

OBD II Fault Code List

DME	Engine
MS 41.1 & MS 42.2 (Siemens)	M52, S52, M52 w/ORVR
M5.2 (Bosch),	M44, M62, M73
M5.2.1 (Bosch)	M62MJ98, M73MJ98

NOTE: The fault code information provide in this text is a supplement to the normal DIS diagnostics and test modules for the systems identified above. A brief explanation of why a particular fault may set is provided, however it does not contain a list of associated components which can cause the fault to set.

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
		X	X	1 01	M62/M73MY98 only: EVAP; LDP Valve - Final Stage	Final stage Check	Output digital on/off (active low)	LDP	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
	X			1 01	Ignition Coil Cyl. 2	Ignition Feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.	
X		X		2 02	Running losses valve - Final stage	Final stage Check	Output digital pulse width (active low)	Running losses -valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
	X			2 02	Ignition Coil Cyl. 4	Ignition Feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.	
		X	X	3 03	M62/M73MY98 only: EVAP; Reed Switch not closed, doesn't open or doesn't close	EVAP Monitoring	Input digital 12V on/off	LDP reed contact switch	Within a predetermined time the LDP reed switch signal has to change from high to low or from low to high or LDP reed switch is "low" for longer then the predetermined time.	detailed in OBD II training
	X			3 03	Ignition Coil Cyl. 6	Ignition Feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.	
	X	X	X	4 04	O2-Sensor-Heater, Post Cat.(Bank2), Insufficient Heating.	Final stage Check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	detailed in OBD II training
	X			5 05	Injector Circuit Cylinder 2	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	5 05	O2 Sensor Heater, Pre Cat.(Bank2), insufficient.	Final stage Check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	detailed in OBD II training
	X			6 06	Injector Circuit Cylinder 1	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	6 06	M62/M73MY98 only: CAN- Timeout Instrument Cluster	Timing Check	Input digital 0-12V binary information	Instrument Cluster	The CAN message was not received within the expected time	

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			X	7 07	M62/M73MY98 only: Engine coolant temperature, radiator outlet	Signal Range Check	Input analog 12V voltage	temperature sensor on radiator outlet	Failed the Signal Range check against predefined diagnostic limits	
X		X	X	8 08	Misfire with low fuel detected	Misfire Monitoring	DME internal Values logical	Calculated	Misfire fault was recorded while the low fuel / reserve light in the instrument cluster was illuminated.	detailed in OBD II training
	X			8 08	Mass or Volume Air Flow Circuit, Range/Perf.	Signal Range Check	Input analog 0-5V voltage	HFM	Failed the Signal Range check against predefined diagnostic limits	
X		X	X	10 0A	O2 Sensor Pre Cat. (Bank1)	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line.	Detailed in OBD II training
	X			10 0A	Engine Coolant Temp. Circuit Range/Perf.	Signal Range Check	Input analog 0-5V voltage	Coolant Temp sensor	Signal Range is checked against the predefined diagnostic limits.	
	X			11 0B	EVAP System, Pressure Sensor, Range and Performance.	EVAP Monitoring	Input analog 0-5V voltage	Tank pressure sensor	Signal Range is checked against predefined diagnostic limits	detailed in OBD II training
X		X	X	12 0C	O2 Sensor Post Cat.(Bank1)	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line.	Detailed in OBD II training
	X			12 0C	Throttle Position Sensor	Rationality Check	Input analog 0-5V voltage	Throttle position sensor	Signal Range is checked against the predetermined diagnostic limits. A fault will set if the Air Flow meter value (volume) does not logically match throttle position sensor value (throttle opening).	
X		X	X	13 0D	O2 Sensor Heater Circuit Pre Cat (Bank1)	Final stage Check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	detailed in OBD II training
X		X	X	14 0E	O2-Sensor-Heater, Post Cat. (Bank1), insufficient.	Final stage Check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	detailed in OBD II training
	X			14 0E	Intake Air Temperature Range/Performance	Signal Range Check	Input analog 0-5V voltage	Intake Temp sensor	Signal Range is checked against predefined diagnostic limits	
X		X	X	15 0F	O2 Sensor Pre Cat. (Bank1), Slow Response time	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains too long in either rich or lean condition, the fault will set.	detailed in OBD II training

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X		X	X	16 10	O2-Sensor Pre Cat (Bank 1)	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor takes to switch from rich to lean and vice versa. If it takes too long to switch the fault will set.	detailed in OBD II training
	X			16 10	AC Compressor Pulse Width Signal (E-39 only)	Timing Check	Input digital 0-12V pulse width	IHKA	Plausibility Check of pulse width modulation of the square wave signal frequency and if it's permanently high or low.	
X		X	X	17 11	O2 Sensor Post Cat. (Bank1), Slow Response time	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains too long in either the rich or the lean condition, the fault will set.	detailed in OBD II training
	X			18 12	EWS Signal not present or faulty	DME HW Test SIO	Input binary stream 0-12V Bit information	EWS	During the time out check no signal was present within the specific time or faulty information from serial interface (parity, overrun, etc.)	
		X	X	18 12	O2 Sensor Pre Cat. (Bank2)	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line.	detailed in OBD II training
			X	19 13	M73LEVMY99 only: CAN Signal, Timeout EKAT	Timing Check	Input digital 0-12V binary information	ECU for electrically heated Catalyst	The CAN message was not received within the expected time	
	X			20 14	Check Engine Light, final stage Malfunction	Final stage Check	Output digital steady (active low)	Instrument Cluster	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	20 14	O2 Sensor Post Cat. (Bank2)	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line.	detailed in OBD II training
	X			21 15	VANOS electrical fault, Malfunction	Final stage Check	Output digital on/off (active low)	VANOS valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	21 15	O2 Sensor Pre Cat. (Bank2) Slow Response time	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains too long in either the rich or the lean condition, the fault will set.	detailed in OBD II training
	X			22 16	Injector Circuit Cylinder 3, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	22 16	O2-Sensor Pre Cat (Bank 2)	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor takes to switch from rich to lean and vice versa. If it takes too long to switch the fault will set.	detailed in OBD II training

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	X			23	Injector Circuit Cylinder 6, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	17						
		X		23	O2 Sensor Post Cat. (Bank2) Slow Response time	O2-Sensor Check	Input analog 0-1V (high is rich)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains too long in either the rich or the lean condition, the fault will set.	detailed in OBD II training
	X			24	Injector Circuit Cylinder 4, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
				18						
X		X	X	24	AC Compressor Function	Rationality Check	Input digital 0-12V on/off	IHKA	Fault will set if AC-Switch is off and Compressor Switch is on.	
	X			25	O2 Sensor Heater Circuit Pre Cat (Bank1)	Final stage Check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	detailed in OBD II training
X		X	X	26	Fuel Trim at part load (Bank1), Multiplicative	Fuel System Monitoring	DME internal Values logical	Calculated	Range control of adaptation values	detailed in OBD II training
	X			27	Idle Control Valve Closing Coil, Malfunction	Final stage Check	Output digital pulse width, 120Hz (active low)	Idle control valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
X		X	X	27	Fuel Adaptation Additive at Idle (Bank 1)	Fuel System Monitoring	DME internal Values logical	Calculated	Range control of adaptation values	detailed in OBD II training
X		X	X	28	Fuel Trim (Bank1), Additive	Fuel System Monitoring	DME internal Values logical	Calculated	Range control of adaptation values	detailed in OBD II training
		X	X	29	M62/M73MY98 only: air containment valve for air control of shrouded fuel injector (Bank 1)	Final stage Check	Output digital on/off (active low)	air containment valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
	X			29	Ignition Coil Cyl. 1	Ignition Feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.	
				1D						

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			X	30 1E	M73LEVMY99 only: EKAT- Status 7 - power switch control	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
	X			30 1E	Ignition Coil Cyl. 3	Ignition Feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.	
	X			31 1F	Ignition Coil Cyl. 5	Ignition Feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	The DME initiates the secondary ignition for each cylinder then looks for the feedback through the shunt resistor in the harness to determine if the ignition actually occurred.	
X		X	X	32 20	Idle Control Valve stuck mechanically	Plausibility Check	DME internal Values logical	Idle control Valve	Plausibility check between the actual engine speed and the predetermined engine speed. Fault will set if not within the desired RPM range (+200/-100 rpm)	
			X	33 21	M73LEVMY99 only: EKAT- Status 8 - EKAT-ECU	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
	X			33 21	Injector Circuit Cylinder 5, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	34 22	Fuel Trim (Bank2), Multiplicative	Fuel System Monitoring	DME internal Values logical	Calculated	Range control of adaptation values	detailed in OBD II training
	X			35 23	Secondary Air Injection System el. Pump	Final stage Check	Output digital on/off (active low)	Air pump	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs (0.02A<I<2A).	
X		X	X	35 23	Fuel Adaptation Additive at Idle (Bank 2)	Fuel System Monitoring	DME internal Values logical	Calculated	Range control of adaptation values	detailed in OBD II training
		X	X	36 24	Fuel Trim at part load (Bank2), Additive	Fuel System Monitoring	DME internal Values logical	Calculated	Range control of adaptation values	detailed in OBD II training
X		X	X	39 27	EWS Content of Message	Manipulation Check	Input binary stream 0-12V Bit information	EWS	The content of the binary message received from EWS was invalid	
X		X	X	40 28	Catalyst Efficiency Bank 1, Below Threshold	Catalyst Monitoring	Input analog 0-1V voltage	O2 Sensor pre/post catalyst	Compares the value of the of pre cat O2 sensor to value of the post cat O2 sensor to measure the oxygen storage capability / efficiency of the catalytic converter. The post O2 sensor must be relatively lean.	detailed in OBD II training

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			X	42 2A	M73LEVMY99 only: EKAT- heater for Catalyst 1	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
			X	43 2B	M73LEVMY99 only: EKAT- Status 2 - switch on operating condition catalyst 1	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
			X	44 2C	M73LEVMY99 only: EKAT- Status 3 - power switch Catalyst 1	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
		X	X	45 2D	Catalyst Efficiency Bank 2, Below Threshold	Catalyst Monitoring	Input analog 0-1V voltage	O2 Sensor pre/post catalyst	Compares the value of the pre cat O2 sensor to value of the post cat O2 sensor to measure the oxygen storage capability / efficiency of the catalytic converter. The post O2 sensor must be relatively lean.	detailed in OBD II training
			X	46 2E	M73LEVMY99 only: EKAT- Status 4 - Disconnection heater for Catalyst 2	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
			X	47 2F	M73LEVMY99 only: EKAT- Status 5 - switch on operating condition catalyst 2	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
			X	48 30	M73LEVMY99 only: EKAT- Status 6 - power switch catalyst 2	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
	X			50 32	Running Loss Valve (3/2), final stage	Final stage Check	Output digital on/off (active low)	RL valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
X		X	X	50 32	Cylinder 1 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 1 is longer the fault will set.	detailed in OBD II training
	X			51 33	Shut Off Valve, Malfunction	Final stage Check	Output digital steady (active low)	Shut off valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs (0.02A<i<2A).	
X		X	X	51 33	Cylinder 2 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 2 is longer the fault will set.	detailed in OBD II training

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	X			52 34	Rear Exhaust Valve flap	Final stage Check	Output digital steady (active low)	Valve for exhaust flap	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
X		X	X	52 34	Cylinder 3 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 3 is longer the fault will set.	Detailed in OBD II training
	X			53 35	Idle Control Valve Opening Coil, Malfunction	Final stage Check	Output digital pulse width, 120Hz (active low)	Idle control valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
X		X	X	53 35	Cylinder 4 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 4 is longer the fault will set.	detailed in OBD II training
		X	X	54 36	Cylinder 5 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 5 is longer the fault will set.	detailed in OBD II training
	X			55 37	O2 Sensor Heater Circuit Pre Cat (Bank2)	Final stage Check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	detailed in OBD II training
		X	X	55 37	Cylinder 6 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 6 is longer the fault will set.	detailed in OBD II training
	X			56 38	Ignition Feedback, interruption at shunt resistor	Ignition Feedback	Input analog 32V Voltage	Ignition Shunt Resistor	Check for correct signal voltage If Voltage is 32V (Zener Voltage) than secondary Ignition voltage is detected then there might be a problem with the shunt resistor in the harness.	
		X	X	56 38	Cylinder 7 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 7 is longer the fault will set.	detailed in OBD II training
	X			57 39	Knock Sensor 1 Circuit, (Bank 1)	Circuit continuity Signal Range Check	Input analog 13-19kHz amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.	
		X	X	57 39	Cylinder 8 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 8 is longer the fault will set.	detailed in OBD II training

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	X			59 3B	Knock Sensor 2 Circuit, (Bank 2)	Circuit continuity Signal Range Check	Input analog 13-19kHz amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.	
	X			61 3D	O2 Sensor Heater Circuit Post Cat (Bank2)	Final stage Check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	detailed in OBD II training
	X			62 3E	Secondary Air Inj. System Switching Valve	Final stage Check	Output digital on/off (active low)	Air valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs (0.02A<I<2A).	
X		X	X	62 3E	Random/Multiple Cylinder, Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for a cylinder is longer the fault will set.	detailed in OBD II training
X		X	X	63 3F	Cylinder 1 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 1 is longer the fault will set.	detailed in OBD II training
X		X	X	64 40	Cylinder 2 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 2 is longer the fault will set.	detailed in OBD II training
X		X	X	65 41	Cylinder 3 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 3 is longer the fault will set.	detailed in OBD II training
X	X			65 41	Camshaft Position Sensor Circuit, Malfunction	Rationality Check	Input analog 0-5V phase shift	CAM sensor	Internal check of the phase shift from the cam sensor which should change during every crankshaft revolution. The phase shift occurs due to the 2:1 mechanical relationship between cam and crank.	
X		X	X	66 42	Cylinder 4 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder41 is longer the fault will set.	detailed in OBD II training
		X	X	67 43	Cylinder 5 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 5 is longer the fault will set.	detailed in OBD II training
	X			68 44	EVAP System, Purge Control Valve Circuit	Final stage Check	Output digital steady (active low)	purge valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
		X	X	68 44	Cylinder 6 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 6 is longer the fault will set.	detailed in OBD II training
	X			69 45	Relay Fuel Pump	Final stage Check	Output digital on/off (active low)	Relay fuel pump	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	69 45	Cylinder 7 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 7 is longer the fault will set.	detailed in OBD II training
		X	X	70 46	Cylinder 8 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 8 is longer the fault will set.	detailed in OBD II training
			X	71 47	Cylinder 9 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 9 is longer the fault will set.	detailed in OBD II training
			X	72 48	Cylinder 10 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 10 is longer the fault will set.	detailed in OBD II training
			X	73 49	Cylinder 11 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 11 is longer the fault will set.	detailed in OBD II training
	X			74 4A	Relay AC Compressor	Final stage Check	Output digital on/off (active low)	Relay AC Compr.	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
			X	74 4A	Cylinder 12 Misfire detected, catalyst damaging	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 12 is longer the fault will set.	detailed in OBD II training
X		X		75 4B	Random/Multiple Cylinder, Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for a cylinder is longer the fault will set.	detailed in OBD II training

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
	X			75 4B	O2 Sensor Pre Cat. (Bank1)	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line. The voltage signal has to be within a predetermined range (0,1V - 4,9V) or a fault will set.	detailed in OBD II training
	X			76 4C	O2 Sensor Pre Cat. (Bank2)	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line. The voltage signal has to be within a predetermined range (0,1V - 4,9V) or a fault will set.	detailed in OBD II training
	X	X	X	77 4D	M62/M73MY98 only: air containment valve for air control of shrouded fuel injector (Bank 2)	Final stage Check	Output digital on/off (active low)	air containment valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
	X			77 4D	O2 Sensor Post Cat.(Bank1)	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	The oxygen sensor signal range is checked to determine if electrical shorts exist on the input line. The voltage signal has to be within a predetermined range (0,1V - 4,9V) or a fault will set.	detailed in OBD II training
	X			78 4E	O2 Sensor Post Cat. (Bank2)	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	The voltage signal has to be within a predetermined range (0,1V - 4,9V) or a fault will set.	detailed in OBD II training
X		X	X	78 4E	Crankshaft Position Sensor (too many teeth)	Rationality Check	Input digital 0-12V frequency/pattern	Crank sensor	Crank sensor signal reports that too many teeth were detected within one crankshaft revolution. The fault will set if more teeth was detected than the default value.	
	X			79 4F	O2 Sensor Heater Circuit (Bank1, Sensor2)	Final stage Check	Output digital pulse width (active low)	O2 Sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	detailed in OBD II training
X		X		80 50	Secondary Air Control	Secondary Air Delivery	Input analog 0-1V voltage	O2 Sensor	Checks to see if the O2 sensor reacts to the increase in unmetered air flow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a fault will set.	
	X			80 50	ASC Signal, active too long	Timing Check	Input digital 0-12V timing	ASC	Time out Check, Fault occurs when ASC signal is active for more than 5 seconds	
		X		81 51	M73LEVMY99 only: EKAT-Status 9 - sensor check temperature sensor (1) in battery	Electrically heated catalyst check	Input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
	X			81 51	MSR Signal, active too long	Timing Check	Input digital 0-12V timing	ASC	Time out Check, Fault when MSR signal is active for more than 5 seconds	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
			X	82	M73LEVMY99 only: EKAT - Status 10 - sensor check temperature sensor (2) in battery	Electrical heated catalyst check	Input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
	X			82	EML Signal, active too long	Timing Check	Input digital 0-12V timing	ASC	Time out Check, Fault when EML signal is active for more than 5 seconds	
			X	83	M73LEVMY99 only: EKAT - Status 11 - plausibility check of temperature sensor in battery.	Electrical heated catalyst check	Input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
	X			83	Crankshaft Position Sensor, Malfunction	Rationality Check	Input digital 0-12V frequency/pattern	Crank sensor	Checks for correct signal pattern and correct number of expected flywheel teeth.	
X			X	84	Secondary Air Pump Final stage	Final stage Check	Output digital on/off (active low)	Secondary Air pump	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i>2A).	
X			X	84	M44/M73MY98 only: ODTSLPE: secondary air pump - final stage	Final stage Check	Output digital on/off (active low)	secondary air pump	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i>2A).	
X			X	85	Secondary Air Valve Final stage	Final stage Check	Output digital on/off (active low)	Secondary Air valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i>2A).	
		X	X	91	M62/M73MY98 only: EVAP System, Purge Control Valve Circuit (Bank 2)	Final stage Check	Output digital on/off (active low)	purge valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i>2A).	
X		X		93	EVAP Emission Control System	EVAP Monitoring	Input analog 0-5V voltage	Tank pressure sensor	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i>2A).	detailed in OBD II training
X				94	EVAP System Large Leak	EVAP Monitoring	Input analog 0-5V voltage	Tank pressure sensor	During purging with the open TEV valve the tank pressure sensor must react to the decrease in pressure. It must reach a minimum pressure differential after a predetermined time or a fault will set.	detailed in OBD II training
X				96	Shut Off Valve, Malfunction	Final stage Check	Output digital steady (active low)	Shut off valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs (0.02A<i>i</i>2A).	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
X				97 61	EVAP System Small Leak detected	EVAP Monitoring	Input analog 0-5V voltage	Tank pressure sensor	With the purge open and shut off valve closed the gas tank is introduced to intake manifold vacuum. The tank pressure sensor looks for a predetermined pressure (vacuum) difference within a specific time.	detailed in OBD II training
X		X	X	98 62	EVAP System, Purge Control Valve Circuit	Final stage Check	Output digital on/off (active low)	purge valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
	X			100 64	Internal Control Module, Memory check sum or internal communication	DME HW Test Memory	DME internal Values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.	
		X		100 64	M73LEV only: Transmission/coolant heat exchanger	Final stage Check	Output digital on/off (active low)	Trans/coolant heat exchanger	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
X		X	X	101 65	Internal Control Module, RAM	DME HW Test Memory	DME internal Values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.	
X		X	X	102 66	Internal Control Module, Keep Alive Memory	DME HW Test Memory	DME internal Values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.	
X		X	X	103 67	Internal Control Module, Memory check sum	DME HW Test Memory	DME internal Values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.	
X		X	X	104 68	Internal Control Module, RAM	DME HW Test Memory	DME internal Values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.	
		X	X	105 69	M62/M73MY98 only: Internal Control Module, EEPROM	DME HW Test Memory	DME internal Values logical	DME internally	Internal hardware test of RAM, ROM, and Flash Prom.	
X		X	X	107 6B	Battery Voltage	Signal Range Check	Input analog Batt. Voltage voltage	Battery Voltage	Check that proper battery voltage is present between 9 and 16 Volts. This check is not performed during cranking due to voltage drop.	
X		X	X	108 6C	Battery Voltage Disconnected	Rationality Check	Input analog Batt. Voltage voltage continuity	Battery Voltage	ECU internal test determines if the unit has been disconnected from battery power. This fault could be set by disconnection of the battery or control unit or wiring problem effecting B+ supply or ground.	
X		X	X	111 6F	Crankshaft Position Sensor, Malfunction	Rationality Check	Input digital 0-12V frequency/pattern	Crank sensor	Checks for correct signal pattern and correct number of expected flywheel teeth.	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
X		X	X	112 70	Camshaft Position Sensor Circuit, Malfunction	Rationality Check	Input analog 0-5V phase shift	Cam sensor	Internal check of the phase shift from the cam sensor which should change during every crankshaft revolution. The phase shift occurs due to the 2:1 mechanical relationship between cam and crank.	
X		X	X	115 73	Mass or Volume Air Flow Circuit, Malfunction	Signal Range Check	Input analog 0-5V voltage	HFM	Failed the Signal Range check against predefined diagnostic limits	
X		X	X	117 75	Throttle Position Sensor	Rationality Check	Input analog 0-5V voltage	Throttle position sensor	Signal Range is checked against the predetermined diagnostic limits. A fault will set if the Air Flow meter value (volume) does not logically match throttle position sensor value (throttle opening).	
X		X	X	120 78	Vehicle Speed Sensor	Rationality Check	Input digital 0-12V binary combination	ASC	Signal Range is checked against predefined diagnostic limits. No vehicle speed is observed after a specific time when compared to engine speed and load which is equivalent to a moving vehicle.	
X		X	X	121 79	Load Calculation Cross Check, Range/Perf.	Signal Range Check Rationality Check	Input analog 0-5V voltage	HFM, Throttle pos sensor	Plausibility check between the Throttle Position Sensor Signal and the HFM.	
X		X	X	123 7B	Engine Coolant Temp, Circuit Range/Perf.	Signal Range Check	Input analog 0-5V voltage	Coolant Temp sensor	Signal Range is checked against the predefined diagnostic limits and the calculated temperature.	
X		X	X	124 7C	Intake Air Temperature Range/Performance	Signal Range Check	Input analog 0-5V voltage	Intake Temp. sensor	Signal Range is checked against predefined diagnostic limits	
X		X	X	130 82	Swapped O2 Sensors Pre Cat.	O2 Sensor Check	DME internal Value logical	O2 Sensor	Fault will set if the O2 sensor from one bank shows a rich condition while the other bank shows a lean condition.	detailed in OBD II training
		X		133 85	M73MY98 only: DME Bank identification input	Rationality Check	Input digital on/off	Bank identification- pin wiring harness check	DME identifies itself as a DME_Right or DME_Left depending how the input signal is wired. If it determines that the "learned" value has changed then a fault is detected.	
X		X	X	135 87	Transmission: Torque Reduction	Rationality Check	Input digital 0-12V binary information	EGS	CAN message had an invalid or undefined value	
		X	X	138 8A	AC Compressor Torque Reduction	Timing Check	Input digital 0-12V binary information	IHKA via K- Bus from the Instr. Cluster	Checks CAN message for proper content of pulse width modulation signal (>MY97)	
		X	X	139 8B	Electric Thermostat Control, final stage	Final stage Check	Output digital on/off (active low)	Electric Thermostat	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
			X	140 8C	M73MY98 only: Torque imbalance	Rationality Check	Input analog 0-5V voltage	HFM1 and HFM2	Comparison between the 2 air mass signals. If the difference is too large then a fault is detected. Most likely cause is and air leak.	
		X	X	141 8D	ASC Signal, Plausibility check	Rationality Check	Input digital 0-12V binary combination	ASC	Internal check of binary signals from ASC/MSR/EML. The control unit knows what are the possible combinations of signals. If the combined signals don't match the internal table the fault will be set.	
X		X	X	143 8F	MSR Signal	Timing Check	Input digital 0-12V binary combination	ASC	Internal check of binary signals from ASC/MSR/EML. The control unit knows what are the possible combinations of signals. If the combined signals don't match the internal table the fault will be set.	
X		X	X	144 90	ASC Signal, Plausibility Torque Reduction	Timing Check	Input digital 0-12V binary combination	ASC	Internal check of binary signals from ASC/MSR/EML. The control unit knows what are the possible combinations of signals. If the combined signals don't match the internal table the fault will be set.	
		X	X	147 93	Electric Thermostat Control, Range/Performance.	Final stage Check	Output digital on/off (active low)	Electric Thermostat	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
X		X	X	148 94	EWS Signal not present or faulty	DME HW Test SIO	Input binary stream 0-12V Bit information	EWS	During the time out check no signal was present within the specific time or faulty information from serial interface (parity, overrun, etc.)	
X		X	X	150 96	Injector Circuit Cylinder 1, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
X		X	X	151 97	Injector Circuit Cylinder 2, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
X		X	X	152 98	Injector Circuit Cylinder 3, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
X		X	X	153 99	Injector Circuit Cylinder 4, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
		X	X	154 9A	Injector Circuit Cylinder 5, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
		X	X	155 9B	Injector Circuit Cylinder 6, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	
		X	X	156 9C	Injector Circuit Cylinder 7, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	
		X	X	157 9D	Injector Circuit Cylinder 8, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	
			X	158 9E	Injector Circuit Cylinder 9, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	
			X	159 9F	Injector Circuit Cylinder 10, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	
		X		160 A0	Injector Circuit Cylinder 11, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	
		X		161 A1	Injector Circuit Cylinder 12, Malfunction	Final stage Check	Output digital pulse width (active low)	Injector	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	
		X		163 A3	M73MY98 only: Electric Fuel Pump Relay, Final stage (Bank 2)	Final stage Check	Output digital on/off (active low)	Fuel pump relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	
		X		164 A4	M62/M73MY98 only: EVAP; Barometric Tank Pressure Sensor	Signal Range Check	Input analog 0-5V voltage	Tank pressure sensor	The Signal Range is checked to detect shorts on the input line	
X		X	X	165 A5	Check Engine Light, Final stage Malfunction	Final stage Check	Output digital on/off (active low)	Instrument Cluster	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i>i</i><2A).	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
X		X	X	167 A7	Electric Fuel Pump Relay, Final stage	Final stage Check	Output digital on/off (active low)	Fuel pump relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
X		X	X	168 A8	Idle Control Valve Opening Coil, Malfunction	Final stage Check	Output digital pulse width (active low)	Idle control valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
X		X	X	169 A9	Idle Control Valve Closing Coil, Malfunction	Final stage Check	Output digital pulse width (active low)	Idle control valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
X		X	X	170 AA	AC Compressor Control	Final stage Check	Output digital on/off (active low)	AC Comp.	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. Occurs (0.02A<I<2A).	
X		X	X	175 AF	DISA, Range/Performance	Final stage Check	Output digital on/off (active low)	Disa Valve	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	179 B3	M73MY98 only: AC Compressor Control (Bank 2)	Final stage Check	Output digital on/off (active low)	AC-Control	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
		X	X	183 B7	M62/M73MY98 only: EVAP: Large Leak detected	EVAP Monitoring	Input digital 12V Frequency	LDP reed contact	The frequency of the LDP pumps reed switch is above the predetermined "small" leak range. The larger the leak the higher the frequency will be.	detailed in OBD II training
		X	X	184 B8	M62/M73MY98 only: EVAP: pinched hose check	EVAP Monitoring	Input digital 12V Frequency	LDP reed contact	The frequency of the LDP pumps reed switch is lower then the predetermined limit. The volume of leak is determined to be too small as in a pinched or restricted hose.	detailed in OBD II training
	X			190 BE	Only E39MY98: EVAP: Reed Switch not closed	EVAP Monitoring	Input digital 12V Frequency	LDP reed contact	The fault will set if the signal from LDP reed switch is "low" for longer then the predetermined time.	detailed in OBD II training
	X			191 BF	Only E39MY98: EVAP: Reed Switch doesn't open	EVAP Monitoring	Input digital 12V on/off	LDP reed contact	Within a predetermined time the LDP reed switch signal has to change from high to low or a fault will set.	detailed in OBD II training
	X			192 C0	Only E39MY98: EVAP: Reed Switch doesn't close	EVAP Monitoring	Input digital 12V on/off	LDP reed contact	Within a predetermined time the LDP reed switch signal has to change from high to low or a fault will set.	detailed in OBD II training

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
	X			193 C1	Only E39MY98: EVAP: Clamped Tube Check	EVAP Monitoring	Input digital 12V Frequency	LDP reed contact	The frequency of the LDP pumps reed switch is lower than the predetermined limit. The volume of leak is determined to be too small as in a pinched or restricted hose.	detailed in OBD II training
	X			194 C2	Only E39MY98: EVAP: Large Leak detected	EVAP Monitoring	Input digital 12V Frequency	LDP reed contact	The frequency of the LDP pumps reed switch is above the predetermined "small" leak range. The larger the leak the higher the frequency will be.	detailed in OBD II training
	X			195 C3	Only E39MY98: EVAP: Small Leak detected	EVAP Monitoring	Input digital 12V Frequency	LDP reed contact	The frequency of the LDP pumps reed switch is above the predetermined "small" leak range. The larger the leak the higher the frequency will be.	detailed in OBD II training
	X			196 C4	Only E39MY98: EVAP: el. Valve LDP	Final stage Check	Output digital on/off (active low)	LDP	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
	X			197 C5	Only E39MY98: EVAP: Barometric Pressure Sensor	Signal Range Check	Input analog 0-5V voltage	Tank pressure sensor	The Signal Range is checked to detect shorts on the input line	
	X			200 C8	O2 Sensor Pre Cat. (Bank1), No Activity	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	The oxygen sensor signal has to be oscillating under certain normal engine operation conditions. The O2 amplitude signal check must have a minimum of height.	detailed in OBD II training
	X			201 C9	O2 Sensor Pre Cat. (Bank2) No Activity	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	The oxygen sensor signal has to be oscillating under certain normal engine operation conditions. The O2 amplitude signal check must have a minimum of height.	detailed in OBD II training
	X			202 CA	Fuel Trim (Bank1), O2 Control Limit	Fuel System Monitoring	DME internal Values logical	Calculated	The Controller for Lambda is too long beyond a min. or a max. limit	detailed in OBD II training
	X			203 CB	Fuel Trim (Bank2), O2 Control Limit	Fuel System Monitoring	DME internal Values logical	Calculated	The Controller for Lambda is too long beyond a min. or a max. limit	detailed in OBD II training
	X	X	X	203 CB	M62/M73MY98 only: Ignition Feedback (bank failed)	Ignition Feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	Check for correct signal timing after each Ignition has been initiated by this feedback signal	
		X	X	204 CC	M62/M73MY98 only: rolling code storage	DME HW-Test	DME internal Values	EWS	The EWS3.3 rolling code is not stored properly in the DME internal memory	
	X			204 CC	Idle Control System, Idle Speed not plausible	Rationality Check	DME internal Values logical	calculated	Functional Check between the actual engine speed (RPM) and the predetermined RPM exceeds the maximum deviation of +200/-100 RPM.	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

	M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
				X		Secondary Air Induction System (Bank 2)	Secondary Air Delivery	Input analog 0-1V voltage	O2 Sensor	Checks to see if the O2 sensor reacts to the increase in unmetered air flow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a fault will set.	
		X				EWS Content of Message	Manipulation Check	Input binary stream 0-12V Bit information	EWS	The content of the binary message received from EWS was invalid	
X			X	X		Knock Sensor 1 Circuit, (Bank 1)	Circuit continuity Signal Range Check	Input analog 13-19kHz amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.	
	X					Ignition Feedback, faulty (>2 Cylinders)	Ignition Feedback	Input analog 100 mV Timing	Ignition Shunt Resistor	Check for correct signal timing after each ignition has been initiated by this feedback signal. If more than two ignition is not recognized than there might be a problem in the feedback line itself	
X			X	X		Knock Sensor 2 Circuit, (Bank 2)	Circuit continuity Signal Range Check	Input analog 13-19kHz amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.	
	X					Idle Control Valve stuck mechanically	Rationality Check	DME internal Values logical	calculated	Functional Check against a calculated value by monitoring the flow through the air mass meter to determine is the idle valve is mechanically stuck open. Tested during closed throttle deceleration.	
			X	X		Knock Sensor Signal 3	Circuit continuity Signal Range Check	Input analog 13-19kHz amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.	
	X					VANOS mechanically stuck (Bank1)	Rationality Check	DME internal Values logical	Crank-/ cam sensor	Plausibility check between crank and cam sensor signals (timing) before and after the Vanos is switched active.	
			X	X		Knock Sensor Signal 4	Circuit continuity Signal Range Check	Input analog 13-19kHz amplitude	Knock sensor	Plausibility Check between the knock sensor amplitude during knocking with the internal knock detection mapped DME values.	
			X	X		M62/M73MY98 only: CAN-Index Verification	CAN Message Check	Input digital 0-12V binary information	Any ECU on CAN	Logical check of every ECU on the CAN bus has a CAN message interpretation (refer to CAN-index on the DIS-Tester page) that applies to the vehicle	
	X					Vehicle Speed Sensor	Rationality Check	Input digital 0-12V frequency	ASC	Signal Range is checked against predefined diagnostic limits. No vehicle speed is observed after a specific time when compared to engine speed and load which is equivalent to a moving vehicle.	
	X					ASC/MSR/EML-Interface not plausible	Rationality Check	Input digital 0-12V binary combination	ASC	Internal check of binary signals from ASC/MSR/EML. The control unit knows what are the possible combinations of signals. If the combined signals don't match the internal table the fault will be set.	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input / Output	Explanation	Remark
		X		215 D7	M62/M73MY98 only: CAN-Signal, Timeout Left / Right DME	Timing Check	input digital 0-12V binary information	both DMEs	The Left DME will check for the Right DME and vice versa. If the CAN message was not received by either within the expected time a fault will set.	
	X			216 D8	Gear Selector Signal, Signal Undefined	Rationality Check	input digital 0-12V binary information	EGS	CAN message had an invalid or undefined value	
		X		216 D8	CAN Signal, Timeout ASC	Timing Check	input digital 0-12V binary information	ASC	The CAN message was not received within the expected time	
	X			217 D9	CAN Time Out (EGS1)	DME HW Test CAN	input digital 0-12V binary information	EGS	CAN message between DME/EGS was not received within the expected time	
		X		217 D9	M62/M73MY98 only: CAN-Signal, Timeout EML	Timing Check	input digital 0-12V binary information	EML ECU	The CAN message was not received within the expected time	
	X			219 DB	CAN-Chip, Bus Off	DME HW Test CAN	input digital 0-12V binary information	Any ECU on CAN	Hardware test determines if Can Bus is off line. Data transmission is disturbed.	
X		X	X	220 DC	Knock control, Test pulse	Circuit continuity Signal Range Check	DME internal Values logical	DME internally	The ECU internally generated pulse was not detected. It is used to verify electrical integrity (shorts or disconnection) of the knock control circuitry both internally and externally.	
X		X		222 DE	Knock control, Test pulse (Bank2)	Circuit continuity Signal Range Check	DME internal Values logical	DME Internally	The ECU internally generated pulse was not detected. It is used to verify electrical integrity (shorts or disconnection) of the knock control circuitry both internally and externally.	
	X			222 DE	Insufficient Coolant Temp. to permit Closed Loop Operation.	Rationality Check	input analog 0-5V voltage	Coolant Temp sensor	Comparison of actual coolant temperature against the calculated DME value which varies with the load signal.	
		X		225 E1	M73LEVMY99 only: EKAT-Status 12 - temperature sensor - plausibility power switch	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
		X		226 E2	M73LEVMY99 only: EKAT-Status 13 - - temperature sensor - plausibility power switch	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	
		X		227 E3	M73LEVMY99 only: EKAT-Status 14 - plausibility check of battery disconnection switch	Electrically heated catalyst check	input digital 0-12V binary information	EKAT-ECU	not applied yet - future enhancement for MY99	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
	X			227 E3	Fuel Trim (Bank1), O2 Control Adaptation Limit	Fuel System Monitoring	DME internal Values logical	Calculated	Range control of adaptation values	detailed in OBD II training
	X	X	X	228 E4	M62/M73MJ98 only: Automatic Start, Output (Bank 2)	Final stage Check	Output digital on/off (active low)	Starter Relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
	X			228 E4	Fuel Trim (Bank2), O2 Control Adaptation Limit	Fuel System Monitoring	DME internal Values logical	Calculated	Range control of adaptation values	detailed in OBD II training
	X			229 E5	O2 Sensor Pre Cat. (Bank1) Slow Response time	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains there too long in either the fault will set.	detailed in OBD II training
	X			230 E6	O2 Sensor Pre Cat. (Bank2) Slow Response time	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor stays in its rich or lean state. If it remains there too long in either the fault will set.	detailed in OBD II training
	X			231 E7	O2-Sensor Pre Cat (Bank 1), Switching time too slow	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor takes to switch from rich to lean and vice versa. If it takes too long to switch the fault will set.	detailed in OBD II training
	X			232 E8	O2-Sensor Pre Cat (Bank 2), Switching time too slow	O2-Sensor Check	Input analog 0-5V (high is lean)	O2 Sensor	Checks the amount of time the oxygen sensor takes to switch from rich to lean and vice versa. If it takes too long to switch the fault will set.	detailed in OBD II training
	X			233 E9	Catalyst Efficiency Bank 1, Below Threshold	Catalyst Monitoring	Input analog 0-5V voltage	O2 Sensor pre/post catalyst	Compares the value of the of pre cat O2 sensor to value of the post cat O2 sensor to measure the oxygen storage capability / efficiency of the catalytic converter. The post O2 sensor must be relatively lean.	detailed in OBD II training
	X	X	X	233 E9	M62/M73MJ98 only: Automatic Start, Output	Final stage Check	Output digital on/off (active low)	Starter Relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<i<2A).	
	X			234 EA	Catalyst Efficiency Bank 2, Below Threshold	Catalyst Monitoring	Input analog 0-5V voltage	O2 Sensor pre/post catalyst	Compares the value of the of pre cat O2 sensor to value of the post cat O2 sensor to measure the oxygen storage capability / efficiency of the catalytic converter. The post O2 sensor must be relatively lean.	detailed in OBD II training
		X	X	234 EA	Automatic Start, Input	Rationality Check	Input digital 0-12V on/off	KL50	Fault will set if after a predetermined time with engine revolution is greater than a limit and KL50 still active	
	X			235 EB	O2-Sensor-Heater, Post Cat. (Bank1), Insufficient Heating.	O2-Sensor Check	Internal Shunt Current	O2 Sensor	Checks the amount of time it takes to heat the O2 sensor to a predetermined limit as measured by the change in the lean signal. This test occurs during deceleration only.	detailed in OBD II training

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
X		X	X	236 EC	CAN Time Out (EGS)	DME HW Test CAN	Input digital 0-12V binary information	EGS	CAN message between DME/EGS was not received within the expected time	
	X			236 EC	O2-Sensor-Heater, Post Cat. (Bank2), Insufficient Heating.	O2-Sensor Check	Output digital on/off current	O2 Sensor	Checks the amount of time it takes to heat the O2 sensor to a predetermined limit as measured by the change in the lean/rich signal. This test occurs during deceleration only.	detailed in OBD II training
		X	X	237 ED	Automatic Start, Output	Final stage Check	Output digital on/off (active low)	Starter Relay	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
	X			238 EE	Cylinder 1 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 1 is longer the fault will set.	detailed in OBD II training
	X			239 EF	Cylinder 2 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 2 is longer the fault will set.	detailed in OBD II training
	X			240 F0	Cylinder 3 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 3 is longer the fault will set.	detailed in OBD II training
	X			241 F1	Cylinder 4 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 4 is longer the fault will set.	detailed in OBD II training
	X			242 F2	Cylinder 5 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 5 is longer the fault will set.	detailed in OBD II training
	X			243 F3	Cylinder 6 Misfire detected	Misfire Monitoring	DME internal Values logical	Calculated	Crankshaft speed/acceleration is monitored by the crank sensor. The time for each cylinders combustion is compared against the average of the others. If the time for cylinder 6 is longer the fault will set.	detailed in OBD II training
	X			244 F4	Segment Timing faulty- Flywheel adaptation	Rationality Check	Input digital 0-12V timing	Crank sensor	The flywheel segments are monitored during deceleration to establish a baseline for misfire calculation. If the segments are too long/short (bad flywheel) and exceed the limit a fault will set or one tooth too much/less.	detailed in OBD II training
	X			245 F5	Secondary Air Injection (Bank1), Flow too Low	Secondary Air Delivery	Input analog 0-5V voltage	O2-Sensor signal	Checks to see if the O2 sensor reacts to the increase in unmetered airflow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a fault will set.	

DME: MS41.1 (Siemens), M5.2 (Bosch), M5.2.1 (Bosch)
Engines: M44, M52, S52, M52ORVR, M62, M62MJ98, M73, M73MJ98

Fault Code List OBD II

M44	M52	M62	M73	FC dec hex	Fault Type and Function	OBD II Requirement / type of test	- Signal Type - Signal Range - Detection of	Input /Output	Explanation	Remark
	X			246 F6	Secondary Air Injection (Bank2), Flow too Low	Secondary Air Delivery	Input analog 0-5V voltage	O2-Sensor signal	Checks to see if the O2 sensor reacts to the increase in unmetered airflow generated by the secondary air pump operation. The O2 sensor must sense the lean condition or a fault will set.	
	X			250 FA	EVAP System, TEV	EVAP Monitoring	Input analog 0-5V voltage	O2 Sensor Signal	This functional check looks for the reaction of the O2 sensor signal during canister purging. The O2 sensor, Air Flow meter and RPM values must react to the purging of the canister	detailed in OBD II training
	X			251 FB	EVAP System, Leak Detected (small leak)	EVAP Monitoring	Input analog 0-5V voltage	Tank pressure sensor	With the purge and shut off valves closed the gas tank is introduced to intake manifold vacuum. The tank pressure sensor looks for a predetermined pressure (vacuum) difference within a specific time.	detailed in OBD II training
	X			252 FC	EVAP System, Incorrect Purge Flow	EVAP Monitoring	Input analog 0-5V voltage	Tank pressure sensor	During purging with the open TEV valve the tank pressure sensor must react to the decrease in pressure. It must reach a minimum pressure differential after a predetermined time or a fault will set	detailed in OBD II training
	X			253 FD	EVAP System, Shut Off Valve Stuck closed	EVAP Monitoring	Input analog 0-5V voltage	Tank pressure sensor	The signal from the Tank pressure sensor determines that the tank has a pressure lower (higher vacuum) than the predetermined value. This fault will occur if the Shut off Valve is stuck closed or restricted.	detailed in OBD II training
X		X	X	253 FD	Coolant Fan, Final stage	Final stage Check	Output digital pulse width (active low)	Coolant Fan	The final stage inside the DME will set an internal flag whenever a short to ground, a short to battery voltage or a disconnection between the output transistor and the connected comp. occurs (0.02A<I<2A).	
	X			254 FE	EVAP System, Leak Detected (large leak)	EVAP Monitoring	Input analog 0-5V voltage	Tank pressure sensor	During purging with the open TEV valve the tank pressure sensor must react to the decrease in pressure. It must reach a minimum pressure differential after a predetermined time or a fault will set	detailed in OBD II training
	X			255 FF	EVAP System, TEV Stuck Open	EVAP Monitoring	Input analog 0-5V voltage	purge valve	Check for HC in canister with vehicle speed equal to zero, purge and shutoff valves closed the tank pressure after a predetermined time must be greater than the pressure observed during engine start	detailed in OBD II training