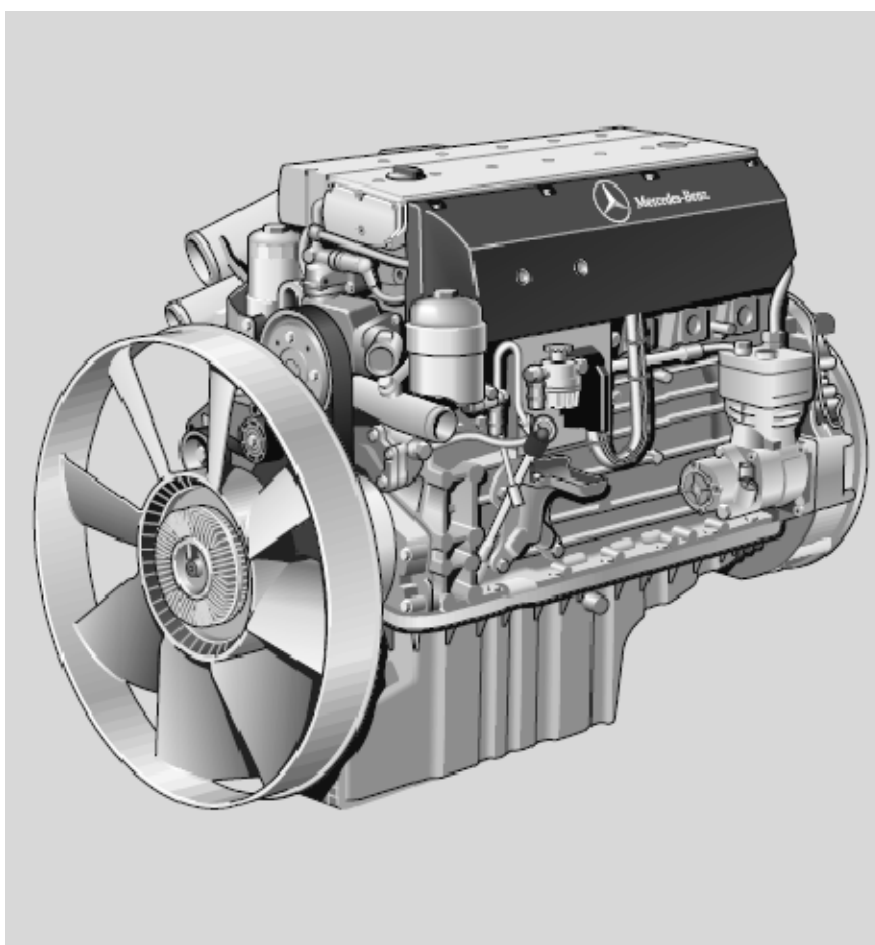


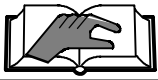
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ENGINE FAULT CODES



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MERCEDES BENZ

ENGINE FAULT CODES

MERCEDES BENZ

ENGINE FAULT CODES



1.1. Fault codes of engine control (PLD-MR) via SAE J1939

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
45/12	16409D)	heater flange	open circuit-fault (heater flange defective)	The heating flange becomes after Kl. 15 uniquely briefly switched on. Here if no breakdown of the battery voltage is recognized, the heating flange is classified as defective. Error threshold and cyclic duration are deposited in the data record
94/0	11715	fuel pressure sensor or fuel pressure & temperature sensor	measuring range exceeded or short circuit to terminal 30 / terminal 15	If a fuel pressure sensor or a combination sensor fuel pressure & temperature is fitted to the engine depends on the engine make
94/1	11716	combination input (FPS, P-DK)	remains under measuring range or short circuit to ground	
94/2	11717	combination input (FPS, P-DK)	signal not plausible	
94/3	13015	combination input (FPS, P-DK)	open circuit	
94/4	13016	combination input (FPS, P-DK)	short circuit to ground	
94/14	11917	Fuel line signal not plausible *	measured value not plausible	
98/2	02026	engine oil circulation*	fluid level too high / too low	- message via CAN: warning oil level too high (=98/0) or advance warning (=98/1) or warning oil level too low (=98/1)



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
	02517	oil level sensor (up to diagnosis version 4)	measured value not plausible	- check oil level, correct if necessary. - check wire for short circuit to battery, repair or replace if necessary. - check oil level sensor, replace if necessary. nominal value: 20-25 Ohm - perform functional check.
98/4	02515	oil level sensor **	measuring range exceeded	- check oil level, correct if necessary. - check wire for short circuit to ground, repair or replace if necessary. - check oil level sensor, replace if necessary. nominal value: 20-25 Ohm - perform functional check.
98/3	02516	oil level sensor **	measured value not plausible	- check oil level, correct if necessary. - check wire for short circuit to ground, repair or replace if necessary. - check oil level sensor, replace if necessary. nominal value: 20-25 Ohm - perform functional check.
98/5	02509	oil level sensor **	open circuit fault	- check oil level sensor , replace if necessary. - check wire for open circuit fault, repair or replace if necessary. - perform functional check

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
100/2	11617	oil pressure sensor	signal not plausible	- check oil level, correct if necessary. - check wire for open circuit fault, repair or replace if necessary. - check oil pressure sensor, replace if necessary. - perform functional check.
100/3	11615	oil pressure sensor	measuring range exceeded	- check oil pressure sensor, replace if necessary. - check wire for open circuit fault or if shortened to battery-voltage, repair if necessary. - perform functional check.
100/4	11616	oil pressure sensor	remains under measuring range	- check oil pressure sensor, replace if necessary. - check wire for short circuit to ground, repair if necessary. - perform functional check.
100/14	02020	engine oil circulation **	pressure too low	- message via CAN: oil pressure advance warning or warning
102/0	11820	booster path *	boost pressure too high	- if fault codes 11415 or 11417 are also present, process them first. - boost pressure system (boost air tubes, boost air cooler) visual check. - perform functional check.
102/1	11818	booster path*	booster path defective	- check tubes and connections between turbocharger, boost air cooler and the boost air tubes for leakage. - check boost air cooler. - perform functional check.



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
102/2	11417	boost pressure sensor	measured value not plausible	- check wire for open circuit fault, repair if necessary. - check boost pressure sensor, replace if necessary. - perform functional check. - if fault code 01315 or 01316 also actual: replace and calibrate ECU engine control (e.g. MR-PLD).
102/3	11415	boost pressure sensor	measuring range exceeded	- check boost pressure, replace if necessary. - check wire for open circuit fault and if shorted to battery voltage, repair if necessary. - perform functional check.
102/4	11416	boost pressure sensor	remains under measuring range	- unplug the connector from combination sensor. fault codes 01215 and 11415 actual: replace combination sensor. - check wire for short circuit to ground, repair if necessary. - perform functional check.
102/13	11873	booster path / boost pressure control **	max. output of booster speed balancing governor	
102/13	11874 order 01874	booster path / boost pressure control	set value deviation too high	(with power reduction) - check booster path fault codes 11874* , 01874**
102/13	11875	booster path / boost pressure control*	boost pressure deviation too high	
102/13	11876	booster path / boost pressure control *	braking power too low	

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
102/13	12415	scavenging gradient sensor (P2S-P3)**	(boost pressure) measuring range exceeded	- check sensor, replace if necessary. - check wire for open circuit
102/13	12416	scavenging gradient sensor (P2S-P3)**	(boost pressure) remains under measuring range	- check sensor, replace if necessary. - check wire for open circuit
103/7	12612	no speed booster 1**	no engine speed	
103/14	12712	no speed booster 2**	no engine speed	
105/0	01822	booster path **	temperature too high	- temperature of boost pressure too high
105/3	11215	boost temperature sensor	measuring range exceeded	- check temperature sensor, replace if necessary. - nominal value: 2.4 k Ohm (corresponds to 21°C) - check wire if connected to battery voltage and if open circuit fault, repair if necessary. - perform functional check.
105/4	11216	boost temperature sensor	remains under measuring range	- check temperature sensor, replace if necessary. - nominal value: 2.4 kOhm (corresponds to 21°C) - check wire for short circuit to ground, repair if necessary. - perform functional check.
110/0	02122	coolant temperature sensor *	temperature too high	



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
110/3	11515	coolant temperature sensor	measuring range exceeded	- check sensor, repair or replace if necessary. - nominal value: 2.4 kOhm (corresponds to 21°C) - check wire for open circuit fault or if shortened to battery voltage, repair if necessary. - perform functional check.
110/4	11516	coolant temperature sensor	remains under measuring range	- check sensor, repair or replace if necessary. - nominal value: 2.4 kOhm (corresponds to 21°C) - check wire for open circuit fault, repair or replace if necessary. - perform functional check.
158/2	12219	terminal 15 detection *	inconsistency MR<->FR terminal 15	- check fuse, replace if necessary. - check wires and plug connectors for open circuit fault, repair or replace if necessary. - perform functional check.
158/2	12319	terminal 50 detection*	inconsistency MR<->FR terminal 50	- check wires and plug connectors for open circuit fault, repair if necessary. - check wires and plug connectors for open circuit fault, repair if necessary.
168/3	07542	terminal 30, battery voltage	nominal range exceeded	- 24 V-Mode: 30 V, 12 V-Mode: 16 V - alternator or governor defect

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
168/4	07543	terminal 30, battery voltage	remains below nominal range	- 24 V-Mode: 22 V, 12 V-Mode: 10 V - battery defect - alternator, governor or fuse defect
174/3	11115	fuel temperature sensor	measuring range exceeded	- check wire, repair or replace if necessary. - nominal value: 2.4 kOhm (corresponds to 21°C). - check wire if shortened to battery voltage and if open circuit fault, repair if necessary. - perform functional check
174/4	11116	fuel temperature sensor	remains under measuring range	- check sensor, repair or replace if necessary. - nominal value: 2.4 kOhm (corresponds to 21°C). - check wire for short circuit to ground, repair if necessary. - perform functional check
175/3	01015	oil temperature sensor	measuring range exceeded	- check oil temperature sensor and replace if necessary. - nominal value: 2.4 kOhm (corresponds to 21°C). - check wire for ground short, repair if necessary. - perform functional check.
175/4	01016	oil temperature sensor	remains under measuring range	- check oil temperature sensor B11 and replace if necessary. - nominal value: 2.4 kOhm (corresponds to 21°C). - check wire for ground short, repair if necessary. - perform functional check



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
190/0	10530	engine speed	engine speed too high	- inform about authorized engine speed - delete fault memory
609/11	04056	internal fault*	backup control defective*	- check all affected connectors, plug connections and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - if fault code is still present, renew and program control unit. - perform functional check.
609/12	01315	ambient pressure sensor	measuring range exceeded	- if fault codes 11415 or 11416 are present, remove them first. - fault code 01315 remains present: read out actual values 014 and 015 and compare with each other. - actual value should be inside tolerance band (+/- 10%) while engine stops.
609/12	01316	ambient pressure sensor	remains under measuring range	- if fault codes 11415 or 11416 are present, remove them first. - fault code 01316 remains present: read out actual values 014 and 015 and compare with each other. - actual value inside tolerance band (+/- 10%) while engine stops: replace and program ECU engine control (e.g. MR-PLD).

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
609/12	04024	internal fault	auxiliary controller defective	- check all affected connectors, plug connections and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - if fault code is still present, renew and program control unit. - perform functional check.
609/12	14034D)	internal fault**	HS-transistor PVB1 high-resistance High-side-Transistor	- Change control unit
609/12	14035D)	internal fault**	HS-transistor PVB2 high-resistance	- Change control unit**
609/12	14036D)	internal fault	HS-transistor PV5 high-resistance	- Change control unit**
609/12	04038	internal fault*	high resistance starter driver (redundant-/auxiliary path)	present, remove this fault code first. - check all affected connectors, plug connections and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check.
609/12	14038	internal fault**	starter driver high-resistance (main path)	- check all affected plugs, plug connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check.



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
609/12	14039	internal fault*	14039 starter driver low-resistance (main path or auxiliary path)	- check all affected plugs, plug connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check
609/12	04040	internal fault	level detection starter defective	- check all affected plugs, plug connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional.
609/12	14041	internal fault (till diagnosis version 4)	PV- Highside-transistor defective	- check all affected plugs, plug connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check.
609/12	14054	internal fault	CAN-data area defective	- check all affected plugs, plug connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - if fault code is still present, replace and program control unit. - -perform functional check.

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
609/12	18039	internal fault**	Starter output stage with low impedance (main branch or branch of emergency) or load (relay) also to high resistance and/or to high inductance.	Main branch: During the controller initialization the two transistors of the main branch are alternating switched on briefly. The level at the starter output changes thereby on "High", the main branch is classified as low impedance. Backup branch: If that changes for clamp 50 signal on "High" and follows this level change a change of the level at the starter output before the starter output stage was activated, the backup branch is classified as low impedance.
609/14	04037	internal fault	cylinder number implausible	- check all affected connectors, plug connections and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check.
609/14	04047	internal fault	characteristic data map defective	- check all affected connectors, plug connections and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check.



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
609/14	04048	internal fault	cylinder number implausible	- check all affected connectors, plug connections and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check.
609/14	14049	internal fault **	parametrization fault	- check all affected plugs, plug connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check.
609/14	04050	internal fault	incorrect hardware detection	- check all affected connectors, plug connections and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - perform functional check.
609/14	04051	internal fault	EEPROM: Checksum failure1 (memory fault)	- check all affected connectors, plug connections and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - if fault code is still present, renew and program control unit. - perform functional check.
609/14	14052	internal fault	EEPROM: CKS- fault 2 (groups vehicle parameters)	- check all affected plugs, plug connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. - if fault code is still present, replace and program control unit. - perform functional check.

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
609/14	24053	internal fault **	EEPROM: Checksum-fault 3 (block production or immobilizer).	- check all affected connectors, plug connections and electric components for damage, loose contact, corrosion etc., and repair if necessary. - if fault code still present, renew and calibrate control unit. - perform functional check .
611/4	06506	oil separator*	short circuit to ground diagnostic line.	
611/12	06564	oil separator*	oil separator defective	
625/2	10102	CAN connection	CAN data not plausible	- work off actual faults of SG FRE apart from CAN data bus fault codes 10201, 00202 and 10203. - perform functional check.
625/2	10104	CAN connection	no connection to CAN	- check CAN connection to SG FRE. - check cables, connectors, plug connectors and electrical components for damage, correct connection, loose contact and corrosion, repair if necessary. - remove engine CAN bus fault in the SG FRE. - perform functional check - communication with the ECU engine control (e.g. MR-PLD) restored: check calibration of ECU engine control (e.g. MR-PLD) for one wire capability.



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
625/14	10100	CAN connection	CAN-High defective	- check for open circuit fault, repair or replace if necessary. - switch on ignition. - delete fault memory in ECU engine control (e.g. MR-PLD). - delete fault memory in SG FRE. - perform functional check .
625/14	10101	CAN connection	CAN-Low defective	- check wire for open circuit fault, repair or replace if necessary. - switch on ignition. - delete fault memory in ECU engine control (e.g. MR-PLD). - delete fault memory in SG FRE. - perform functional.
625/14	10149	CAN connection	parameter fault CAN	- check parameters and - perform functional check
636/1	10310	crankshaft position sensor	crankshaft level too low	- pull out position sensor while engine is stopped and perform visual check. - remove metal pieces/shavings if necessary. - replace position sensor in the case of mechanical damage (clear stress marks). - replace clamping sleeve of the position sensor if necessary. - press-in speed (position) sensor during engine standstill until mechanical limit stop. - perform functional check

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
636/3	10309	crankshaft position	crankshaft sensor open circuit fault	- check wire and position sensor for open circuit fault, replace if necessary. - nominal value 1.2 kOhm.
636/4	10308	crankshaft position	crankshaft sensor ground	- check wire and position sensor for ground short, replace if necessary. - nominal value 1.2 kOhm.
636/7	10311	crankshaft position sensor	crankshaft/camshaft signal assignment not plausible	- pull out position sensor during engine standstill and perform visual check. - replace position sensor in the case of mechanical damage (clear stress marks). - check crankshaft- and camshaft position sensor for tight fitting, replace clamping sleeve if necessary. - check wires at plug connection for damage, correct connection and corrosion, repair if necessary. - check crankshaft- and camshaft position sensor at plug for interchanging.
636/8	10312	crankshaft position	crankshaft timeout - no-crankshaft signal Timeout	- press in speed (position) sensor during engine standstill until mechanical limit stop. - fault code 10309 actual: work off this fault code. - fault code 10312 actual: check crankshaft position sensor, replace if necessary. - nominal value 1.2 kOhm



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
636/14	10313	crankshaft position	crankshaft sensor wrong polarity	- connect the position sensor correctly. - perform functional check.
651/3	24805	control solenoid valve**	shortened to battery voltage-Highside bank 1	- shortened to battery voltage-Highside bank 1
651/3	24905	control solenoid valve**	shortened to battery voltage-Highside bank 2	- switch off solenoid valves bank 2
651/3	24905	control solenoid valve**	shortened to battery voltage-Highside bank 2	- switch off solenoid valves bank 2
651/4	24806	control solenoid valve**	ground short Low side bank 1	- switch off solenoid valves bank 1
651/4	24906	control solenoid valve**	ground short Lowside bank2	- switch off solenoid valves bank 2
651/5	15027	control failure injector-/solenoid valve	control cylinder 1 disturbed	important note: - upon removing mechanical or electrical faults at the injector valves, the engine-smoothness control has to be set to zero.
651/6	25028	solenoid valve cylinder 1**	short circuit injector solenoid valve cylinder 1	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
651/7	15026	contact recognition injector-/solenoid valve	no contact cylinder 1	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
651/12	09044	engine-smoothness cylinder 1	LRR-limitation cylinder 1	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
651/14	09045	individual cylinder adaption	EZA-limitation cylinder 1	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero
652/5	15127	injector-/solenoid valve cylinder 2	control cylinder 2 disturbed / failure	- upon removing mechanical or electrical faults at the injector valves, the engine-smoothness control has to be set to zero. - the engine-smoothness control can be set to zero in the menu "controls" at the menu level "check engine-smoothness control".
652/6	25128	solenoid valve cylinder 2**	short circuit injector-/	- check electrical screw connections of the affected injector valve for short circuit. - disconnect electrical screw connections of the affected injector valve.



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
652/7	15126	contact recognition injector-/solenoid valve cylinder 2	no contact cylinder 2	- upon removing mechanical or electrical faults at the injector valves, the engine-smoothness control has to be set to zero. - the engine-smoothness control can be set to zero in the menu "controls" at the menu level "check engine-smoothness control".
652/12	09144	injector-/solenoid valve cylinder 2	engine-smoothness control: LRR-limitation cylinder	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
652/14	09145	injector-/solenoid valve cylinder	individual cylinder adaptation: EZA-limitation cylinder	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero
653/5	15227	injector-/solenoid valve cylinder 3	control cylinder 3 disturbed / failure	important note: - upon removing mechanical or electrical faults at the injector valves, the engine-smoothness control has to be set to zero.
653/6	25228	injector-/solenoid valve cylinder 3**	short circuit injector-/ solenoid valve cylinder 3	- check electrical screw connections of the affected injector valve for short circuit. - disconnect electrical screw connections of the affected injector valve.

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
653/7	15226	injector-/sole-noid valve cylinder 3	contact recognition injector-/sole-noid valve: no contact cylinder 3	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
653/12	09244	injector-/sole-noid valve: cylinder 3	engine-smoothness control: LRR-limitation cylinder	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
653/14	09245	injector-/sole-noid valve: cylinder 3	individual cylinder adaptation: EZA-limitation cylinder 3	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
654/5	15327	control failure injector-/sole-noid valve	contact recognition injector-/solenoid valve: no contact cylinder 4	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
654/6	25328	injector-/sole-noid valve cylinder 4**	short circuit injector-/solenoid valve cylinder 4	- check electrical screw connections of the affected injector valve for short circuit. - disconnect electrical screw connections of the affected injector valve.
654/7	15326	injector-/sole-noid valve cylinder 4	contact recognition injector-/solenoid valve: no contact cylinder 4	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
654/12	09344	injector-/sole-noid valve cylinder 4	engine-smoothness control: LRR-limitation cylinder 4	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
654/14	09345	injector-/sole-noid valve cylinder 4	individual cylinder adaption: EZA-limitation cylinder 4	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
655/5	15427	injector-/sole-noid valve cylinder 5	contact recognition injector-/solenoid valve: no contact cylinder 5	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
655/6	25428	injector-/sole-noid valve cylinder 5 **	short circuit injector-/solenoid valve cylinder 5	- check electrical screw connections of the affected injector valve for short circuit. - disconnect electrical screw connections of the affected injector valve.
655/7	15426	injector-/sole-noid valve cylinder 5	contact recognition injector-/solenoid valve: no contact cylinder 5	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
655/12	09444	injector-/sole-noid valve cylinder 5	engine-smoothness control: LRR-limitation cylinder 5	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
655/14	09445	injector-/sole-noid valve cylinder 5	individual cylinder adaptation: EZA-limitation cylinder 5	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
656/5	15527	injector-/sole-noid valve cylinder 6	control failure injector-/sole-noid valve: control cylinder 6 disturbed	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
656/6	25528	injector-/sole-noid valve cylinder 6**	short circuit injector-/ sole-noid valve cylinder 6	- check electrical screw connections of the affected injector valve for short circuit. - disconnect electrical screw connections of the affected injector valve.
656/7	15526	injector-/sole-noid valve cylinder 6	contact recognition injector-/ solenoid valve: no contact cylinder 6	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
656/12	09544	injector-/sole-noid valve cylinder 6	engine-smoothness control: LRR-limitation cylinder 6	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
656/14	09545	injector-/sole-noid valve cylinder 6	individual cylinder adaption: EZA-limitation cylinder 6	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI *****	Fault-codes. PLD-MR ***	Description		Repair instructions
657/5	15627	injector-/sole-noid valve cylinder 7	control failure injector-/sole-noid valve	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
657/6	25628	injector-/sole-noid valve cylinder 7**	short circuit injector-/sole-noid valve cylinder 7	- check electrical screw connections of the affected injector valve for short circuit. - disconnect electrical screw connections of the affected injector valve.
657/7	15626	injector-/sole-noid valve cylinder 7	contact recognition injector-/solenoid valve: no contact cylinder 7	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
657/12	09644	injector-/sole-noid valve cylinder 7	engine-smoothness control: LRR-limitation cylinder 7	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
657/14	09645	injector-/sole-noid valve cylinder 7	individual cylinder adaptation: EZA-limitation cylinder 7	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
658/5	15727	injector-/sole-noid valve cylinder 8	control failure injector-/sole-noid valve: control cylinder 8 disturbed	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
658/6	25728	injector-/solenoid valve cylinder 8**	short circuit injector-/ solenoid valve cylinder 8	- check electrical screw connections of the affected injector valve for short circuit. - disconnect electrical screw connections of the affected injector valve.
658/7	15726	injector-/solenoid valve cylinder 8	contact recognition injector-/ solenoid valve: no contact cylinder 8	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
658/12	09744	injector-/solenoid valve cylinder 8	engine-smoothness control: LRR-limitation cylinder 8	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
658/14	09745	injector-/solenoid valve cylinder 8	individual cylinder adaptation: EZA-limitation cylinder 8	important note: - upon removing mechanical or electrical faults at the injector valves, the engine smoothness control has to be set to zero.
677/3	18005	starter control (PLD-MR)**	starter relay external current supply	- check wire - terminal 50 input of starter relay if shortened to battery voltage, repair or replace if necessary. - check starter relay, replace if necessary. - restore electrical connection(s)



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
677/5	18009	starter control (PLD-MR)**	starter relay external current supply	- check of starter relay if shortened to battery voltage, repair or replace if necessary. - check starter relay, replace if necessary. - restore electrical connection(s)
677/6	18008	starter control (PLD-MR)**	short circuit to ground	- check wire - terminal 50 input of the starter relay for short circuit to ground, repair or replace if necessary. - check starter relay, replace if necessary.
677/7	18086	starter control (PLD-MR)**	starter does not engage	- check starter electrically and mechanically. - perform functional check.
677/14	18033	starter control Starter relay is (PLD-MR)**	starter relay fixed in closed position	- check starter relay, replace if necessary. - perform functional
697/3	17007D)	proportional valve (MBR-BK)	shortened to battery voltage (-lead)	- set output off
	17705	proportional valve bank 1PVB	shortened to battery voltage (+lead)*	- set output off 1 2 3 4
697/4	17708	proportional valve bank 1 (PVB 1)	short circuit to ground (+lead)**	- set output off 1 2 3 4

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
697/5	17009	proportional valve 1 (MBR-BK)	open circuit fault** ECU engine control (e.g. MR-PLD) wrong calibration.	- check parametrization. - parameter 06 has to be set to NOT ACTIVE - if not, then the data set of ECU engine control (e.g. MR-PLD) is wrong - replace and program ECU engine control (e.g. MR-PLD). - perform functional check.
697/6	17006	proportional valve 1 (MBR-BK)	short circuit to ground (-lead) ECU engine control (e.g. MR-PLD) wrong calibration.	- check parametrization. - parameter 06 has to be set to NOT ACTIVE - if not, then the data set of ECU engine control (e.g. MR-PLD) is wrong - replace and program ECU engine control (e.g. MR-PLD). - perform functional check.
698/3	17305C) 17307D)	proportional valve 2 (MBR-KD)	shortened to battery voltage (-lead) High Side	- set output off
698/5	17317C) 17309D)	proportional valve 2 (MBR-KD)	open circuit fault Low Side	- set output off
698/6	17306	proportional valve 2 Activation: engine brake reecompression valve (MBR-KD)	short circuit to ground (-lead) High Side wrong calibration	- check calibration, correct if necessary. Parameter 007 has to be set to NOT ACTIVE. - if not, then the data set of the control unit MR is wrong. - replace and program ECU engine control (e.g. MR-PLD). - perform functional check.



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
699/3	17107D)	proportional valve 3	shortened to battery voltage (-lead)*	- set output off
699/5	17109	proportional valve 3	open circuit fault wrong calibration	- check calibration, correct if necessary. Parameter 008 has to be set to NOT ACTIVE. note: - if a Linig-fan is installed, the following calibration applies: a) parameters 8 and 9 have to be set to ACTIVE. b) parameter 14 has to be set to "Type 0".
699/6	17106	proportional valve 3	short circuit to ground (-lead) ECU engine control (e.g. MR-PLD) wrong calibration / short circuit to ground	- check calibration, correct if necessary. Parameter 008 has to be set to NOT ACTIVE. - if the calibration is OK, check wire for short circuit to ground, repair or replace if necessary. - if still no fault can be detected, replace and program ECU engine control (e.g. MR-PLD). - perform functional check.
700/3	17207**	proportional valve 4	shortened to battery voltage (-lead)*	- set output off

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
700/5	17209	proportional valve 4	open circuit fault	note: ECU engine control (e.g. MR-PLD) wrong calibration / open circuit fault - check calibration, correct if necessary. Parameter 009 has to be set to NOT ACTIVE. note: - if a Linnig-fan is installed, the following calibration applies: a) parameters 8 and 9 have to be set to ACTIVE. b) parameter 14 has to be set to "Type 0". - fault code 17209 remains actual: check wires for open circuit fault, repair or replace if necessary. - if no fault can be detected, replace and program ECU engine control (e.g. MR-PLD) - -perform functional check. - set output off



MERCEDES BENZ

ENGINE FAULT CODES

Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
700/6	17206	proportional valve 4	short circuit to ground (-lead)	note: ECU engine control (e.g. MR-PLD) wrong calibration / short circuit to ground - check calibration, correct if necessary. Parameter 009 has to be set to NOT ACTIVE. - check calibration, correct if necessary. Parameter 009 has to be set to NOT ACTIVE. if the calibration is OK, check wire for short circuit to ground, repair or replace if necessary. - if still no fault can be detected, replace and program ECU engine control (e.g. MR-PLD). - perform functional check.
705/3	17405	proportional valve 5	shortened to battery voltage (+lead)*	- set output off
705/4	17408	proportional valve 5	short circuit to ground (+lead)*	- set output off for valve 6 and 5.
705/11	17805	proportional valve bank 2 PVB 2	shortened to battery voltage (+lead)*	- set output off for valve 6 and 5.
705/11	17808	proportional valve bank 2 PVB 2	short circuit to ground (+lead)*	- set output off for valve 6 and 5.
706/3	17609	proportional valve 6	open circuit fault *	- set output off for valve 6
723/3	10409	camshaft position	camshaft sensor open circuit fault	- check wire for open circuit, replace if necessary. - nominal value: 1.2 kOhm

MERCEDES BENZ

ENGINE FAULT CODES



Fault-codes. SAE J1939 SPN/FMI ****	Fault-codes. PLD-MR ***	Description		Repair instructions
723/4	10408	camshaft position sensor	camshaft sensor ground short	- check wire and position sensor for ground short, replace if necessary. - nominal value: 1.2 kOhm necessary.
723/8	10412	camshaft position sensor	camshaft time-out (no camshaft signal) Timeout	- if fault codes 10408 and 10409 are current, remove them first - pull out position sensor during engine standstill and perform visual check - remove metal pieces/shavings if necessary. - replace position sensor in the case of mechanical damage (clear stress marks). - press in speed (position) sensor during engine standstill until mechanical limit stop. - perform functional check.
723/14	10413	camshaft position	camshaft sensor wrong polarity Sensor verpolt	- position sensor correctly with pin of the ECU engine control (e.g. MR-PLD) - perform functional check
986/8	17112	fan speed	no signal (time-out) Timeout	- currently not fan speed detection installed. - check calibration, correct if necessary. Parameter 14 has to be set to "Type 0".

* diagnosis version 5 D=only for the D-Model of PLD-MR control units (diagnosis version 6)

**diagnosis version 6 and newer

*** Minidiag 2 Diagnostic unit

**** Driving panel master gauge (P1)



MERCEDES BENZ

ENGINE FAULT CODES

1.2. Fault codes of vehicle control (ADM2) via SAE J1939

ADM2 fault codes (J1939) SPN/FMI ****	ADM2 fault codes (k-line) ***	Description		Remedial action	Pin
45/3	10003	decompression valve MBR_KD	open circuit	- check wiring - check solenoid valve	15/10
45/4	10004	decompression valve MBR_KD	shorted to ground	- check wiring - check solenoid valve	15/10
84/3	10103	vehicle speed signal C3	open circuit	- check wiring - check parameter 08/01	15/03
84/4	10104	vehicle speed signal C3	shorted to ground	- check wiring	15/03
84/14	10114	vehicle speed signal C3	value not plausible	- check parameter 08/01	15/03
91/0	10200	analog accelerator pedal	accelerator pedal not adjusted	- restart accelerator pedal adjustment routine - check wiring - Limit value idle operation position: 5,0 V - Limit value kick down position: 4,9 V	21/11
91/2	10202	analog accelerator pedal	voltage not plausible	- Pedal unit exchange, if defective - check wiring - Limit value idle operation position: 5,0 V - Limit value kickdown position: 4,9 V	

MERCEDES BENZ

ENGINE FAULT CODES



ADM2 fault codes (J1939) SPN/FMI ****	ADM2 fault codes (k- line) ***	Description		Remedial action	Pin
91/3	10203	analog accelerator pedal	voltage too high or shorted to battery volt- age	- Pedal unit exchange, if de- fective - check wiring - Limit value idle operation position: 5,0 V - Limit value kickdown posi- tion: 4,9 V	21/11
91/4	10204	analog accelerator pedal AFPS	voltage too low or shorted to ground	- Pedal unit exchange, if de- fective - check wiring - Limit value idle operation position: 5,0 V - Limit value kickdown posi- tion: 4,9 V	21/11
98/0	10400	oil level	oil level to high	- Oil discharge with to strong overstocking. - remark: This problem can occur also if in PLD-MR the false type of oil pan were programmed.	PLD- MR
98/1	10401	oil level	low oil level	- refill oil	PLD- MR
98/14	10414	oil level	oil level too low	- refill oil - remark: This problem can occur also if in PLD-MR the false type of oil pan were programmed.	PLD- MR
100/1	10501	oil pressure sensor	low oil pres- sure	- check oil pump and oil cir- cuit	PLD- MR
100/14	10514	oil pressure sensor	oil pressure too low	- check oil pump and oil cir- cuit.	PLD- MR
107/0	10800	air filter sensor	air pressure too high	- check wiring.	15/08
107/3	10803	air filter sensor	open circuit	- check wiring.	15/08



MERCEDES BENZ

ENGINE FAULT CODES

ADM2 fault codes (J1939) SPN/FMI ****	ADM2 fault codes (k- line) ***	Description		Remedial action	Pin
107/4	10804	air filter sensor	shorted to ground	- check wiring.	15/08
110/0	10900	coolant temperature	high coolant temperature	- cooling-water level and cooling circuit check.	PLD- MR
110/14	10914	coolant temperature	coolant temperature too high	- cooling-water level and cooling circuit check.	PLD- MR
111/1	11001	coolant level	low coolant level	- refill coolant - check wiring	15/07
111/3	11003	coolant level	open circuit	- check wiring - Voltage must be larger than 2,0 V.	15/07
111/4	11004	coolant level	shorted to ground	- check wiring.	15/07
158/0	11100	terminal 15 (ignition)	over voltage	- check battery voltage - check parameter 2/08 (24V/12V selection)	21/02
158/1	11101	terminal 15 (ignition)	under voltage	- check battery voltage - check parameter 2/08 (24V/12V selection)	21/02
558/1	11701	idle switch (analog ped- al)	Wiring idle validation switch GAS1 and GAS2 twisted or open circuit at potentiometer ground FP-	- check wiring - Pedal unit exchange, if de- fective	21/12 and 21/13 or 21/14
558/5	11705	idle switch (analog ped- al)	both switches open circuit (GAS2 + GAS1 open)	- check wiring - Pedal unit exchange, if de- fective	21/12 and 21/13
558/12	11712	idle switch (analog ped- al)	both switches closed (GAS2 + GAS1 closed)	- check wiring - Pedal unit exchange, if de- fective	21/12 and 21/13

MERCEDES BENZ

ENGINE FAULT CODES



ADM2 fault codes (J1939) SPN/FMI ****	ADM2 fault codes (k- line) ***	Description		Remedial action	Pin
599/12	11812	cruise control switch CC+ and CC-	both switches closed	- check wiring - check cruise control switch	18/04 and 18/05
601/12	11912	cruise control switch CC+ and CC-	both switches closed	- check wiring - check cruise control switch	18/04 and 18/05
620/3	12103	power supply analog pedal (AFP+)	voltage too high	- supply voltage > 5,2 V.	21/09
620/4	12104	power supply analog pedal (AFP+)	voltage too low	- supply voltage < 4,8 V.	21/09
625/2	12202	CAN link ADM2 - MR	no commu- nication with MR	- check wiring (engine CAN) - check configuration: MR parameter (../..) and ADM2 parameter 1/01 to be set to equal function- ality (One wire capability)	
625/14	12214	CAN link ADM2 - MR	one wire mode	- check wiring (engine CAN) - check configuration: MR parameter (../..) and ADM2 parameter 1/01 to be set to equal function- ality (One wire capability)	
629/12	12312	ADM2	internal error		
677/5	13305	output relay 1	open circuit	- check wiring - check relay 1	15/12
677/6	13306	output relay 1	shorted to ground	- check wiring - check relay 1	15/12
730/0	13900	output relay 2	grid heater: no increasing boost temper- ature after ac- tivation	- check wiring - check relay 2 - check grid heater	15/09



MERCEDES BENZ

ENGINE FAULT CODES

ADM2 fault codes (J1939) SPN/FMI ****	ADM2 fault codes (k- line) ***	Description		Remedial action	Pin
730/1	13901	output relay 2	grid heater: relay perma- nently closed	- check wiring - check relay 2	15/09
730/2	13902	output relay 2	grid heater: relay perma- nently closed	- check wiring - check relay 2	15/09
730/3	13903	output relay 2	voltage too high or shorted to battery volt- age	- check wiring	15/09
730/4	13904	output relay 2	voltage too low or shorted to ground	- check wiring - check relay 2	15/09
974/2	14202	remote pedal HFG	supply volt- age out of range	- limit values for the supply voltage of the HFG: Minimum value: 4,8 V and maximum value: 5,2 V.	18/17
974/3	14203	remote pedal HFG	voltage too high or shorted to battery volt- age	- check wiring - check remote pedal	18/18
974/4	14204	remote pedal HFG	voltage too low or shorted to ground	- check wiring - check remote pedal	18/18
1004/3	14403	output relay 4	open circuit	- check wiring - check relay 4	18/01
1004/4	14404	output relay 4	shorted to ground	- check wiring - check relay 4	18/01
1005/3	14503	output PWM pedalsupply or transmissi- on	open circuit	- check wiring.	15/05
1005/4	14504	output PWM pedalsupply or transmissi- on	shorted to ground	- check wiring.	15/05

MERCEDES BENZ

ENGINE FAULT CODES



ADM2 fault codes (J1939) SPN/FMI ****	ADM2 fault codes (k- line) ***	Description		Remedial action	Pin
1006/3	14603	exhaust brake valve MBR_BK	open circuit	- check wiring - check exhaust brake valve	15/06
1006/4	14604	exhaust brake valve MBR_BK	shorted to ground	- check wiring - check exhaust brake valve	15/06
639/2	14902	J1939 CAN- interface	CAN identifi- ers ETC#1 or ACC#1 miss- ing	- PGN ETC1 was received only once and did not dis- appear.	
1015/1	15001	PWM acceler- ator pedal	no supply voltage	- check wiring	15/05
1015/2	15002	PWM acceler- ator pedal	both signals missing (GAS1 and GAS2)	- check wiring - Pins 21/13, 21/12, 15/05 , 21/14.	
1015/3	15003	PWM acceler- ator pedal	signal GAS2, not available	- check wiring - Pins 21/13, 15/05 , 21/14.	
1015/4	15004	PWM acceler- ator pedal	signal GAS1, not available	- check wiring - Pins 21/12, 15/05 , 21/14.	
1015/5	15005	PWM acceler- ator pedal	accelerator pedal not ad- justed	- restart accelerator pedal adjustment routine	
1015/6	15006	PWM acceler- ator pedal	idle position out of ad- justed range	- restart accelerator pedal adjustment routine	
1015/7	15007	PWM acceler- ator pedal	accelerator pedal out of adjusted range	- restart accelerator pedal adjustment routine	

* diagnosis version 5 D)=only for the D-Model of PLD-MR control units (diagnosis version 6)

** diagnosis version 6 and newer

*** Minidiag 2 Diagnostic unit

**** Driving panel master gauge (P1)

TAMROCK