fault is detected by the DME self-test. Potential problem source(s): - DME defective	The fault is logged in the control module's fault memory after it is detected 10 times.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	NO	none	Y	- DME defective	- Determine whether diagnostic fault code is logged after the following procedure. If yes, then replace the DME - Clear control module fault memory - Turn off ignition and allow vehicle to fully assume sleep mode - Ignition on - Read fault code memory	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: off - CC message: off	No control activation possible from some DME output terminals.	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1F0501	2032897	Terminal 15N from CAS, signal: not switched off	E7X: The diagnostic function monitors the DME main relay. F01: The diagnostic function monitors the voltage supply from the CAS to the DME.					E7X: The fault is recognized when the DME main relay's contacts fail to close within a specified period after Terminal 15 is energized. F01: The fault is recognized when no voltage is present at the DME within a specific period after Terminal 15 is energized. Potential problem source(s): - E7X: - The control-activation wire to the DME main relay has a short circuit to positive or is open - Defective DME main relay - F01: - Defect in wiring harness between CAS and DME	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- 1 sec. after Terminal 15 on	The main relay can be activated wit	N	N	- E7X: - The control-activation wire to the DME main relay has a short circuit to positive or is open - Defective DME main relay - F01: - Defect in wiring harness between CAS and DME	- E7X: - Check wiring harness between DME main relay and DME - Determine whether the DME main relay is switching. If not, then replace the DME main relay - If the diagnostic fault code has been logged numerous times, replace the DME main relay - F01: - Check wiring harness between DME and CAS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine difficult or impossible to start. If the engine starts, then it runs badly.	Breakdown notice: - none	- Data configured
MSD87-6Z	0x1F0502	2032898	Terminal 15N from CAS, signal: not switched	E7X: The diagnostic function monitors the DME main relay. F01: The diagnostic function monitors the voltage supply from the CAS to the DME.					E7X: The fault is recognized when the DME main relay's contacts fail to close within a specified period after Terminal 15 is energized. F01: The fault is recognized when no voltage is present at the DME within a specific period after Terminal 15 is energized. Potential problem source(s): E7X: - The control-activation wire to the DME main relay has a short circuit to positive or is open - Defective DME main relay F01: - Defect in wiring harness between CAS and DME	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- 1 sec. after Terminal 15 on	The main relay can be activated wit	N	N	- E7X: - The control-activation wire to the DME main relay has a short circuit to positive or is open - Defective DME main relay - F01: - Defect in wiring harness between CAS and DME	- E7X: - Check wiring harness between DME main relay and DME - Determine whether the DME main relay is switching. If not, then replace the DME main relay - If the diagnostic fault code has been logged numerous times, replace the DME main relay - F01: - Check wiring harness between DME and CAS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	It is probable that this fault will be accompanied by other, secondary faults, because the delay before the DME main relay closes, or its failure to close, will prevent voltage from being available.	Possible apparent symptoms: - Engine difficult or impossible to start. If the engine starts, then it runs badly.	Breakdown notice: - none	- none
MSD87-6Z	0x1F0601	2033183	Terminal 15N from CAS, switching delay: switches too late	The diagnostic function monitors the DME main relay.					The fault is recognized when the DME main relay's contacts fail to close within a specified period after Terminal 15 is energized. Potential problem source(s): - Defective DME main relay	This fault is logged in the control module's fault memory if it remains present for longer than 0.12 sec.	Terminal 15	Voltage condition: - - Electrical sup	None	- 1 sec. after Terminal 15 on	The main relay can be activated wit	N	N	- Defective DME main relay	- If the diagnostic fault code has been logged numerous times, replace the DME main relay	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- This fault can occur at low temperatures.
MSD87-6Z	0x1F2004	2039812	No encoding: Coding data in EEPROM faulty	Data configured in L6	P3287	Internal Control Module Coding Process EEPROM Error			The fault is recognized when ? Potential problem source(s): - Incorrect code data in EEPROM	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	none	none	N	- Incorrect code data in EEPROM	- Recode DME and clear control module fault memory - If fault occurs repeatedly then replace DME.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - None	none	- Data configured
MSD87-6Z	0x1F2008	2039816	No encoding: no encoding after programming	Data configured in L6	P3239	Control Module Coding Process No Coding			The fault is recognized when ? Potential problem source(s): - No code entry executed (following programming)	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	none	none	N	- No code entry executed (following programming)	- Enter code	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Occurs after every programming session (data or program)	Possible apparent symptoms: - None	none	- Data configured
MSD87-6Z	0x1F2104	2040068	Incorrect data record: CAN timeout	Data configured in L6	P3288	Control Module Monitoring Engine Variant CAN-Timeout			The fault is recognized when ? Potential problem source(s): - Timeout on FAHRZEUGTYP (VEHICLE VERSION) message from CAS	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	none	none	N	- Timeout on FAHRZEUGTYP (VEHICLE VERSION) message from CAS	- Check CAS and/or CAN link to CAS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Reduced power	Occurs when vehicle version message from CAS is missing	Possible apparent symptoms: - None	none	- Data configured
MSD87-6Z	0x1F2108	2040072	Incorrect data record: variant monitoring	Data configured in L6	P3289	Control Module Monitoring Engine Variant Plausibility			The fault is recognized when ? Potential problem source(s): - Incorrect data set in DME or incorrect code entered in DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: Tempe	None	- None	none	none	N	- Incorrect data set in DME or incorrect code entered in DME	- Data programming - If fault is still active recode the DME - If it remains active replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Reduced power	OL/UL code: Codes for CAS and/or code in data set and/or DME code do not match.	Possible apparent symptoms: - None	none	- Data configured
MSD87-6Z	0x1F2201	2040321	Injectors, group 1, or DME, internal fault: initialization fault	The diagnostic function monitors the electrical connection between the DME and the injector when Terminal 15 is on.	P10A5	Injectors Initialization Error (Group 1)	Injectors	Initialization	This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - Defect in wiring harness between DME and injector 1 and/or 6 - Injector 1 and/or 6 defective - Defective DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical sup	None	- None	None	none	N	- Defect in wiring harness between DME and injector 1 and/or 6 - Injector 1 and/or 6 defective - Defective DME	- Check injectors 1 and 6: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm); if the specified value is not obtained, replace the injector - Replace DME	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Power loss and poor engine operation; breakdown vehicle if multiple driver circuits are defective	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x1F2202	2040322	Injectors, group 1, or DME, internal fault: connection fault	The diagnostic function monitors the DME's injection driver circuit while the engine is running.	P10A6	Injectors Open Circuit (Group 1)	Injectors	Open Circuit	This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical sup	None	- None	None	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Power loss and poor engine operation; breakdown vehicle if multiple driver circuits are defective	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none

MSD87-6Z	0x1F2204	2040324	Injectors, group 1, or DME, internal fault: discharge fault	The diagnostic function monitors the DME's injection driver circuit while the engine is running.	P10A7	Injectors Discharge Error (Group 1)	Injectors	Discharge	This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- None	None	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Power loss and poor engine operation; breakdown vehicle if multiple driver circuits are defective	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x1F2301	2040577	Injectors, group 2, or DME, internal fault: initialization fault	The diagnostic function monitors the electrical connection between the DME and the injector when Terminal 15 is on.	P10A8	Injectors Initialization Error (Group 2)	Injectors	Initialization	This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - Defect in wiring harness between DME and injector 3 and/or 5 - Injector 3 and/or 5 defective - Defective DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	None	none	N	- Defect in wiring harness between DME and injector 3 and/or 5 - Injector 3 and/or 5 defective - Defective DME	- Check injectors 3 and 5: Measure the resistance between the pins for the injectors, (specified: 200 kOhm +/-10 kOhm), if the specified value is not obtained, replace the injector - Replace DME	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Power loss and poor engine operation; breakdown vehicle if multiple driver circuits are defective	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x1F2302	2040578	Injectors, group 2, or DME, internal fault: connection fault	The diagnostic function monitors the DME's injection driver circuit while the engine is running.	P10A9	Injectors Open Circuit (Group 2)	Injectors	Open Circuit	This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- None	None	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Power loss and poor engine operation; breakdown vehicle if multiple driver circuits are defective	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x1F2304	2040580	Injectors, group 2, or DME, internal fault: discharge fault	The diagnostic function monitors the DME's injection driver circuit while the engine is running.	P10AA	Injectors Discharge Error (Group 2)	Injectors	Discharge	This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - Electrical syst	None	- None	None	none	N	- DME defective	- Replace DME	- ECE emissions warning lamp: No information - US emissions warning lamp: No information - ECE electronic engine power reduction: No information - US electronic engine power reduction: No information - CC message: Engine malfunction, loss of power	none	Possible apparent symptoms: - Power loss and poor engine operation; breakdown vehicle if multiple driver circuits are defective	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x1F2601	2041345	Encoding: Wrong version encoded	The diagnostic function monitors the version code.					The fault is recognized when code data for the incorrect version is entered Potential problem source(s): - Incorrect encoding - Replace DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: - Tempe	None	- None	None	none	N	- Incorrect encoding - Replace DME	- Recode DME and clear control module fault memory - If fault occurs more than once replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Power limited in extreme cases	Breakdown notice: - Because power may be reduced passing maneuvers should be avoided.	- none
MSD87-6Z	0x1F2602	2041346	Encoding: Version not found	The diagnostic function monitors the version code.					The fault is recognized when the DME has not been encoded. Potential problem source(s): - No code entry executed	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: - Tempe	None	- None	None	none	N	- No code entry executed	- Enter code data in DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Power limited in extreme cases	Breakdown notice: - Because power may be reduced passing maneuvers should be avoided.	- none
MSD87-6Z	0x1F2701	2041601	Encoding: Error on writing the version	The diagnostic function monitors the version code.					The fault is recognized when attempt to write version was not successful. Potential problem source(s): - Mutual interchange of control module positions - Tampering	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: - Tempe	None	- None	None	none	N	- Mutual interchange of control module positions - Tampering	- Recode DME and clear control module fault memory - If fault occurs more than once replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Power limited in extreme cases	Breakdown notice: - Because power may be reduced passing maneuvers should be avoided.	- none
MSD87-6Z	0x1F2702	2041602	Encoding: Version check faulty	The diagnostic function monitors the version code.					The fault is recognized when attempt to check version was not successful. Potential problem source(s): - Mutual interchange of control module positions - Tampering	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: - Tempe	None	- None	None	none	N	- Mutual interchange of control module positions - Tampering	- Recode DME and clear control module fault memory - If fault occurs more than once replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Power limited in extreme cases	Breakdown notice: - Because power may be reduced passing maneuvers should be avoided.	- none
MSD87-6Z	0x1F2704	2041604	Encoding: Implausible version	The diagnostic function monitors the version code.					The fault is recognized when implausible data were present during encoding. Potential problem source(s): - Mutual interchange of control module positions - Tampering	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None: - Tempe	None	- None	None	none	N	- Mutual interchange of control module positions - Tampering	- Recode DME and clear control module fault memory - If fault occurs more than once replace DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Power limited in extreme cases	Breakdown notice: - Because power may be reduced passing maneuvers should be avoided.	- none
MSD87-6Z	0x1F2801	2041857	DME, software: Program invalid	The diagnostic function monitors correct programming of the DME program version					The fault is recognized when programming has been carried out with an unauthorized program version (chip tuning) Potential problem source(s): - DME program version has been tampered with	none	none	Voltage condition: - None: - Tempe	none	none	NO	None	Y	- DME program version has been tampered with	- If the diagnostic fault code is logged in isolation (no ecu_clss) then suspect tuning/manipulation	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: Usually customer does not notice any negative effects after tampering	Breakdown notice: None	Fault can only be repaired through reprogramming, tampering can be suspected
MSD87-6Z	0x1F2802	2041858	DME, software: Data invalid	The diagnostic function monitors correct programming of the DME program version					The fault is recognized when programming has been carried out with an unauthorized data version (chip tuning) Potential problem source(s): - Tampering with DME data version	none	none	Voltage condition: - None: - Tempe	none	none	NO	None	Y	- Tampering with DME data version	- If the diagnostic fault code is logged in isolation (no ecu_clss) then suspect tuning/manipulation	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: Usually customer does not notice any negative effects after tampering	Breakdown notice: None	Fault can only be repaired through reprogramming, tampering can be suspected
MSD87-6Z	0x1F2804	2041860	DME, software: Program and data invalid	The diagnostic function monitors correct programming of the DME programdata version					The fault is recognized when programming has been carried out with an unauthorized programdata version (chip tuning) Potential problem source(s): - DME programdata version has been manipulated	none	none	Voltage condition: - None: - Tempe	none	none	NO	None	Y	- DME programdata version has been manipulated	- If the diagnostic fault code is logged in isolation (no ecu_clss) then suspect tuning/manipulation	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: Usually customer does not notice any negative effects after tampering	Breakdown notice: None	Fault can only be repaired through reprogramming, tampering can be suspected
MSD87-6Z	0x1F3008	2043912	Accelerator-pedal module, internal fault, channel 1: voltage regulator	The diagnostic function monitors the power-supply voltage to sensor 1 on the accelerator pedal module.	P164C	Pedal Position Sensor Potentiometer Supply Channel 1 Electrical	Pedal Position Sensor	D Electrical	The fault is recognized when the power-supply voltage at accelerator pedal module sensor 1 varies from 5V by more than 0.21 V. Potential problem source(s): - Defect in power-supply voltage to sensor 1 at the accelerator pedal module - E7X: DME main relay displays lag when switching - Defective DME	The diagnostic fault code is logged when the fault persists for longer than 200 ms.	Terminal 15	Voltage condition: - - None: - Tempe	None	- None	NO	Supply voltage to pedal-travel senso	N	- Defect in power-supply voltage to sensor 1 at the accelerator pedal module - E7X: DME main relay displays lag when switching - Defective DME	Check power-supply voltage to pedal-travel sensor - E7X: Determine whether a diagnostic fault code related to the DME main relay has been logged - Replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x1F3109	2044168	Accelerator-pedal module, internal fault, channel 2: voltage regulator	The diagnostic function monitors the power-supply voltage to sensor 2 on the accelerator pedal module.	P16j5	Pedal Position Sensor Potentiometer Supply Channel 2 Electrical	Pedal Position Sensor	E Electrical	The fault is recognized when the power-supply voltage at accelerator pedal module sensor 2 varies from 5V by more than 0.21 V. Potential problem source(s): - Defect in power-supply voltage to sensor 2 at the accelerator pedal module - E7X: DME main relay displays lag when switching - Defective DME	The diagnostic fault code is logged when the fault persists for longer than 200 ms.	Terminal 15	Voltage condition: - - None: - Tempe	None	- None	NO	Supply voltage to pedal-travel senso	N	- Defect in power-supply voltage to sensor 2 at the accelerator pedal module - E7X: DME main relay displays lag when switching - Defective DME	Check power-supply voltage to pedal-travel sensor - E7X: Determine whether a diagnostic fault code related to the DME main relay has been logged - Replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	none	Possible apparent symptoms: - Power reduction - Engine speed governed	Breakdown notice: - The engine reverts to its limp-home program, continued vehicle operation is possible but drivability is restricted, because power is reduced the driver should refrain from passing maneuvers.	- none
MSD87-6Z	0x1F4001	2048001	Automatic starting device, activation: short circuit to positive	The diagnostic function monitors the electrical link between the DME and the CAS: S_START.	P1587	MSA (Engine Start Automatic) Circuit High			The fault is recognized when a short circuit to positive is present. Potential problem source(s): - The wire from the DME to the CAS: S_START has a short to positive.	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	none	Voltage condition: - - Electrical syst	None	- 5 sec. at engine speed > 750 rpm	None	N	N	- The wire from the DME to the CAS: S_START has a short to positive.	- The wire from the DME to the CAS: S_START Check	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - No convenience start possible	Breakdown notice: - Because power may be reduced passing maneuvers should be avoided.	- none
MSD87-6Z	0x1F4002	2048002	Automatic starting device, activation: short circuit to ground	The diagnostic function monitors the electrical link between the DME and the CAS: S_START.	P1586	MSA (Engine Start Automatic) Circuit Low			The fault is recognized when a short circuit to ground is present. Potential problem source(s): - The wire from the DME to the CAS: S_START has a short to ground.	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	none	Voltage condition: - - Electrical syst	None	- 5 sec. at engine speed > 750 rpm	None	N	N	- The wire from the DME to the CAS: S_START has a short to ground.	- The wire from the DME to the CAS: S_START Check	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - No convenience start possible	Breakdown notice: - none	- none
MSD87-6Z	0x1F4004	2048004	Automatic starting device, activation: open circuit	The diagnostic function monitors the electrical link between the DME and the CAS: S_START.	P0512	Starter Request Circuit			The fault is recognized when an open wire is present. Potential problem source(s): - The wire from the DME to the CAS: S_START is open.	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	none	Voltage condition: - - Electrical syst	None	- 5 sec. at engine speed > 750 rpm	None	N	N	- The wire from the DME to the CAS: S_START is open.	- The wire from the DME to the CAS: S_START Check	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - No convenience start possible	Breakdown notice: - none	- none
MSD87-6Z	0x1F4A04	2050564	Load-shedding relay for ignition and fuel injection system: not dropped	The diagnostic function monitors the overload-protection relay for ignition coils and injection valves.					The fault is recognized when the DME main relay fails to open within a specified period after Terminal 15 is switched off. Potential problem source(s): - The overload-protection relay's control wire has a short to ground - Defective overload-protection relay	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	none	Voltage condition: - - Electrical syst	None	- 3 sec. after Terminal 15 off	The HPDI relay can be activated wi	N	N	- The overload-protection relay's control wire has a short to ground - Defective overload-protection relay	- Check control wire between overload-protection relay and DME - Disconnect the overload-protection relay and determine whether the contacts are open when no power is being applied to the relay. If the contacts are closed then replace the overload-protection relay - If the diagnostic fault code has been logged numerous times, replace the overload-protection relay	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1F4A08	2050568	Load-shedding relay for ignition and fuel injection system: not tightened	The diagnostic function monitors the overload-protection relay for ignition coils and injection valves.					The fault is recognized when the overload-protection relay fails to make the contact within a specified period after power is switched on at Terminal 15. Potential problem source(s): - The control wire to the overload-protection relay has a short to positive or the wire is open - Defective overload-protection relay	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 3 sec. after Terminal 15 on	The HPDI relay can be activated wi	N	N	- The control wire to the overload-protection relay has a short to positive or the wire is open - Defective overload-protection relay	- Check control wire between overload-protection relay and DME - Determine whether the overload-protection relay switches. If not, then replace the overload-protection relay - If the diagnostic fault code has been logged numerous times, replace the overload-protection relay	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine will not start	Breakdown notice: - The engine cannot be restarted without this relay.	- none
MSD87-6Z	0x1F4B08	2050824	Load-shedding relay for ignition and fuel injection system, shift delay: switches too late	The diagnostic function monitors the overload-protection relay for ignition coils and injection valves.					The fault is recognized when the overload-protection relay fails to make the contact within a specified period after power is switched on at Terminal 15. Potential problem source(s): - Load-shedding relay defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.12 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 1 sec. after Terminal 15 on	The HPDI relay can be activated wi	N	N	- Load-shedding relay defective	- If the diagnostic fault code has been logged numerous times, replace the overload-protection relay	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- This fault can occur at low temperatures.
MSD87-6Z	0x1F5001	2052097	DME, internal fault, interior-temperature sensor, electric: short circuit to positive or open circuit	The diagnostic function monitors the upper voltage limit of the DME's temperature sensor.	P0669	Control Module Internal Temperature Sensor 'A' Circuit High	ECM/TCM	Internal Temperature Sensor	The fault is recognized when the voltage of the temperature sensor in the DME > 3.3 V. Potential problem source(s): - DME defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 10 sec. after engine off	NO	Test data block ID 4806	N	- DME defective	- If the diagnostic fault code has been logged multiple times, replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none

MSD87-6Z	0x1F5002	2052098	DME, internal fault, interior-temperature sensor, electric short circuit to ground	The diagnostic function monitors the lower voltage limit of the DME's temperature sensor.	P0998	Control Module Internal Temperature Sensor 'A' Circuit Low	ECM/TCM	Internal Temperature Sensor	The fault is recognized when the voltage of the temperature sensor in the DME is < 0.6 V. Potential problem source(s): - DME defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	10 sec, after engine off	NO	Test data block ID 4606	N	- DME defective	- If the diagnostic fault code has been logged multiple times, replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x1F5101	2052353	DME temperature: excess temperature	The diagnostic function monitors the temperature of the DME.	P0634	Control Module Internal Temperature 'A' Too High	ECM/TCM	Internal Temperature	The fault is recognized when the DME's temperature exceeds the monitoring limit. Potential problem source(s): - E-box fan (defective) - Intake ducts to E-box obstructed	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	No (yes, change monitoring limit at	none	Y	- E-box fan defective - Intake ducts to E-box obstructed	- Check intake ducts in E-box - Check E-box fan - Replace E-box fan	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x200001	2097153	DME, internal fault, monitoring cruise control: FGR monitoring	DME, internal fault: Cruise control monitoring function	P16A6	Control Module Self-Test, Cruise Control Monitoring			Control module monitor Throttle valve not without current; Failure to comply with activation conditions for internal vehicle speed controller	480 ms	Terminal 15	Voltage in onboard electrical system	none	480 ms	none	none	Y	No deactivation possible; Speed too low, brake activation, main switch operation	Check speed signal, brake light switch, main cruise control switch If frequency is >=3 Replace DME	MIL OFF EML OFF CC: Vehicle speed control Vehicle speed controller is rejected	Internal cruise control monitor	none	none	- Data configured
MSD87-6Z	0x200002	2097154	DME, internal fault, monitoring cruise control: ACC monitoring	DME, internal fault: Cruise control monitoring function	P16BF	Control Module Self-Test, ACC (Adaptive Cruise Control) Monitoring			Control module monitor Throttle valve not without current ACC/DCC programmed; Interface fails to detect implausible torque demand	480 ms	Terminal 15	Voltage in onboard electrical system	none	480 ms	none	none	Y	Unrecognized implausible torque demand, internal control-module fault	Check CAN, ACC/DCC control module If frequency is >=3 Replace DME	MIL OFF EML OFF CC: Vehicle speed control Vehicle speed controller is rejected	ACC/DCC torque demand monitor	none	none	- Data configured
MSD87-6Z	0x200004	2097156	DME, internal fault, monitoring cruise control: LDM monitoring	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Here regarding communications with the LDM)	P166A	Control Module Self-Test, LDM (Longitudinal Dynamics Management) Monitoring			The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Collateral fault - Defective DME	- If diagnostic fault codes for the CAN or LDM are present, repair these issues first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	- none	Possible apparent symptoms: - Vehicle cruise control does not operate	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200108	2097416	DME, internal fault, monitoring engine speed: malfunction	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (here with regard to rpm signal)	P16A0	Control Module Self-Test, Speed Monitoring Reset	ECM Self-Test	RPM	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from programming error - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Collateral fault from programming error - Defective DME	- If faults related to programming are present, repair these first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- none	Possible apparent symptoms: - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200208	2097672	DME, internal fault, monitoring engine-speed limitation: malfunction	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (here relative to rpm limitation)	P16C2	Control Module Self-Test, Speed Limitation Monitoring	ECM Self-Test	RPM Limitation	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	NO	NO	Y	- DME defective	- If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on CC message: MIL OFF EML ON CC: Reduced power, engine malfunction Reset, rpm limited to 1300 rpm	- none	Possible apparent symptoms: - In extreme cases engine stalls and cannot be restarted	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200308	2097928	DME, internal fault, monitoring accelerator-pedal module: malfunction	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (here with regard to pedal-travel sensor)	P16B0	Control Module Self-Test, Pedal Position Sensor Monitoring	ECM Self-Test	Pedal Position Sensor	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from accelerator pedal travel sensor - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Collateral fault from accelerator pedal travel sensor - Defective DME	- If diagnostic fault codes related to the pedal-travel sensor are logged, repair these faults first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200404	2098180	DME, internal fault, monitoring idle-speed control: request, f component, implausible	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (here with regard to idle controller)	P16B1	Control Module Self-Test, Idle Air Control System Integrated Component Plausibility	ECM Self-Test	Idle Speed Control	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- DME defective	- If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200408	2098184	DME, internal fault, monitoring idle-speed control: request, PD component, implausible	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (here with regard to idle controller)	P16B2	Control Module Self-Test, Idle Air Control System PD-Component Plausibility	ECM Self-Test	Idle Speed Control	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- DME defective	- If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200501	2098433	DME, internal fault, monitoring external torque request: request, MSR, implausible	The diagnostic function monitors internal operations within the control module to confirm that they are executed correctly, here the focus is on CAN signals transmitted by the DME. (here regarding control-loops via the DSC)	P16B3	Control Module Self-Test, MSR (Engine-Drag-Torque Control) Monitoring			The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from CAN or DSC - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Unrecognized implausible torque demand, '- DME defective --> Control module defective	- If diagnostic fault codes for the CAN or DSC are present, repair these issues first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL OFF EML OFF CC: ??? DSC cancelled	- none	Possible apparent symptoms: - - DSC does not operate	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200502	2098434	DME, internal fault, monitoring external torque request: request, ICM, implausible	The diagnostic function monitors internal operations within the control module to confirm that they are executed correctly, here the focus is on CAN signals transmitted by the DME. (here regarding communications with the ICM)	P16C9	Control Module Self-Test, ICM (Integrated Chassis Management) Monitoring			The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from CAN or ICM - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Unrecognized implausible torque demand, '- DME defective --> Control module defective	- If diagnostic fault codes for the CAN or ICM are present, repair these issues first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL OFF EML OFF CC: ???	- none	Possible apparent symptoms: - Possible engine reaction to steering inputs	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200504	2098436	DME, internal fault, monitoring external torque request: transmit signals implausible	The diagnostic function monitors internal operations within the control module to confirm that they are executed correctly, here the focus is on CAN signals transmitted by the DME.	P16D3	Control Module Self-Test, Torque Monitoring	ECM Self-Test	Torque Monitoring	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from CAN - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Unrecognized implausible bus parameter output, internal ECU fault --> ECU defective	- If diagnostic fault codes related to the CAN are logged, repair these faults first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL OFF EML OFF CC: ???	none	Possible apparent symptoms: - DSC lamps light up, etc., cruise control/DSC are not operational	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- Wait for bus activity to subside and restart as indicated.
MSD87-6Z	0x200508	2098440	DME, internal fault, monitoring external torque request: request, EGS, implausible	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (here regarding communications with the EGS)	P16B6	Control Module Self-Test, ETC Monitoring			The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from CAN or EGS - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Unrecognized implausible torque demand, '- DME defective --> Control module defective	- If diagnostic fault codes for the CAN or EGS electronic gearbox control are present, repair these issues first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL OFF EML OFF CC: ??? EGS cancelled	- none	Possible apparent symptoms: - Transmission in emergency program	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200601	2098689	DME, internal fault, monitoring setpoint torque: maximum clutch torque implausible	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Here regarding maximum clutch torque)	P16B7	Control Module Self-Test, Clutch Torque Monitoring Maximum Value Plausibility	ECM Self-Test	Clutch Torque	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- DME defective	- If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: MIL OFF EML ON CC: Reduced power, engine malfunction RPM limited to 1300 rpm	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200602	2098690	DME, internal fault, monitoring setpoint torque: minimum clutch torque implausible	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Here regarding minimum clutch torque)	P16B8	Control Module Self-Test, Clutch Torque Monitoring Minimum Value Plausibility	ECM Self-Test	Clutch Torque	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- DME defective	- If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: MIL OFF EML ON CC: Reduced power, engine malfunction RPM limited to 1300 rpm	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200604	2098692	DME, internal fault, monitoring setpoint torque: loss torque implausible	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Here regarding torque losses)	P16B9	Control Module Self-Test, Torque Loss Monitoring	ECM Self-Test	Torque Loss	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from temperature sensors for engine oil and coolant - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Collateral fault from temperature sensors for engine oil and coolant - Defective DME	- If faults related to the temperature sensors for engine oil and coolant are present, repair these first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on CC message: MIL OFF EML ON CC: Reduced power, engine malfunction RPM limited to 1300 rpm	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200708	2098952	DME, internal fault, monitoring actual torque: signal implausible	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Regarding actual torque in this case)	P16C1	Control Module Self-Test, Torque Monitoring Current Indicated Value Plausibility	ECM Self-Test	Engine Torque	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from mixture formation - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Collateral fault from mixture formation - Defective DME	- If faults related to mixture formation are present, repair these first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on CC message: MIL OFF EML ON CC: Reduced power, engine malfunction RPM limited to 1300 rpm	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200808	2099208	DME, internal fault, monitoring hardware: malfunction	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Here focusing on one signal but comparing the two different paths by which it is registered)	P16CE	Control Module Self-Test, Hardware Monitoring	ECM Self-Test	Hardware	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - DME defective	This fault is logged in the control module's fault memory if it remains present for longer than 0.5 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- DME defective	- If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200904	2099460	DME, internal fault, monitoring fuel quantity: operating mode in rel. to lambda implausible	Fuel quantity monitoring function	P32F9	Control Module Monitoring Fuel Volume, Lambda Implausible to Operating Mode (Homogeneous/Stratified Mode)	ECM Monitoring	Fuel Volume Control	Control module monitor Throttle valve is not without current; operating mode implausible relative to lambda	5 sec.	Terminal 15	Voltage in onboard electrical system	none	5 sec.	none	none	Y	O2 sensor fault or fuel path fault not detected by diagnosis utility, internal control-module fault	Check paths for O2 sensors, fuel and air If frequency is > 3 Replace DME	MIL OFF EML ON CC: Reduced power, engine malfunction RPM limited to 1300 rpm	Operating mode plausibility check	none	none	- Data configured
MSD87-6Z	0x200908	2099464	DME, internal fault, monitoring fuel quantity: ratio lambda air mass to fuel quantity, correlation fault	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Here focusing on the ratio of injected fuel to the air mass)	P323F	Control Module Monitoring Fuel Volume, Air Mass/Lambda - Injected Fuel Volume Correlation	ECM Monitoring	Fuel Volume Control	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from malfunction in fuel system - Collateral fault from malfunction in air induction - Defective DME	This fault is logged in the control module's fault memory if it remains present for longer than 4 sec.	Terminal 15	Voltage condition: - - None: Tempo	None	- None	NO	NO	Y	- Collateral fault from malfunction in oxygen sensors - Collateral fault from malfunction in fuel system - Collateral fault from malfunction in air induction - Defective DME	- If diagnostic fault code 0x110001, 0x110002 or 0x110008 is logged, then this fault can be ignored - Check oxygen sensors, fuel-supply system and air-induction path - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: on - US electronic engine power reduction: on - CC message: on	- none	Possible apparent symptoms: - - Refuses to respond to accelerator - - Pronounced shaking at idle	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
									The fault is recognized when an internal comparison detects excessively high deviations.			Voltage condition: - - None: Tempo								- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power				

MSD87-6Z	0x200B01	2099969	DME, internal fault, monitoring stoichiometric mixture: changeover to homogeneous due to fuel-mass flow	Stoichiometric mixture monitoring function				Monitor control module Throttle value not without current, request for switch to operating mode in response to implausible fuel mass. Max. approved number of switches exceeded.	fault code stored following violation of maximum approved number of switches	Terminal 15	Voltage in onboard electrical system	none	fault code stored following violation	none	none	Y	Implausible fuel quantity triggers switch to homogeneous operating mode	Check O2 sensors, fuel path. Issue causes increased fuel consumption and frequency > 4 Replace DME	MIL OFF EML OFF CC: -	Fuel mass monitor function	none	none	- Data configured
MSD87-6Z	0x200B02	2099970	DME, internal fault, monitoring stoichiometric mixture: changeover to homogeneous due to engine torque	Stoichiometric mixture monitoring function				Monitor control module Throttle value not without current, request for switch to operating mode in response to implausible fuel mass. Max. approved number of switches exceeded.	fault code stored following violation of maximum approved number of switches	Terminal 15	Voltage in onboard electrical system	none	fault code stored following violation	none	none	Y	Implausible fuel quantity triggers switch to homogeneous operating mode	Check O2 sensors, fuel path. Issue causes increased fuel consumption and frequency > 4 Replace DME	MIL OFF EML OFF CC: -	Fuel mass monitor function	none	none	- Data configured
MSD87-6Z	0x200C01	2100225	DME, internal fault, control-unit fault, internal monitoring: ROM error	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (Here focusing on the internal bilateral data communications)	P0605	Internal Control Module Read Only Memory (ROM) Error	ECM/TCM	ROM	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from programming error - Defective DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe...	None	- Immediate	NO	NO	Y	- Collateral fault from programming error - Defective DME	- If faults related to programming are present, repair these first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	- none	Possible apparent symptoms: - Engine is impossible to restart	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200C02	2100226	DME, internal fault, control-unit fault, internal monitoring: RAM error	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly. (In this case focusing on RAM)	P0604	Internal Control Module Random Access Memory (RAM) Error	ECM/TCM	RAM	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from programming error - Defective DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe...	None	- Immediate	NO	NO	Y	- Collateral fault from programming error - Defective DME	- If faults related to programming are present, repair these first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	- none	Possible apparent symptoms: - Engine is impossible to restart	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200C04	2100228	DME, internal fault, control-unit fault, internal monitoring: computer monitoring: general composite fault	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly.	P0606	Control Module Processor	ECM/TCM	Processor	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from programming error - Defective DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe...	None	- Immediate	NO	NO	Y	- Collateral fault from programming error - Defective DME	- If faults related to programming are present, repair these first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	- none	Possible apparent symptoms: - Engine is impossible to restart	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200C08	2100232	DME, internal fault, control-unit fault, internal monitoring: host-computer monitoring: operations-set fault	The diagnostic function monitors internal operations within the control module to ensure that they are executed correctly.	P060C	Internal Control Module Main-Processor Performance	ECM/TCM	Main Processor	The fault is recognized when an internal comparison detects excessively high deviations. Potential problem source(s): - Collateral fault from programming error - Defective DME	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe...	None	- Immediate	NO	NO	Y	- Collateral fault from programming error - Defective DME	- If faults related to programming are present, repair these first - If the diagnostic fault code has been entered with a frequency > 3, then replace the DME	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	- none	Possible apparent symptoms: - Engine is impossible to restart	Breakdown notice: - Allow vehicle to enter sleep mode, then restart may resolve the problem, although the remedy may only be temporary	- none
MSD87-6Z	0x200D01	2100481	Internal DME fault, signal monitoring: Wheel torque implausible	The diagnostic function monitors internal operations within the control module to confirm that they are executed correctly. In this case the focus is on CAN signals transmitted by the DME.					Implausible bus parameters being transmitted Potential problem source(s): - Implausible bus parameters being issued, internal ECU fault – > Control module defective	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe...	None	- None	NO	none	Y	- Implausible bus parameters being issued, internal ECU fault –> Control module defective	- Clear control module fault memory - Replace the DME if the fault remains present continuously or if the fault frequency is greater than 3	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms:	Breakdown notice: - none	- none
MSD87-6Z	0x200D02	2100482	Internal DME fault, signal monitoring: Driver's choice implausible	The diagnostic function monitors internal operations within the control module to confirm that they are executed correctly. In this case the focus is on CAN signals transmitted by the DME.					Implausible bus parameters being transmitted Potential problem source(s): - Implausible bus parameters being issued, internal ECU fault – > Control module defective	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe...	None	- None	NO	none	Y	- Implausible bus parameters being issued, internal ECU fault –> Control module defective	- Clear control module fault memory - Replace the DME if the fault remains present continuously or if the fault frequency is greater than 3	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - DSC lamps light up, etc., cruise control/DSC are not operational	Breakdown notice: - Terminal status switch and restart will resolve the malfunction under some circumstances (fix may just be temporary)	- Wait for bus activity to subside and restart.
MSD87-6Z	0x200D04	2100484	Internal DME fault, signal monitoring: Accelerator pedal implausible	The diagnostic function monitors internal operations within the control module to confirm that they are executed correctly. In this case the focus is on CAN signals transmitted by the DME.					Implausible bus parameters being transmitted Potential problem source(s): - Implausible bus parameters being issued, internal ECU fault – > Control module defective	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe...	None	- None	NO	none	Y	- Implausible bus parameters being issued, internal ECU fault –> Control module defective	- Clear control module fault memory - Replace the DME if the fault remains present continuously or if the fault frequency is greater than 3	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - DSC lamps light up, etc., cruise control/DSC are not operational	Breakdown notice: - Terminal status switch and restart will resolve the malfunction under some circumstances (fix may just be temporary)	- Wait for bus activity to subside and restart.
MSD87-6Z	0x200D08	2100488	Internal DME fault, signal monitoring: CAN fault	The diagnostic function monitors internal operations within the control module to confirm that they are executed correctly. In this case the focus is on CAN signals transmitted by the DME.					Implausible bus parameters being transmitted Potential problem source(s): - Implausible bus parameters being issued, internal ECU fault – > Control module defective	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe...	None	- None	NO	none	Y	- Implausible bus parameters being issued, internal ECU fault –> Control module defective	- Clear control module fault memory - Replace the DME if the fault remains present continuously or if the fault frequency is greater than 3	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - DSC lamps light up, etc., cruise control/DSC are not operational	Breakdown notice: - Terminal status switch and restart will resolve the malfunction under some circumstances (fix may just be temporary)	- Wait for bus activity to subside and restart.
MSD87-6Z	0x20A701	2139905	Coolant pump, speed deviation: outside tolerance	The diagnostic function monitors the water pump's rotation speed.	P15D0	Coolant Pump RPM Out of Range			The fault is recognized when the deviation between actual and specified rpm exceeds a limit value. Potential problem source(s): - Air in system - Coolant contaminated or incorrect mixture ratio - Defective wiring harness - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 8 sec.	Terminal 15	Voltage condition: - - Electrical syst...	Engine temperature above 95°C	- None	Yes 'Activate EWAP '	none	Y	- Air in system - Coolant contaminated or incorrect mixture ratio - Defective wiring harness - Defective water pump	- Bleed air from system - Check coolant (foreign matter, mixture ratio, viscosity) - Check wiring harness - Replace water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- If the mixture ratio is incorrect (too much antifreeze) then the liquid can become too dense
MSD87-6Z	0x20A801	2140161	Coolant pump, deactivation: internal temperature too high	The diagnostic function monitors the temperature of the electronics.	P15D1	Coolant Pump Cut-Off, Internal Temperature Too High			The fault is recognized when the water pump has responded to overtemperature (> 160 °C) by deactivating its electronic circuitry. Potential problem source(s): - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	Yes 'Activate EWAP '	none	N	- Defective water pump	- Replace water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- none
MSD87-6Z	0x20A802	2140162	Coolant pump, shutdown: Overvoltage detected	The diagnostic function monitors the voltage of the electronics	P15D2	Coolant Pump Cut-Off, Overvoltage			The fault is recognized when the water pump has responded to measured overvoltage (> 20.5 V) by deactivating itself. Potential problem source(s): - Systematic fault in vehicle, for instance, jump start with 24 V - Intercooler water pump defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	Yes 'Activate EWAP '	none	N	- Systematic fault in vehicle, for instance, jump start with 24 V - Intercooler water pump defective	- If only the diagnostic fault code for the intercooler water pump is stored then the problem lies with the power-supply voltage - Replace intercooler water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- none
MSD87-6Z	0x20A804	2140164	Coolant pump, shutdown: Pump blocked	The diagnostic function monitors the current draw of the electronics.	P15D3	Coolant Pump Cut-Off, Overcurrent			The fault is recognized when the intercooler water pump deactivates in response to detected seizure. Potential problem source(s): - Foreign matter - Stiction - Coolant mixture ratio incorrect - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	Yes 'Activate EWAP '	none	N	- Foreign matter - Stiction - Coolant mixture ratio incorrect - Defective water pump	- Check coolant (foreign matter, mixture ratio) - Replace intercooler water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- none
MSD87-6Z	0x20A901	2140417	Coolant pump, operation with reduced output: Dry-running detected	The diagnostic function monitors the water pump's "ventilation" status.	P15D4	Coolant Pump Dry Run			The fault is recognized when the pump reports cavitation. Potential problem source(s): - Air in system - System leaking - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	Yes 'Activate EWAP '	none	N	- Air in system - System leaking - Defective water pump	- Check system for leaks and bleed it - Replace water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- none
MSD87-6Z	0x20A902	2140418	Coolant pump, operation with reduced output: Undervoltage detected	The diagnostic function monitors the voltage of the water pump	P15D5	Coolant Pump Undervoltage			The fault is recognized when the water pump's voltage is less than 10 V. Potential problem source(s): - Systematic fault in vehicle, related to battery condition, etc. - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	none	Voltage condition: - - Electrical syst...	None	- None	Yes 'Activate EWAP '	none	Y	- Systematic fault in vehicle, related to battery condition, etc. - Intercooler water pump defective	- If the 'undervoltage' diagnostic fault code is stored in several control modules, this relates to a systematic fault in the vehicle (such as unsatisfactory battery condition). Carry out the following test module (ABL): Energy diagnosis. - If the only diagnostic fault code is logged for the water pump, then the problem lies with the power-supply voltage - Replace water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- none
MSD87-6Z	0x20A904	2140420	Coolant pump, power-reduced operation: temperature limit 1 exceeded	The diagnostic function monitors the electronics temperature reported by the pump.	P15D6	Coolant Pump Temperature Threshold 1 Exceeded			The fault is recognized when the reported temperature is > 133 °C. Potential problem source(s): - Engine overheats - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	Yes 'Activate EWAP '	none	Y	- Engine overheats - Defective water pump	- If the engine has overheated (engine temperature >125 °C) and the water pump can be activated without problems, then no further action is required - If the engine has not overheated then replace the water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- none
MSD87-6Z	0x20A909	2140424	Coolant pump, power-reduced operation: temperature limit 2 exceeded	The diagnostic function monitors the electronics temperature reported by the pump.	P15D7	Coolant Pump Temperature Threshold 2 Exceeded			The fault is recognized when the reported temperature is > 136 °C. Potential problem source(s): - Engine overheats - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	Yes 'Activate EWAP '	none	Y	- Engine overheats - Defective water pump	- If the engine has overheated (engine temperature >125 °C) and the water pump can be activated without problems, then no further action is required - If the engine has not overheated then replace the water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- none
MSD87-6Z	0x20A906	2140676	Coolant pump, communication: malfunction	The diagnostic function monitors BSD bus communications with the electric water pump.	U1170	Coolant Pump Communication Error			The fault is recognized when the water pump fails to transmit messages. Potential problem source(s): - Voltage supply defect - Defective BSD wire - Defective wiring harness - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	Yes 'Activate EWAP '	none	N	- Voltage supply defect - Defective BSD wire - Defective wiring harness - Defective water pump	- Check wiring harness - Replace water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Engine can overheat	Breakdown notice: - none	- none
MSD87-6Z	0x20A908	2140936	Coolant pump, emergency operation input: No voltage	The diagnostic function monitors the voltage level at the water pump's emergency default input terminal (Pin 1).	U1171	Coolant Pump Communication Plausibility			The fault is recognized when no voltage is present at pin 1 (emergency default input terminal) for the intercooler water pump when Terminal 15 is on or voltage is present when Terminal 15 is off. Potential problem source(s): - Defect in wiring harness - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 25 sec.	Terminal 15	Voltage condition: - - Electrical syst...	None	- None	NO	none	N	- Defect in wiring harness - Defective water pump	- Check wiring harness - Replace water pump	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x200B001	2142209	Clutch switch, electric: short circuit to positive or open circuit	The diagnostic function monitors the digital signal from the clutch switch.	P0832	Clutch Pedal Switch 'A' Circuit High			The fault is recognized when, following a recognized operating status, the vehicle stops and no signal from the clutch switch is detected. The following conditions must be recognized for the operating status: longer than 3 sec., v > 30 km/h, n > 1510 rpm, load must be present, for instance, by accelerating from standing start in second gear Potential problem source(s): - Driving with clutch slipping - Defective wiring harness - Clutch switch defective	The fault is logged in the control module's fault memory after it is detected 3 times.	none	Voltage condition: - - Electrical syst...	None	- None	None	none	N	- Driving with clutch slipping - Defective wiring harness - Clutch switch defective	- Check wiring harness between DME and clutch switch - Replace clutch switch	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	If the clutch switch is defective the cruise control or ACC will be deactivated.	Possible apparent symptoms: - The cruise control can fail.	Breakdown notice: - none	- Watch debounce, the fault must be recognized three times during a driving cycle.
MSD87-6Z	0x20B002	2142210	Clutch switch, electric: short circuit to ground	The diagnostic function monitors the digital signal from the clutch switch.	P0831	Clutch Pedal Switch 'A' Circuit Low			The fault is recognized when, following a recognized operating status, the vehicle stops and no signal from the clutch switch is detected. The following conditions must be recognized for the operating status: longer than 3 sec., v > 30 km/h, n > 1510 rpm, load must be present, for instance, by accelerating from standing start in second gear Potential problem source(s): - Driving with clutch slipping - Defective wiring harness - Clutch switch defective	The fault is logged in the control module's fault memory after it is detected 3 times.	none	Voltage condition: - - Electrical syst...	None	- None	None	none	N	- Driving with clutch slipping - Defective wiring harness - Clutch switch defective	- Check wiring harness between DME and clutch switch - Replace clutch switch	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	If the clutch switch is defective the cruise control or ACC will be deactivated.	Possible apparent symptoms: - The cruise control can fail.	Breakdown notice: - none	- Watch debounce, the fault must be recognized three times during a driving cycle.
MSD87-6Z	0x20C001	2146305	Electronics-box fan, activation: short circuit to positive	Activation of E-box fan	P3226	E-Box Control Circuit Fan Circuit High			E-module fan activation-control monitor Component must be installed Tester must be used to trigger component for at least 15 sec.	2 sec.	Terminal 15	Voltage in onboard electrical system	none	5 sec.	none	none	N	Wire is shorted to positive, or a short to positive is present in the component	1Check wiring Repair if defective If wiring is OK proceed to check component	No display	none	none	none	- Data configured
									E-module fan activation-control			Voltage in onboard electrical system											

MSD87-6Z	0x2C0D04	2146308	Electronics-box fan, activation: open circuit	Activation of E-box fan	P332B	E-Box Control Circuit Fan Open Circuit			E-module fan activation-control monitor - Component must be installed - Tester must be used to trigger component for at least 15 sec.	5 sec.	Terminal 15	Voltage in onboard electrical system	none	5 sec.	none	none	N	Open circuit	1Check wiring Repair if defective If wiring is OK proceed to check component	No display	none	none	none	- Data configured
MSD87-6Z	0x210001	2162689	Generator: Underexcitation during starting phase	Data content defined	P3255	Generator Voltage in Starting Phase above Threshold			none	none	none	Voltage condition: - None -Temper	None	- None	none	none	N	Data content defined	Data content defined	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Data content defined	Possible apparent symptoms: - None	Breakdown notice: - None	- Data configured
MSD87-6Z	0x210201	2163201	Alternator, electric: malfunction	The diagnostic function monitors whether the alternator is supplying power.	P0620	Generator Control Circuit			This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - Positive wire not correctly connected to battery - Ground not correctly connected - Defective regulator - Alternator defect	This fault is logged in the control module's fault memory if it remains present for longer than 25.5 sec.	none	Voltage condition: - - Alternator spe	None	- 10 sec.	NO	Activation conditions: - 0x4614 Atte	N	- Positive wire not correctly connected to battery - Ground not correctly connected - Defective regulator - Alternator defect	- Check positive wire for correct installation - Check ground wire for correct installation - Check alternator - Fault frequency = 1: If the IMIB is available, perform an alternator test; if no IMIB is available, delete stored fault codes from control module fault memory and do not perform any other actions Fault frequency = 1: Replace alternator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: (213): Battery not charging (red battery symbol)	none	Possible apparent symptoms: - Charge indicator lamp lights up - Breakdown in extreme cases	Breakdown notice: - none	- Can occur during vehicle servicing when external power source is connected, etc.
MSD87-6Z	0x210301	2163457	Alternator, plausibility, electric: calculated	The diagnostic function monitors the voltage of the onboard electrical system and compares it with the specified voltage.	P3255A	Generator Electrical Error Calculated			The fault is recognized when the voltage in the vehicle electrical system is less than 11 V and the specified alternator voltage is greater than 14 V. Potential problem source(s): - Positive wire not correctly connected to battery - Ground not correctly connected - Defective battery - Defective regulator - Alternator defect	The diagnostic fault code is logged when the fault remains present for longer than 3.5 min.	none	Voltage condition: - - Alternator spe	None	- 10 sec.	NO	Activation conditions: - 0x4614 Atte	Y	- Positive wire not correctly connected to battery - Ground not correctly connected - Defective battery - Defective regulator - Alternator defect	- Check positive wire for correct installation - Check ground wire for correct installation - Check battery - If the IMIB is available, perform an alternator test - If no IMIB is available, replace alternator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: (213): Battery not charging (red battery symbol)	none	Possible apparent symptoms: - Charge indicator lamp lights up - Breakdown in extreme cases	Breakdown notice: - none	- Can occur during vehicle servicing when external power source is connected, etc.
MSD87-6Z	0x210401	2163713	Alternator, temperature: overtemperature	The diagnostic function monitors the alternator temperature.	P0A3B	Generator Over Temperature			This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - Alternator dirty - Airflow to alternator obstructed - Thermal overload from unfavorable driving profile possible	This fault is logged in the control module's fault memory if it remains present for longer than 25.5 sec.	none	Voltage condition: - - Alternator spe	None	- 10 sec.	NO	Activation conditions: - 0x4614 Atte	N	- Alternator dirty - Airflow to alternator obstructed - Thermal overload from unfavorable driving profile possible	- Inspect alternator for unobstructed air current - If the IMIB is available, perform an alternator test - If no IMIB is available, delete stored fault codes from control module fault memory and take no further action	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: ECE emissions warning lamp: off US emissions warning lamp: off ECE electronic engine power reduction: off	In all MSD85 (E71) data versions are configured (information memory) in all MSD85 (F01 LI) data versions active in coordination with VS Aftersales Error debounce can lead to reduced availability of comfort and convenience equipment.	Possible apparent symptoms: - Reduction in availability of comfort and convenience accessories	Breakdown notice: - none	- If no other faults related to the alternator have been logged, do not replace the alternator. This diagnostic fault code only indicates that the alternator has overheated. This is not a case of a defective component.
MSD87-6Z	0x210501	2163969	Alternator, plausibility, temperature: overtemperature calculated	The diagnostic function monitors the alternator temperature.	P024C	Generator Over Temperature Calculated			This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - Alternator dirty - Airflow to alternator obstructed - Thermal overload from unfavorable driving profile possible	This fault is logged in the control module's fault memory if it remains present for longer than 25.5 sec.	none	Voltage condition: - - Alternator spe	None	- 10 sec.	NO	Activation conditions: - 0x4614 Atte	Y	- Alternator dirty - Airflow to alternator obstructed - Thermal overload from unfavorable driving profile possible	- Inspect alternator for unobstructed air current - If the IMIB is available, perform an alternator test - If no IMIB is available, delete stored fault codes from control module fault memory and take no further action	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: ECE emissions warning lamp: off US emissions warning lamp: off ECE electronic engine power reduction: off	In all MSD85 (E71) data versions are configured (information memory) in all MSD85 (F01 LI) data versions active in coordination with VS Aftersales Error debounce can lead to reduced availability of comfort and convenience equipment.	Possible apparent symptoms: - Reduction in availability of comfort and convenience accessories	Breakdown notice: - none	- If no other faults related to the alternator have been logged, do not replace the alternator. This diagnostic fault code only indicates that the alternator has overheated. This is not a case of a defective component.
MSD87-6Z	0x210601	2164225	Alternator, mechanical: malfunction	The diagnostic function monitors the alternator's rotation speed.	P3223	Generator Mechanical			This fault is recognized by complex self-diagnosis routines. Potential problem source(s): - Alternator drive defective - Alternator defect (bearing damage)	This fault is logged in the control module's fault memory if it remains present for longer than 25.5 sec.	none	Voltage condition: - - Alternator spe	None	- 10 sec.	NO	Activation conditions: - 0x4614 Atte	N	- Alternator drive defective - Alternator defect (bearing damage)	- Check alternator drive (belt) - Replace alternator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: (213): Battery not charging (red battery symbol)	none	Possible apparent symptoms: - Charge indicator lamp lights up - Breakdown in extreme cases	Breakdown notice: - none	- Can occur during vehicle servicing when external power source is connected, etc.
MSD87-6Z	0x210701	2164481	Alternator, regulator: model incorrect	The diagnostic function monitors alternator's code and compares it with the specified value.	P024E	Generator Regulator Type Implausible			The fault is recognized when the regulator code does not match the code stored in the DME. Potential problem source(s): - Incorrect regulator installed	This fault is logged in the control module's fault memory if it remains present for longer than 25.5 sec.	none	Voltage condition: - - Alternator spe	None	- 10 sec.	NO	Activation conditions: - 0x5998 Spe	Y	- Incorrect regulator installed	- If the fault frequency is less than or equal to 3, clear the control module fault memory and do not take any further action - If the fault frequency is > 3, then replace the alternator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	If detail number is identical to approved number, information through VS to EA	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x210801	2164737	Alternator, model incorrect	The diagnostic function monitors alternator's code and compares it with the specified value.	P024A	Generator Type Implausible			The fault is recognized when the regulator code does not match the code stored in the DME. Potential problem source(s): -Incorrect alternator installed	This fault is logged in the control module's fault memory if it remains present for longer than 25.5 sec.	none	Voltage condition: - - Alternator spe	None	- 10 sec.	NO	Activation conditions: - 0x4614 Atte	Y	- Incorrect alternator installed	- If the fault frequency is less than or equal to 3, clear the control module fault memory and do not take any further action - If the fault frequency is > 3, then replace the alternator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	If detail number is identical with approved number => Info to EA through VS Aftersales Alternator continues to supply vehicle.	Possible apparent symptoms: - Mild roughness at idle can occur	Breakdown notice: - none	- Alternator continues to supply vehicle.
MSD87-6Z	0x210901	2164993	Alternator, communication: no communication	The diagnostic function monitors communications between DME and alternator.	U1132	Lost Communication With Generator via BSD (Bit Serial Data Interface)			The fault is recognized when multiple DME attempts to establish communications with the alternator remain unanswered. Potential problem source(s): - Defect in BSD bus wire between DME and alternator - Alternator defect	This fault is logged in the control module's fault memory if it remains present for longer than 25.5 sec.	Terminal 15	Voltage condition: - - None: - Temp	None	- None	NO	none	N	- Defect in BSD bus wire between DME and alternator - Alternator defect	- Check plug connection (dielent) on alternator. - Check connection wire (BSD bus) between alternator and DME - Alternator replacement required only if the DME only detects a BSD fault with the alternator (not in response to global BSD fault)	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- Alternator usually continues to supply power to vehicle. If no communications are present the alternator will charge at 14.3 V after the alternator speed has risen beyond roughly 3300 rpm one time.
MSD87-6Z	0x213301	2175745	Power management: overvoltage	The diagnostic function monitors the electrical system voltage at the DME/DDE with the engine running.	P160C	Powermanagement Overvoltage	Powermanagement	Electrical	The fault is recognized when the onboard electrical system's voltage exceeds 16 V. Potential problem source(s): With engine running, excessive voltage from: - external charger/battery (jump-start from truck) - Defective voltage regulator - PCU Power Control Unit defective, if present - DME/DDE voltage measurement defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	none	Voltage condition: - - None: - Temp	None	- None	None	none	N	- With engine running, excessive voltage from: - external charger/battery (jump-start from truck) - Defective voltage regulator - PCU Power Control Unit defective, if present - DME/DDE voltage measurement defective	- Ask customer if battery charger has been connected or a jump-start has been performed - Check alternator - Determine whether faults have been logged in the PCU - Determine whether internal control module faults have been logged in the DME/DDE.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Lights flicker, - functional failure (loss of functionality) - Possible destruction of electrical equipment,	Breakdown notice: - none	- none
MSD87-6Z	0x213401	2176001	Power management: undervoltage	The diagnostic function monitors the electrical system voltage at the DME/DDE with the engine running.	P160D	Powermanagement Undervoltage	Powermanagement	Electrical	The fault is recognized when the onboard electrical system's voltage falls below 9 V. Potential problem source(s): - Defective battery - Defective voltage regulator - Defect in wiring harness (power supply wiring to DME/DDE) - DME/DDE voltage measurement defective	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	none	Voltage condition: - - None: - Temp	None	- None	None	none	N	- Defective battery - Defective voltage regulator - Defect in wiring harness (power supply wiring to DME/DDE) - DME/DDE voltage measurement defective	- Use battery tester to check battery condition - Check battery for damage (electrolyte loss, deformation, ?), - check alternator, - check power supply to DME/DDE, - determine whether internal ECU faults are logged in the DME/DDE.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Flickering lights - Functional failure (loss of functionality) - Electrical devices cease to operate - Breakdown in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0x213501	2176267	Power management: battery exhaustive discharge	The diagnostic function monitors the electrical system voltage at the DME/DDE.	P160A	Powermanagement Exhaustive Discharge	Powermanagement	Electrical	The fault is recognized when the electrical system voltage drops below 9.5 V for at least one minute. Potential problem source(s): - Increased power consumption leading to battery damage while the vehicle is stationary - Parked too long	This fault is logged in the control module's fault memory if it remains present for longer than 60 sec.	none	Voltage condition: - - None: - Temp	None	- None	None	none	N	- Increased power consumption while stationary leading to battery damage, - Vehicle parked too long.	- Conduct (ABL) energy diagnosis test module - Ask customer if vehicle has remained parked for an extended period	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0x213601	2176513	Power management: closed-circuit current violation	The diagnostic function monitors the standby current draw.	P160F	Powermanagement No-Load Current Error	Powermanagement	Electrical	The fault is recognized when the discharge from excessively high standby currents is higher than 1 Ah. Potential problem source(s): - Closed-circuit current too high	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: - Temp	None	- None	None	none	Y	- Closed-circuit current too high.	- Conduct (ABL) energy diagnosis test module - Conduct external standby current measurement	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0x213604	2176516	Power management: closed-circuit current violation	The diagnostic function monitors the standby current draw.	P160F	Powermanagement No-Load Current Error	Powermanagement	Electrical	The fault is recognized when the discharge from excessively high standby currents is higher than 1 Ah. Potential problem source(s): - Closed-circuit current too high	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: - Temp	None	- None	None	none	Y	- Closed-circuit current too high.	- Conduct (ABL) energy diagnosis test module - Conduct external standby current measurement	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0x213701	2176769	Power management: Ripple in system voltage too high	The diagnostic function monitors the electrical system voltage at the DME/DDE with the engine running.	P160E	Powermanagement Operation Without Charging of Battery	Powermanagement	Electrical	The fault is logged in the control module's fault memory when the electrical system voltage is less than 8.5 V or higher than 16 V. Potential problem source(s): - Battery not connected correctly (loose contact). - Defect in wiring harness (power supply wiring to DME/DDE) - DME/DDE voltage measurement defective	The diagnostic fault code is logged when the fault persists for longer than 250 ms.	none	Voltage condition: - - None: - Temp	None	- None	None	none	N	- Battery not connected correctly (loose contact). - Defect in wiring harness (power supply wiring to DME/DDE) - DME/DDE voltage measurement defective	- Check screws on battery terminals - Check DME/DDE power-supply voltage - Determine whether internal control module faults have been logged in the DME/DDE.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: on	none	Possible apparent symptoms: - Flickering lights - Functional failure (loss of functionality) - In extreme cases engine fails to operate owing to undervoltage.	Breakdown notice: - none	- none
MSD87-6Z	0x213801	2177025	Power management: battery damaged on transport	The diagnostic function monitors the battery's charge status in the transport mode.					The fault is recognized when the battery charge status is below 35 % while in the transport mode. Potential problem source(s): - Excessive battery discharge in transport mode	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: - Temp	None	- None	None	none	Y	- Excessive battery discharge in transport mode	- Note in dealer's delivery acceptance record: - Conduct (ABL) energy diagnosis test module - Replace battery before delivery to customer and register battery change with service function	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - CC message when battery replacement is not registered with the diagnostic system.	Breakdown notice: - none	- none
MSD87-6Z	0x213901	2177281	Power management: reduction or deactivation of individual electrical loads/consumers	The diagnostic function monitors the limits on functionality that occur when availability of electrical devices is reduced or devices are deactivated.					The fault is recognized when availability of electrical equipment is reduced or power consumers are deactivated. Potential problem source(s): - Poor charge balance owing to driving conditions or excessive number of activated electrical power consumers - Battery aging has occurred	The diagnostic fault code is logged when the fault remains present for longer than 5 min.	Terminal 15	Voltage condition: - - None: - Temp	None	- None	None	STATUS_VERBREDINFO	Y	- Poor charge balance owing to driving conditions or excessive number of activated electrical power consumers - Battery aging has occurred	- Use test module (ABL) to read out history of last reduction: Reduction of electrical power consumers (important notice: components may be detected as defective although only electrical-power consumer reduction was present) - Ask driver about operating conditions (short distances, high number of electrical power consumers) - Check battery, and perform energy diagnosis (ABL) test module as indicated	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Limitations on functionality owing to reduced availability and deactivation of electrical power consumers	Breakdown notice: - none	- none
MSD87-6Z	0x213A01	2177537	Power management: battery discharged on transport	The diagnostic function monitors the battery's charge status in the transport mode.					The fault is recognized when the battery charge status is below 60 % while in the transport mode. Potential problem source(s): - Excessive battery discharge in transport mode	This fault is logged in the control module's fault memory immediately.	none	Voltage condition: - - None: - Temp	None	- None	None	none	Y	- Excessive battery discharge in transport mode	- Note in dealer's delivery acceptance record: Charge battery before delivery to customer - Conduct (ABL) energy diagnosis test module	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - CC message if the transport mode has not been deactivated.	Breakdown notice: - none	- none
									The fault is recognized when the battery is extremely old, resulting in reduced capacity, or when another battery defect has			Voltage condition: - - Onboard elect								- ECE emissions warning lamp: off - US emissions warning lamp: off				

MSD87-6Z	0x213C01	2178049	Power management, battery condition: Total discharge	The diagnostic function monitors the electrical system voltage at the DME/DDE.					The fault is recognized when the electrical system voltage drops below 9.5 V for at least one minute. Potential problem source(s): - Increased power consumption while stationary leading to battery damage. - Vehicle parked too long	The diagnostic fault code is logged when the fault remains current for longer than 60 sec.	none	Voltage condition: - None - Tempera	none	none	NO	None	N	- Increased power consumption while stationary leading to battery damage. - Vehicle parked too long	- Conduct (ABL) energy diagnosis test module - Ask customer if vehicle has remained parked for an extended period	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: None	None
MSD87-6Z	0x215001	2183169	Intelligent battery sensor, signal: bus fault	The diagnostic function monitors BISD communications between the IBS and DME.	P150A	Battery Sensor BISD (Bit Serial Data Interface) Extended Communication Circuit			The fault is recognized when the interference is present in the expanded BISD communications. Potential problem source(s): - Other defective components on BISD - Defective BISD - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 25 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- Other defective components on BISD - Defective BISD - IBS defective	- Unplug other devices from the BISD to determine whether one of these is the problem source - Check BISD - Replace IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215004	2183172	Intelligent battery sensor, signal: bus fault	The diagnostic function monitors BISD communications between the IBS and DME.	P150B	Battery Sensor BISD (Bit Serial Data Interface) Communication Circuit			The fault is recognized when interference is present in the expanded BISD communications. Potential problem source(s): - Other defective components on BISD - Defective BISD - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- Other defective components on BISD - Defective BISD - IBS defective	- Unplug other devices from the BISD to determine whether one of these is the problem source - Check BISD - Replace IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215008	2183176	Intelligent battery sensor, signal: software error	The diagnostic function monitors whether the correct IBS is installed.	P150C	Battery Sensor Firmware Implausible			The fault is recognized when an incorrect IBS is detected. Potential problem source(s): - Installed IBS is incompatible or too old	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- Installed IBS is incompatible or too old	- If the diagnostic fault code has been entered with a frequency > 3 or is present continuously then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215101	2183425	Intelligent battery sensor, function: temperature fault	The diagnostic function monitors the plausibility of the IBS temperature.	P150D	Battery Sensor Temperature Error			The fault is recognized when ??? Potential problem source(s): - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- IBS defective	- If the diagnostic fault code has been entered with a frequency > 3 or is present continuously then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215104	2183428	Intelligent battery sensor, function: voltage fault	The diagnostic function monitors the plausibility of the IBS voltage.	P150E	Battery Sensor Voltage Error			The fault is recognized when ??? Potential problem source(s): - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- IBS defective	- If the diagnostic fault code has been entered with a frequency > 3 or is present continuously then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215108	2183432	Intelligent battery sensor, function: current fault	The diagnostic function monitors the plausibility of the IBS current.	P150F	Battery Sensor Current Error			The fault is recognized when ??? Potential problem source(s): - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- IBS defective	- If the diagnostic fault code has been entered with a frequency > 3 or is present continuously then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215201	2183681	Intelligent battery sensor, signal transfer: wake-up line, short circuit to ground	The diagnostic function monitors the wake-up wire.	P151A	Battery Sensor Terminal 15/30 Wakeup Circuit			The fault is recognized when the IBS reports a short circuit in the wake-up wire. Potential problem source(s): - Wake-up line defective - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- Wake-up line defective - IBS defective	- Disconnect IBS and check wake-up wire for short circuits to ground - Check to determine whether non-approved electrical accessories have been connected to the wake-up wire - If the diagnostic fault code has been entered with a frequency > 3 or is present continuously then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215204	2183684	Intelligent battery sensor, signal transfer: internal fault	The diagnostic function monitors the IBS for internal faults.	P151C	Battery Sensor System Error			The fault is recognized when the IBS reports an internal fault. Potential problem source(s): - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- IBS defective	- If the diagnostic fault code has been entered with a frequency > 3 or is present continuously then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215208	2183688	Intelligent battery sensor, signal transfer: level, wake-up line, implausible	The diagnostic function monitors the wake-up wire.	P151B	Battery Sensor Wakeup Circuit			The fault is recognized when the signal level in the wake-up wire is implausible. Potential problem source(s): - Wake-up line defective - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	NO	none	N	- Wake-up line defective - IBS defective	- Check wake-up wire for consistent and intermittent open circuits - IBS disconnected, Terminal 15 off, wake-up wire shorted to positive. Check wake-up wire and other components connected to the wake-up wire - IBS disconnected, Terminal 15 off, wake-up wire shorted to ground. Check wake-up wire - IBS connected, Terminal 15 off, wake-up wire shorted to positive. Replace IBS IBS connected, Terminal 15 on, wake-up wire shorted to ground. Replace IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - Anything from no symptoms to breakdown from undercharged battery	Breakdown notice: - none	- none
MSD87-6Z	0x215401	2184193	Intelligent battery sensor (IBS): internal voltage measurement implausible	The diagnostic function monitors the internal voltage measurement.	P150E	Battery Sensor Voltage Error			The fault is recognized when the voltage measurement is implausible. Potential problem source(s): - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	none	none	N	- IBS defective	- If the fault is currently present or the frequency is > 5 then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215501	2184449	Intelligent battery sensor (IBS): internal current measurement implausible	The diagnostic function monitors the internal current measurement.	P150F	Battery Sensor Current Error			The fault is recognized when the internal current measurement is implausible. Potential problem source(s): - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- IBS defective	- If the fault is currently present or the frequency is > 5 then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215601	2184705	Intelligent battery sensor (IBS): internal temperature measurement implausible	The diagnostic function monitors the internal temperature measurement.	P150D	Battery Sensor Temperature Error			The fault is recognized when the temperature measurement is implausible. Potential problem source(s): - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- IBS defective	- If the fault is currently present or the frequency is > 5 then replace the IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215701	2184961	Intelligent battery sensor (IBS) faulty	The diagnostic function monitors the internal functions of the sensor.	P151C	Battery Sensor System Error			The fault is recognized when an internal fault is present. Potential problem source(s): - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- IBS defective	- Replace IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215801	2185217	Intelligent battery sensor (IBS): wake-up line, short circuit to positive or ground	The diagnostic function monitors the wake-up wire to the junction box electronics.	P15C5	Battery Sensor Wakeup Cable Circuit High			The fault is recognized when the wake-up wire has a short circuit. Potential problem source(s): - Defect in wake-up wire from IBS to junction box electronics	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- Defect in wake-up wire from IBS to junction box electronics	- Check wake-up wire between IBS and junction box electronics	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215801	2185217	Intelligent battery sensor (IBS): wake-up line, short circuit to positive or ground	The diagnostic function monitors the wake-up wire to the junction box electronics.	P15CE	Battery Sensor Wakeup Cable Circuit Electrical			The fault is recognized when the wake-up wire has a short circuit. Potential problem source(s): - Defect in wake-up wire from IBS to junction box electronics	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- Defect in wake-up wire from IBS to junction box electronics	- Check wake-up wire between IBS and junction box electronics	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215901	2185473	Intelligent battery sensor (IBS): incorrect version	The diagnostic function monitors compatibility of the IBS version with the power management in the DME/DDE.	P15C4	Battery Sensor Wakeup Cable Circuit Low			The fault is recognized when the IBS and DME/DDE are not compatible. Potential problem source(s): - DME/DDE and IBS are not compatible	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- DME/DDE and IBS are not compatible	- Replace IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215901	2185473	Intelligent battery sensor (IBS): incorrect version	The diagnostic function monitors compatibility of the IBS version with the power management in the DME/DDE.	P15CF	Battery Sensor Variant Plausibility			The fault is recognized when the IBS and DME/DDE are not compatible. Potential problem source(s): - DME/DDE and IBS are not compatible	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- DME/DDE and IBS are not compatible	- Replace IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215A01	2185729	Intelligent battery sensor (IBS): wake-up line, open circuit	The diagnostic function monitors the wake-up wire to the junction box electronics.	P15C3	Battery Sensor Wakeup Cable Circuit			The fault is recognized when the wake-up wire is open. Potential problem source(s): - Open wake-up wire from IBS to junction box electronics	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- Open wake-up wire from IBS to junction box electronics	- Check wake-up wire between IBS and junction box electronics	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x215B01	2185985	Intelligent battery sensor (IBS): LIN bus, communication fault	The diagnostic function monitors LIN bus communications with the DME/DDE.					The fault is recognized when interference occurs too often during expanded communications with the DME/DDE. Potential problem source(s): - Defect in power-supply voltage to IBS - Defect in bus connection (LIN bus) - Communications interference caused by other devices on LIN bus	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	none	Voltage condition: - - None - Tempe	None	- None	None	none	N	- Defect in power-supply voltage to IBS - Defect in bus connection (LIN bus) - Communications interference caused by other devices on LIN bus	- Check power-supply voltage to IBS - Check LIN bus between IBS and DME/DDE - Check fault memories of other devices on the LIN bus - Check LIN bus of other components	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x219901	2195457	Charging controller for auxiliary battery: Internal fault	The diagnostic function monitors the control module for managing charging of the secondary battery (BCU).					The fault is recognized when no charging is possible. Potential problem source(s): - Defect in charging unit for auxiliary battery (BCU) - Defective secondary battery	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - - None - Tempe	None	- None	NO	none	Y	- Defect in charging unit for auxiliary battery (BCU) - Defective secondary battery	Check secondary battery - Replace secondary battery - Replace BCU	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: off - CC message: One (from EPS) ID 627	none	Possible apparent symptoms: Steering support from power steering limited	Breakdown notice: None	None
									The fault is recognized when a wire interruption or a seriously open wire capable of generating			Voltage condition: - - Onboard elec								- ECE emissions warning lamp: off - US emissions warning lamp:				

MSD87-6Z	0x218351	2195969	Charging controller for auxiliary battery: Auxiliary battery faulty	The diagnostic function monitors the auxiliary battery for the electric power steering.					The fault is recognized when an internal fault is present. Potential problem source(s): - Defective secondary battery	The diagnostic fault code is logged when the fault remains present for longer than 5 min.	Terminal 15	Voltage condition: - Onboard elect	None	- None	NO	none	Y	- Defective secondary battery	Check secondary battery (BCU) - Replace secondary battery	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: off - CC message: One (from EPS): ID 627	none	Possible apparent symptoms: Steering support from power steering limited	Breakdown notice: None	None
MSD87-6Z	0x218301	2196225	Charging controller for auxiliary battery: Fault in cut-off relay or fine fault	The diagnostic function monitors the battery separator (TE), the wires between vehicle's primary and secondary battery, and the charge status of the secondary battery.					The fault is recognized when an open wire or a sticking relay is present. Potential problem source(s): - Defect in battery separator control wire - Defective battery separator - Battery separator sticking - Defective internal fuse in battery separator - Open wire	This fault is logged in the control module's fault memory immediately.	Terminal 15	Voltage condition: - Onboard elect	None	- None	NO	none	Y	- Defect in battery separator control wire - Defective battery separator - Battery separator sticking - Defective internal fuse in battery separator - Cable break (open circuit)	- Check wiring harness - Check battery separator fuse - Check battery separator and replace as required - Check BCU and replace as required	- ECE emissions warning lamp: off - US emissions warning lamp: off - Electronic engine power reduction: off - CC message: One (from EPS): ID 627	none	Possible apparent symptoms: Steering support from power steering limited	Breakdown notice: None	None
MSD87-6Z	0x219001	2199553	Active engine mount, electric: short circuit to positive	Active engine mount, electric	P0A16	Engine Mount 'A' Control Circuit High			Ignition ON	1	Terminal 15	UBatt > 10 V	none	none	none	none	N	Short to UBatt	Check wires, proceed to inspect component if wiring is OK	NO	none	none	none	- Data configured
MSD87-6Z	0x219002	2199554	Active engine mount, electric: short circuit to ground	Active engine mount, electric	P0A15	Engine Mount 'A' Control Circuit Low			Ignition ON	1	Terminal 15	UBatt > 10 V	none	none	none	none	N	Short to ground	Check wires, proceed to inspect component if wiring is OK	NO	none	none	none	- Data configured
MSD87-6Z	0x219004	2199556	Active engine mount, electric: open circuit	Active engine mount, electric	P0A14	Engine Mount 'A' Control Circuit/Open			Ignition ON	1	Terminal 15	UBatt > 10 V	none	none	none	none	N	Open circuit	Check wires, proceed to inspect component if wiring is OK	NO	none	none	none	- Data configured
MSD87-6Z	0x219101	2199559	Active engine mount 2, electrical: short circuit to positive	Active engine mount, electric	P0A88	Engine Mount 'B' Control Circuit High			Ignition ON	1	Terminal 15	UBatt > 10 V	none	none	none	none	N	Short to UBatt	Check wires, proceed to inspect component if wiring is OK	NO	none	none	none	- Data configured
MSD87-6Z	0x219102	2199810	Active engine mount 2, electrical: short circuit to ground	Active engine mount, electric	P0A87	Engine Mount 'B' Control Circuit Low			Ignition ON	1	Terminal 15	UBatt > 10 V	none	none	none	none	N	Short to ground	Check wires, proceed to inspect component if wiring is OK	NO	none	none	none	- Data configured
MSD87-6Z	0x219104	2199812	Active engine mount 2, electrical: open circuit	Active engine mount, electric	P0A86	Engine Mount 'B' Control Circuit/Open			Ignition ON	1	Terminal 15	UBatt > 10 V	none	none	none	none	N	Open circuit	Check wires, proceed to inspect component if wiring is OK	NO	none	none	none	- Data configured
MSD87-6Z	0x230004	2203764	DME/DDE PT-CAN, communication, sleep coordinator: Timeout	The diagnostic function monitors deactivation coordination in the network management system.					The fault is recognized when communications on PT CAN2 to ZGW are lost. Potential problem source(s): - Interference with communications to ZGW via PT CAN2	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 3 sec.	NO	CAN message	Y	- Interference with communications to ZGW via PT CAN2	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x230008	2203768	DME/DDE PT-CAN, communication, sleep coordinator: Message implausible	The diagnostic function monitors deactivation coordination in the network management system.					The fault is recognized when communications on PT CAN2 to ZGW are lost. Potential problem source(s): - Interference with communications to ZGW via PT CAN2	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 3 sec.	NO	CAN message	Y	- Interference with communications to ZGW via PT CAN2	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0x211101	2298113	Dummy Application DTC: application DTC	Only relevant for development, no PP required					Only relevant for development, no PP required Potential problem source(s): Only relevant for development, no PP required	none	none	Voltage condition: - None - Tempera	none	none	NO	None	Y	Only relevant for development, no PP required	Only relevant for development, no PP required	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Only relevant for development, no PP required	Possible apparent symptoms: None	Breakdown notice: None	None
MSD87-6Z	0x211301	2298625	Dummy Network DTC: network DTC	Only relevant for development, no PP required					Only relevant for development, no PP required Potential problem source(s): Only relevant for development, no PP required	none	none	Voltage condition: - None - Tempera	none	none	NO	None	Y	Only relevant for development, no PP required	Only relevant for development, no PP required	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Only relevant for development, no PP required	Possible apparent symptoms: None	Breakdown notice: None	None
MSD87-6Z	0x231501	2299137	Active DTC reporting: DTC buffer full	Only relevant for development, no PP required	P16D2	DTC Report, DTC Sending Buffer Overflow			Only relevant for development, no PP required Potential problem source(s): Only relevant for development, no PP required	none	none	Voltage condition: - None - Tempera	none	none	NO	None	Y	Only relevant for development, no PP required	Only relevant for development, no PP required	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Only relevant for development, no PP required	Possible apparent symptoms: None	Breakdown notice: None	None
MSD87-6Z	0x231502	2299138	Active DTC reporting: DTC sending faulty	Only relevant for development, no PP required	P16D3	DTC Report, DTC Sending Failed			Only relevant for development, no PP required Potential problem source(s): Only relevant for development, no PP required	none	none	Voltage condition: - None - Tempera	none	none	NO	None	Y	Only relevant for development, no PP required	Only relevant for development, no PP required	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	Only relevant for development, no PP required	Possible apparent symptoms: None	Breakdown notice: None	None
MSD87-6Z	0xCD9430	1347281E	CAN communication at undervoltage: Communication fault to electronic transmission control (EGS)	The diagnostic function monitors communications to the EGS during undervoltage					The fault is recognized when interference in communications to the EGS occurs while undervoltage is present. Potential problem source(s): Battery voltage too low	The diagnostic fault code is logged when the fault persists for longer than 0.5 sec.	none	Voltage condition: - - Electrical syste	None	- 750 ms	NO	CAN message	Y	Battery voltage too low	- Carry out system analysis.	MY10: no MY11: - ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: none	none	Possible apparent symptoms: None	Breakdown notice: None	- none
MSD87-6Z	0x231F04	2301700	Electronic transmission control (EGS), PT-CAN, PT-CAN2: Communication fault	The diagnostic function monitors whether both communications paths (PT-CAN2 / PT-CAN) between transmission and engine-management ECU are subject to interference, meaning that redundancy is not present.	U1190	Lost Communication With TCM via A- and FA-CAN	Communication	TCM	The fault is recognized when communications with the EGS electronic gearbox control on the A and PT CAN break down. Potential problem source(s): - Interference in communications to EGS via A and PT CAN	This fault is logged in the control module's fault memory if it remains present for longer than 0.03 sec.	Terminal 15	Voltage condition: - - Electrical syste	None	- 750 ms	NO	Bus status (signal redundancy)	Y	- EGS deactivated or not connected to A and PT CAN. - Unplug EGS	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on (probably only in US, please check this)	none	Possible apparent symptoms: - Transmission in emergency program	Breakdown notice: - none	- none
MSD87-6Z	0x233004	2306052	Message (OBD sensor, diagnosis, status, 0x5E0, 0dBC) missing, Digital Motor Electronics, integrated automatic heating / air conditioning system receiver, instrument panel transmitter	The diagnostic function monitors reception of the message.	U1189	Lost Communication with OBD-Sensor	Communication	OBD Sensor	The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on (probably only in US, please check this)	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD8510	1348694H		none	U029D	Lost Communication With NOx Sensor 'A'			none	none	none	none	none	none	none	none	N	none	none	none	none	none	none	- Data configured
MSD87-6Z	0xCD840A	1348668Z		The diagnostic function monitors the PT CAN.	U1185	Lost Communication with FA-CAN	Communication	FA-CAN	The fault is recognized when a short circuit is present. Potential problem source(s): - Defective PT CAN	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	none	Y	- Defective PT CAN	- Check PT-CAN	- ECE emissions warning lamp: on - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on	none	Possible apparent symptoms: - No tachometer display in the instrument cluster - Brief rpm drop when IHKA automatic climate control is activated at idle	Breakdown notice: - none	- none
MSD87-6Z	0xCD8420	1348670A		The diagnosis monitors the FlexRay.	U119E	Lost Communication With FlexRay	Communication	FlexRay	The fault is recognized when a short circuit is present. Potential problem source(s): - FlexRay defect	This fault is logged in the control module's fault memory if it remains present for longer than 0.06 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	Physical bus status	Y	- FlexRay defect	- Check FlexRay	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on	none	Possible apparent symptoms: - DSC Failure - Cruise control failure	Breakdown notice: - none	- none
MSD87-6Z	0xCD840B	1348668D	FlexRay data bus: Hardware faulty	The diagnostic function monitors the FlexRay controller	P10DD	FlexRay Hardware Defective	FlexRay	Hardware	The fault is recognized when a hardware defect is detected Potential problem source(s): - Defect in FlexRay controller	This fault is logged in the control module's fault memory if it remains present for longer than 0.06 sec.	Terminal 15	Voltage condition: - Voltage in orde	None	- 750 ms	NO	None	Y	- Defect in FlexRay controller	Replace DME if the fault is present permanently, or sporadically with a fault frequency greater than 3.	MY10: - ECE emissions warning lamp: off - ECE electronic engine power reduction: off - CC message: none MY11: - ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: One	none	Possible apparent symptoms: - none	Breakdown notice: None	- none
MSD87-6Z	0xCD849B	1348680K		The diagnostic function monitors PT CAN 2.	U1184	Lost Communication with A-CAN			The fault is recognized when a short circuit is present. Potential problem source(s): - Defective PT CAN 2	This fault is logged in the control module's fault memory if it remains present for longer than 0.03 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	none	Y	- Defective PT CAN 2	- Check PT-CAN 2	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD8487	1348680 7		The diagnosis monitors the FlexRay.	P16DC	FlexRay Controller Startup Error	FlexRay	Startup Error	The fault is recognized when the FlexRay fails to achieve 'Normal Active' status. Potential problem source(s): - FlexRay defect	This fault is logged in the control module's fault memory if it remains present for longer than 0.01 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	none	Y	- FlexRay defect	- Check FlexRay	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on	- none	Possible apparent symptoms: - DSC Failure - Cruise control failure	Breakdown notice: -. None	- none
MSD87-6Z	0xCDBE01	1347123X	DME/DDE LIN-Bus, communication fault: Short circuit	The diagnostic function monitors communications on the LIN.					The fault is recognized when a short circuit is present. Potential problem source(s): - Short circuit on the LIN bus	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 10 sec.	NO	none	Y	- Short circuit on the LIN bus	- Check wiring harness	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Slight increase in fuel consumption, reduction in steering support provided by electric power steering	Breakdown notice: - none	- none

MSD87-6Z	0xCD8E02	13471234	DME/DDE LIN-Bus, communication fault: Line disconnection	The diagnostic function monitors communications on the LIN.					The fault is recognized when an open wire is present. Potential problem source(s): - Open circuitwire on the LIN Bus	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 10 sec.	NO	none	Y	- Open circuitwire on the LIN bus	- Check wiring harness	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Slight increase in fuel consumption, reduction in steering support provided by electric power steering	Breakdown notice: - none	- none
MSD87-6Z	0xCD8F01	13471489	Intelligent battery sensor (IBS), LIN bus: not current	The diagnostic function monitors LIN communications with the IBS.					The fault is recognized when the IBS fails to respond. Potential problem source(s): - Defect in wiring harness - Poor screw connection at battery terminal - Interference from other device on LIN - IBS defective	This fault is logged in the control module's fault memory if it remains present for longer than 6 sec.	none	Voltage condition: - - None - Temp	- None	- None	NO	none	N	- Defect in wiring harness - Poor screw connection at battery terminal - Interference from other device on LIN - IBS defective	- Check wiring harness - Look for faults in other devices on the bus - Replace IBS	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0xCD8F02	13471490	Intelligent battery sensor (IBS), LIN bus: signal invalid	The diagnostic function monitors communications with the water pump.					The fault is recognized when inconsistent data are present. Potential problem source(s): - Component transmits fault conditions	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 10 sec.	NO	none	Y	- Component transmits fault conditions	- Check component	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Mild rise in fuel consumption, turbocharger damage in extreme cases	Breakdown notice: - none	- Data configured
MSD87-6Z	0xCD8001	13471745	Charge air cooler coolant pump, communication: Timeout	The diagnostic function monitors communications with the water pump.					The fault is recognized when communications with the water pump are interrupted. Potential problem source(s): - Defect in wiring harness - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 10 sec.	NO	none	Y	- Defect in wiring harness - Defective water pump	- Check wiring harness - Check components	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Mild rise in fuel consumption, turbocharger damage in extreme cases	Breakdown notice: - none	- Data configured
MSD87-6Z	0xCD8002	13471746	Charge air cooler coolant pump, communication: Invalid message	The diagnostic function monitors communications with the water pump.					The fault is recognized when inconsistent data are present. Potential problem source(s): - Component transmits fault conditions	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 10 sec.	NO	none	Y	- Component transmits fault conditions	- Check component	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Mild rise in fuel consumption, turbocharger damage in extreme cases	Breakdown notice: - none	- Data configured
MSD87-6Z	0xCD8101	13472001	Charging controller for auxiliary battery, LIN communication: Timeout	The diagnostic function monitors communications with the water pump's DC converter.					The fault is recognized when communications with the water pump are interrupted. Potential problem source(s): - Defect in wiring harness - Defective water pump	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 10 sec.	NO	none	Y	- Defect in wiring harness - Defective water pump	- Check wiring harness - Check components	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Mild rise in fuel consumption, turbocharger damage in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0xCD8102	13472002	Charging controller for auxiliary battery, LIN communication: Invalid message	The diagnostic function monitors communications with the water pump's DC converter.					The fault is recognized when inconsistent data are present. Potential problem source(s): - Component transmits fault conditions	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 10 sec.	NO	none	Y	- Component transmits fault conditions	- Check component	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Mild rise in fuel consumption, turbocharger damage in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0xCD8201	13472257	Radiator shutter, LIN communication: Timeout	The diagnostic function monitors between the active air flap control and the DME.	U1186	Lost Communication With Controlled Upper Air Shutter via LIN			The fault is recognized when communications are interrupted. Potential problem source(s): - Defect in power supply to radiator vent slat assembly - Defect in wiring harness - Radiator shutter defective	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	steuern_systemcheck_gf	status_systemcheck_gf	N	- Defect in power supply to radiator vent slat assembly - Defect in wiring harness - Radiator shutter defective	- Check LIN bus between DME and radiator vent slat assembly - Check power-supply voltage to radiator vent slat assembly - Check wiring harness - Replace radiator vent slat actuator	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine may overheat.	Breakdown notice: - none	- none
MSD87-6Z	0xCD8202	13472258	Radiator shutter, LIN communication: Invalid message	The diagnostic function monitors the validity of the messages from the AKKS actuator.	P304F	Controlled Upper Air Shutter Message Monitoring via LIN			The fault is recognized when an incorrect message is transmitted from the AKKS actuator. (Should only occur in R&D phase.) Potential problem source(s): - Incident electromagnetic radiation - AKKS fails to conform to project specifications	The fault is logged in the fault memory if it remains continuously present for longer than 5 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	steuern_systemcheck_gf	status_systemcheck_gf	N	- Incident electromagnetic radiation - AKKS fails to conform to project specifications	- Cannot occur in production vehicles. - If the fault occurs it is most likely the result of electromagnetic interference. - Clear fault memory.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Fault symptom is only relevant for development	Possible apparent symptoms: - The engine may overheat.	Breakdown notice: - none	- none
MSD87-6Z	0xCD8304	13472516	Bit-serial data interface, signal: communication fault	The diagnostic function monitors the BSD.	U1190	Lost Communication With BSD (Bit Serial Data Interface)			The fault is recognized when communications interference is present. Potential problem source(s): - Defective components on BSD - Defective BSD	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- None	NO	Physical bus status	Y	- Defective components on BSD - Defective BSD	- Unplug all components on the BSD with the exception of the oil condition sensor, clear diagnostic fault codes from the control module fault memory and then ignition offon. If the diagnostic fault code is logged again this means that the oil condition sensor is defective. - Reconnect all of the remaining devices on the BSD one after the other, clear the control module fault memory, and then switch the ignition offon, continuing until the defective component is found. - If the fault is not found, check the BSD. - If the fault appears sporadically then check all contacts on the BSD.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: Power management not operating correctly, as battery sensor data cannot be monitored. No oil level available.	none	Possible apparent symptoms: - Breakdown in extreme cases	Breakdown notice: - none	- none
MSD87-6Z	0xCD8402	13472770	Message (request, torque, crankshaft, driving dynamics, 58.1.4) not current, receiver DME/DDE, transmitter ICM	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine can stall in response to rapid steering motion to full-lock.	Breakdown notice: - Continued driving possible, reduce steering angle, restart if engine stalls	- none
MSD87-6Z	0xCD8404	13472772	Message (request, torque, crankshaft, driving dynamics, 58.1.4) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.8 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine can stall in response to rapid steering motion to full-lock.	Breakdown notice: - none	- none
MSD87-6Z	0xCD8406	13472776	Message (request, torque, crankshaft, driving dynamics, 58.1.4) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	- none	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine can stall in response to rapid steering motion to full-lock.	Breakdown notice: - none	- none
MSD87-6Z	0xCD8502	13473026	Message (request, wheel torque, drive train, sum, stabilisation, 43.1.4) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - - DSC failure	Breakdown notice: - none	- none
MSD87-6Z	0xCD8504	13473028	Message (request, wheel torque, drive train, sum, stabilisation, 43.1.4) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.8 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - - DSC failure	Breakdown notice: - none	- none
MSD87-6Z	0xCD8506	13473032	Message (request, wheel torque, drive train, sum, stabilisation, 43.1.4) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - - DSC failure	Breakdown notice: - none	- none
MSD87-6Z	0xCD8602	13473282	Message (request, wheel torque, drive train, sum, stabilisation, 47.0.2) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Hybrid reserve	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD8604	13473284	Message (request, wheel torque, drive train, sum, stabilisation, 47.0.2) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 40 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Hybrid reserve	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD8606	13473286	Message (request, wheel torque, drive train, sum, stabilisation, 47.0.2) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Hybrid reserve	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD8702	13473538	Message (configuration, switch, driving dynamics, 272.4.8) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Pedal progression cannot be switched.	Breakdown notice: -. None	- none
MSD87-6Z	0xCD8704	13473540	Message (configuration, switch, driving dynamics, 272.4.8) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 40 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Pedal progression cannot be switched.	Breakdown notice: - none	- none
MSD87-6Z	0xCD8706	13473544	Message (configuration, switch, driving dynamics, 272.4.8) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	- none	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Pedal progression cannot be switched.	Breakdown notice: - none	- none
MSD87-6Z	0xCD9502	13474050	Message (vehicle speed, 55.3.4) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the currency of the message.	U1117	Message Monitoring Speed Alive Check	Communication	Speed	The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: ML on (probably only in US, please check this)	none	Possible apparent symptoms: -. None	Breakdown notice: -. None	- none

MSD87-6Z	0xCD9004	13474052	Message (vehicle speed, 55.3.4) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors reception of the message.	U1118	Lost Communication With Speed	Communication	Speed	The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.8 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on (probably only in US, please check this)	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD9008	13474056	Message (vehicle speed, 55.3.4) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the checksum of the message.	U1119	Message Monitoring Speed Check Sum Error	Communication	Speed	The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	- none	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on (probably only in US, please check this)	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD9402	13474306	Message (actual braking torque, sum, 43.3.4) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the currency of the message.	U1197	Message Monitoring Brake Torque Alive Check			The fault is recognized when the keep-alive counter has not timed the message Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD9404	13474308	Message (actual braking torque, sum, 43.3.4) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors reception of the message.	U1198	Lost Communication With Brake Torque			The fault is recognized when the message is not received in the specified time. Potential problem source(s): Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.8 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD9406	13474312	Message (actual braking torque, sum, 43.3.4) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the checksum of the message.	U1199	Message Monitoring Brake Torque Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD8602	13474562	Message (actual crankshaft speed, wheel, 46.0.1) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the currency of the message.	U1195	Message Monitoring Wheel Speed Alive Check	Communication	Wheel Speed	The fault is recognized when the keep-alive counter has not timed the message Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on (probably only in US, please check this)	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD8604	13474564	Message (actual crankshaft speed, wheel, 46.0.1) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors reception of the message.	U116D	Lost Communication With Wheel Speed	Communication	Wheel Speed	The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on (probably only in US, please check this)	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCD8608	13474568	Message (actual crankshaft speed, wheel, 46.0.1) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the checksum of the message.	U1196	Message Monitoring Wheel Speed Check Sum Error	Communication	Wheel Speed	The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on (probably only in US, please check this)	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCC0C02	13474818	Message (actual steering angle, driver, 59.0.2) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, steering column switch cluster transmitter	The diagnostic function monitors whether the specified message has not been received. If the message fails to appear then a diagnostic fault code is generated.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	- The diagnostic fault code is logged when the fault remains present for more than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine can stall in response to rapid steering motion to full-lock.	Breakdown notice: - none	- Data configured
MSD87-6Z	0xCD9C04	13474820	Message (actual steering angle, driver, 59.0.2) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, steering column switch cluster transmitter	The diagnostic function monitors reception of the message.	U1120	Lost Communication With Steering Wheel Angle			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine can stall in response to rapid steering motion to full-lock.	Breakdown notice: - none	- none
MSD87-6Z	0xCD9C08	13474824	Message (actual steering angle, driver, 59.0.2) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, steering column switch cluster transmitter	The diagnostic function monitors whether the specified message has not been received. If the message fails to appear then a diagnostic fault code is generated.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	- The diagnostic fault code is logged when the fault remains present for more than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The engine can stall in response to rapid steering motion to full-lock.	Breakdown notice: - none	- Data configured
MSD87-6Z	0xCD0D02	13475074	Message (longitudinal acceleration, centre of gravity, 55.0.2) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The oil pressure indicator lamp may light up during acceleration.	Breakdown notice: - None	- none
MSD87-6Z	0xCD0D04	13475076	Message (longitudinal acceleration, centre of gravity, 55.0.2) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	- none	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The oil pressure indicator lamp may light up during acceleration.	Breakdown notice: - none	- none
MSD87-6Z	0xCD0D08	13475080	Message (longitudinal acceleration, centre of gravity, 55.0.2) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	- none	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The oil pressure indicator lamp may light up during acceleration.	Breakdown notice: - none	- none
MSD87-6Z	0xCD0E02	13475330	Message (lateral acceleration, centre of gravity, 55.0.2) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The oil pressure indicator lamp may light up during lateral acceleration/cornering.	Breakdown notice: - None	- none
MSD87-6Z	0xCD0E04	13475332	Message (lateral acceleration, centre of gravity, 55.0.2) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The oil pressure indicator lamp may light up during lateral acceleration/cornering.	Breakdown notice: - none	- none
MSD87-6Z	0xCD0E08	13475336	Message (lateral acceleration, centre of gravity, 55.0.2) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	- none	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - The oil pressure indicator lamp may light up during lateral acceleration/cornering.	Breakdown notice: - none	- none
MSD87-6Z	0xCD0F02	13475586	Message (Dynamic Stability Control stabilisation, 47.1.2) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the currency of the message.	U1125	Message Monitoring DSC Status Alive Check			The fault is recognized when the keep-alive counter has not timed the message Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Cruise control failure - Accelerator pedal progression failure	Breakdown notice: - none	- Cruise control available only after diagnostic fault codes are cleared from control module fault memory.
MSD87-6Z	0xCD0F04	13475588	Message (Dynamic Stability Control stabilisation, 47.1.2) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors reception of the message.	U1126	Lost Communication With DSC Status	Communication	DSC Status	The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Cruise control failure - Accelerator pedal progression failure	Breakdown notice: - none	- Cruise control available only after diagnostic fault codes are cleared from control module fault memory.
MSD87-6Z	0xCD0F08	13475592	Message (Dynamic Stability Control stabilisation, 47.1.2) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the checksum of the message.	U1127	Message Monitoring DSC Status Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Cruise control failure - Accelerator pedal progression failure	Breakdown notice: - none	- Cruise control available only after diagnostic fault codes are cleared from control module fault memory.
MSD87-6Z	0xCDA002	13475842	Message (request, wheel torque, drive train, sum, FAS, 33.1.4) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Cruise control failure	Breakdown notice: - none	- Cruise control available only after diagnostic fault codes are cleared from control module fault memory.
MSD87-6Z	0xCDA004	13475844	Message (request, wheel torque, drive train, sum, FAS, 33.1.4) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.08 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Cruise control failure	Breakdown notice: - none	- none
MSD87-6Z	0xCDA008	13475848	Message (request, wheel torque, drive train, sum, FAS, 33.1.4) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical sys	None	- 750 ms	- none	none	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Cruise control failure	Breakdown notice: - none	- Cruise control available only after diagnostic fault codes are cleared from control module fault memory.

MSD87-6Z	0xCDA102	13476088	Message (roadway inclination, 56.1.2) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors whether the specified message has not been received. If the message fails to appear then a diagnostic fault code is generated.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	- The diagnostic fault code is logged when the fault remains present for more than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- Data configured
MSD87-6Z	0xCDA104	13476100	Message (roadway inclination, 56.1.2) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDA108	13476104	Message (roadway inclination, 56.1.2) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Integrated Chassis Management transmitter	The diagnostic function monitors whether the specified message has not been received. If the message fails to appear then a diagnostic fault code is generated.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	- The diagnostic fault code is logged when the fault remains present for more than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- Data configured
MSD87-6Z	0xCDA204	13476356	Message (request, power, electrical, electromechanical power steering, 234.0.2) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, electromechanical power steering transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 40 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	No EPS is currently being installed in vehicles with MSD85	Possible apparent symptoms: - The engine can stall in response to rapid steering motion to full-lock.	Breakdown notice: - none	- none
MSD87-6Z	0xCDA302	13476610	Message (vehicle standstill, 263.1.4) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - Never drive off with EMF electromechanical parking brake engaged!	- If an error related to redundant information from the DMC occurs at the same time there will be no torque reduction during attempts to accelerate against an engaged EMF electromechanical parking brake. As a worst-case scenario this could damage the brake system and the drivetrain.
MSD87-6Z	0xCDA304	13476612	Message (vehicle standstill, 263.1.4) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 40 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - Never drive off with EMF electromechanical parking brake engaged!	- If an error related to redundant information from the DMC occurs at the same time there will be no torque reduction during attempts to accelerate against an engaged EMF electromechanical parking brake. As a worst-case scenario this could damage the brake system and the drivetrain.
MSD87-6Z	0xCDA308	13476616	Message (vehicle standstill, 263.1.4) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Dynamic Stability Control transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 20 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	FR message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - Never drive off with EMF electromechanical parking brake engaged!	- If an error related to redundant information from the DMC occurs at the same time there will be no torque reduction during attempts to accelerate against an engaged EMF electromechanical parking brake. As a worst-case scenario this could damage the brake system and the drivetrain.
MSD87-6Z	0xCDA602	13477378	Message (request, torque, crankshaft, gearbox 2, 0xA0) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the currency of the message.	U118D	Message Monitoring Torque Request Crankshaft Transmission Data2 via FA-CAN Alive Check			The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.6 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus, manipulate message, freeze keep-alive signal and recalculate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDA604	13477380	Message (request, torque, crankshaft, gearbox 2, 0xA0) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors reception of the message.	U118E1	Lost Communication With Torque Request Crankshaft Transmission Data2 via FA-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 1.2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDA608	13477384	Message (request, torque, crankshaft, gearbox 2, 0xA0) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the checksum of the message.	U118E2	Message Monitoring Torque Request Crankshaft Transmission Data2 via FA-CAN Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.6 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus and use CAPL script to manipulate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDA702	13477634	Message (vehicle standstill parking brake, 0x2DC) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, parking brake transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - Never drive off with EMF electromechanical parking brake engaged!	- If an error related to redundant information from the DMC occurs at the same time there will be no torque reduction during attempts to accelerate against an engaged EMF electromechanical parking brake. As a worst-case scenario this could damage the brake system and the drivetrain.
MSD87-6Z	0xCDA704	13477636	Message (vehicle standstill parking brake, 0x2DC) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, parking brake transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - Never drive off with EMF electromechanical parking brake engaged!	- If an error related to redundant information from the DMC occurs at the same time there will be no torque reduction during attempts to accelerate against an engaged EMF electromechanical parking brake. As a worst-case scenario this could damage the brake system and the drivetrain.
MSD87-6Z	0xCDA708	13477640	Message (vehicle standstill parking brake, 0x2DC) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, parking brake transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - Never drive off with EMF electromechanical parking brake engaged!	- If an error related to redundant information from the DMC occurs at the same time there will be no torque reduction during attempts to accelerate against an engaged EMF electromechanical parking brake. As a worst-case scenario this could damage the brake system and the drivetrain.
MSD87-6Z	0xCDA804	13477892	Message (relative time, 0x32B) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, instrument panel transmitter	The diagnostic function monitors reception of the message.	U1101	Lost Communication With Ambient Temperature/Relative Time	Communication	Ambient Temperature/Relative Time	The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 16 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: MIL on (probably only in US, please check this)	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDA904	13478148	Message (status, trailer, 0x2E4) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, trailer module transmitter	The diagnostic function monitors reception of the message.	U0137	Lost Communication With Trailer Brake Control Module			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 200 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDAB04	13478660	Message (reverse gear, 0x38d) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, footwell module transmitter	The diagnostic function monitors reception of the message.	U112B	Lost Communication With Reverse Status			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 40 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Only F10 relevant! No manual transmission on F01!	Possible apparent symptoms: - Accelerator pedal progression failure	Breakdown notice: - none	- none
MSD87-6Z	0xCDAC04	13478916	Message (status, transmission control unit, 0x39A) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, EGS transmitter	The diagnostic function monitors reception of the message.	U11A5	Lost Communication With Status TCM via FA-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDAD04	13479172	Message (control, crash shutdown, electric fuel pump, 0x135) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Crash Safety Module transmitter	The diagnostic function monitors reception of the message.	U112D	Lost Communication With Control Crash Cut-Off EKP (Electrical Fuel Pump)			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 200 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDAE04	13479428	Message (time display, 0x2F9) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, instrument panel transmitter	The diagnostic function monitors reception of the message.	U113C	Lost Communication With Time/Date			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 240 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDAF04	13479684	Message (central locking system and lid status, 0x2FC) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Car Access System transmitter	The diagnostic function monitors reception of the message.	U113A	Lost Communication With Central Locking System Status			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 200 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Message is required only on vehicles with MSA and stratified-charge DI engines	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB002	13479938	Message (data, transmission line, 0x1AF) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, EGS transmitter	The diagnostic function monitors the currency of the message.	U1193	Message Monitoring Transmission Data via FA-CAN Alive Check			The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus, manipulate message, freeze keep-alive signal and recalculate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB004	13479940	Message (data, transmission line, 0x1AF) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, EGS transmitter	The diagnostic function monitors reception of the message.	U11A0	Lost Communication With Transmission Data via FA-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.8 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB008	13479944	Message (data, transmission line, 0x1AF) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, EGS transmitter	The diagnostic function monitors the checksum of the message.	U1194	Message Monitoring Transmission Data via FA-CAN Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- None	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus and use CAPL script to manipulate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB102	13480194	Message (request, torque, crankshaft, gearbox, 0x0B0) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the currency of the message.	U11AA	Message Monitoring Torque Request Crankshaft Transmission Data via FA-CAN Alive Check			The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus, manipulate message, freeze keep-alive signal and recalculate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none

MSD87-6Z	0xCDB104	13480196	Message (request, torque, crankshaft, gearbox, 0x0B0) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors reception of the message.	U11A8	Lost Communication With Torque Request Crankshaft Transmission Data via FA-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.8 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB108	13480200	Message (request, torque, crankshaft, gearbox, 0x0B0) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the checksum of the message.	U11AC	Message Monitoring Torque Request Crankshaft Transmission Data via FA-CAN Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus and use CAPL script to manipulate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB204	13480452	Message (ambient temperature, 0x2CA) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, instrument panel transmitter	The diagnostic function monitors reception of the message.	U1198	Lost Communication With Ambient Temperature	Communication	Ambient Temperature	The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 16 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: on - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: ML on (probably only in US, please check this)	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB302	13480706	Message (data, display, transmission line, 0x3FD) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus, manipulate message, freeze keep-alive signal and recalculate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB304	13480708	Message (data, display, transmission line, 0x3FD) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB308	13480712	Message (data, display, transmission line, 0x3FD) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the checksum of the message.					The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus and use CAPL script to manipulate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB404	13480964	Message (vehicle condition, 0x3A0) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, junction box electronics transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 100 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB504	13481220	Message (kilometre reading / range, 0x330) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, instrument panel transmitter	The diagnostic function monitors reception of the message.	U111C	Lost Communication With Mileage/Range			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 120 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB602	13481474	Message (clamp, 0x12F) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, Car Access System transmitter	The diagnostic function monitors the currency of the message.	U111D	Message Monitoring Terminal Status Alive Check			The fault is recognized when the keep-alive counter has not timed the message. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 1 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Next engine start may take longer - No automatic car wash function	Breakdown notice: - none	- none
MSD87-6Z	0xCDB604	13481476	Message (clamp, 0x12F) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Car Access System transmitter	The diagnostic function monitors reception of the message.	U111E	Lost Communication With Terminal Status			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Next engine start may take longer - No automatic car wash function	Breakdown notice: - none	- none
MSD87-6Z	0xCDB608	13481480	Message (clamp, 0x12F) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, Car Access System transmitter	The diagnostic function monitors the checksum of the message.	U111F	Message Monitoring Terminal Status Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Next engine start may take longer - No automatic car wash function	Breakdown notice: - none	- none
MSD87-6Z	0xCDB704	13481732	Message (after-running period, voltage supply, 0x3BE) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, Car Access System transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 200 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB804	13481988	Message (request, A/C, 0x2F3) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, integrated automatic heating / air conditioning system transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 40 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - Brief rpm drop when IHKA automatic climate control is activated at idle	Breakdown notice: - none	- none
MSD87-6Z	0xCDB904	13482244	Message (diagnosis, OBD gearbox, 0x396) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS, EL transmitter	The diagnostic function monitors reception of the message.	U11A7	Lost Communication With OBD Data Transmission via FA-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 40 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB902	13482754	Message (request, torque, crankshaft, gearbox 2, 0xA0) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the currency of the message.	U11B3	Message Monitoring Torque Request Crankshaft Transmission Data2 via A-CAN Alive Check			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus, manipulate message, freeze keep-alive signal and recalculate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB904	13482756	Message (request, torque, crankshaft, gearbox 2, 0xA0) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors reception of the message.	U11B4	Lost Communication With Torque Request Crankshaft Transmission Data2 via A-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDB908	13482760	Message (request, torque, crankshaft, gearbox 2, 0xA0) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the checksum of the message.	U11B5	Message Monitoring Torque Request Crankshaft Transmission Data2 via A-CAN Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus and use CAPL script to manipulate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDBC04	13483012	Message (request, power, electrical power control unit, 0x53F) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, power control unit transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 550 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	none	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Effects are not yet known, as EPS has not yet been installed in any vehicle	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDBD04	13483268	Message (status, power generation BN2, 0x2AF) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, power control unit transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	none	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	Effects are not yet known, as PCU Power Control Unit has not yet been installed in any vehicle	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDBE02	13483522	Message (display, engine, crankshaft speed, dynamisation, 0xF8) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, EGS transmitter	The diagnostic function monitors the currency of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus, manipulate message, freeze keep-alive signal and recalculate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDBE04	13483524	Message (display, engine, crankshaft speed, dynamisation, 0xF8) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, EGS transmitter	The diagnostic function monitors reception of the message.					The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.8 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDBF04	13483780	Message (status, transmission control unit, 0x39A) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors reception of the message.	U11A6	Lost Communication With Status TCM via A-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 10 sec.	none	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDC004	13484036	Message (diagnosis, OBD gearbox, 0x396) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors reception of the message.	U11A4	Lost Communication With OBD Data Transmission via A-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 40 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDC102	13484290	Message (data, transmission line, 0x1AF) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the currency of the message.	U11A1	Message Monitoring Transmission Data via A-CAN Alive Check			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	none	Voltage condition: - - Electrical syst	None	- 750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus, manipulate message, freeze keep-alive signal and recalculate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none

MSD87-6Z	0xCDC104	13494292	Message (data, transmission line, 0x1AF) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors reception of the message.	U11A2	Lost Communication With Transmission Data via A-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.8 sec.	none	Voltage condition: - - Electrical syst	None	750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDC108	13494296	Message (data, transmission line, 0x1AF) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the checksum of the message.	U11A3	Message Monitoring Transmission Data via A-CAN Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	none	Voltage condition: - - Electrical syst	None	750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus and use CAPL script to manipulate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDC202	13494546	Message (request, torque, crankshaft, EGS, 0x0B0) not up-to-date, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the currency of the message.	U11AD	Message Monitoring Torque Request Crankshaft Transmission Data via A-CAN Alive Check			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus, manipulate message, freze keep-alive signal and recalculate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDC204	13494548	Message (request, torque, crankshaft, EGS, 0x0B0) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors reception of the message.	U11AE	Lost Communication With Torque Request Crankshaft Transmission Data via A-CAN			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.4 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDC208	13494552	Message (request, torque, crankshaft, EGS, 0x0B0) incorrect checksum, Digital Motor Electronics / Digital Diesel Electronics receiver, twin-clutch gearbox, EGS transmitter	The diagnostic function monitors the checksum of the message.	U11AF	Message Monitoring Torque Request Crankshaft Transmission Data via A-CAN Check Sum Error			The diagnostic fault code is logged when the message has a checksum error. Potential problem source(s): - Fault with transmitting control module	This fault is logged in the control module's fault memory if it remains present for longer than 0.2 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	750 ms	NO	CAN message	Y	- Fault in EGS u-controller - Open CAN bus and use CAPL script to manipulate checksum	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none
MSD87-6Z	0xCDC304	13494804	Message (status, electric fuel pump, 0x33f) missing, Digital Motor Electronics / Digital Diesel Electronics receiver, electric fuel pump transmitter	The diagnostic function monitors reception of the message.	U11 2B	Lost Communication With Status EKP (Electrical Fuel Pump)			The fault is recognized when the message is not received in the specified time. Potential problem source(s): - Fault with transmitting control module	- The diagnostic fault code is logged when the fault remains present for more than 40 sec.	Terminal 15	Voltage condition: - - Electrical syst	None	750 ms	NO	CAN message	Y	- Fault with transmitting control module	- Carry out system analysis.	- ECE emissions warning lamp: off - US emissions warning lamp: off - ECE electronic engine power reduction: off - US electronic engine power reduction: off - CC message: off	none	Possible apparent symptoms: - none	Breakdown notice: - none	- none