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Instruction Manual & Code Tables
for the R5/FCX(3)
Code/reset tool for BMWs

R5/FCX-3

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IMPORTANT DISCLAIMER - READ NOW

Thank you for purchasing the R5/FCX scanner/resetter for BMWs. This product was designed to provide a long service life and ease of use at a low cost. In designing this product we went to great lengths to assure compatibility and safe operation with the majority of BMWs. As with any software-based device, there is a risk that a small number of unique DME variants may not be compatible with this device. Peake Research Corporation (also referred to as Peake Research) may not be held liable for any problems resulting from incompatibilities. Additionally, the code definitions contained in this manual should be regarded as a starting point for diagnosing a problem - the codes your BMW generates can often be misleading, and there may be errors in our code definitions. Before spending your money on a repair, make sure you have a clear understanding of the problem by using additional sources of information, such as a good quality repair manual (see page 40), expert advice, the Internet, etc... **Peake Research Corporation may not be held liable for any expenses you incur in response to the codes or instructions contained in this manual.**

Table of Contents

1987 Through 2000 (Located under the hood)*

Important Note: Mid-2000-on often use OBD connector, page 4

BMWs' built 1987 to year 2000 have a 20 pin diagnostic connector located in the engine compartment. The car image at right gives a general idea of where the connector can be found depending on year and model. The images below show what the connector looks like, covered and uncovered.
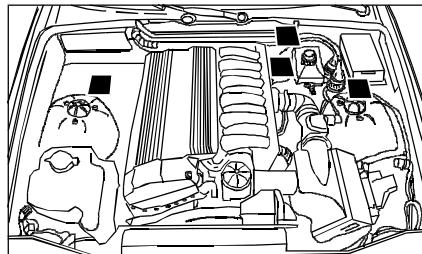
Black squares show possible locations
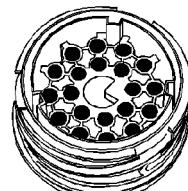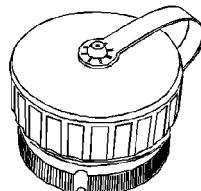
20 pin Connector used in BMWs 1987-2000
Left- dust cap on.   Right- dust cap removed.

Orientation:
BMW located the 20 pin diagnostic connector in several locations in varying orientations. You may find that when the tool is plugged in properly, the face panel is actually upside-down relative to your position.

Plugging tool in properly:
When inserting the R5/FCX, plug it straight in, as you would plug a lamp into a wall socket. The car's connector appears to be a twist-on type, but the R5/FCX DOES NOT twist in (twisting will damage tool

*Not there?
All BMWs 1989 - 1999 have the above connector - no exceptions. Mid 2000 forward is when BMW began to phase out the above connector in favor of the "OBD" connector on page 4.

2001 and Later (Connector Located inside the Car)

Important: an adaptor may be required on some R5/FCX configurations see Appendix, page 39 for details.

To locate the Diagnostic Connector in most BMWs built 2001 and later, open the driver's door, kneel down and look up at the underside of the dashboard. You will see the diagnostic connector near the pedals, above the driver's left leg (see illustration below.) You will see a rectangular access panel, (often embossed with the letters OBD) with a rounded thumb grip you will use to snap it off. The cover will swing downward revealing the 16 pin diagnostic connector inside.
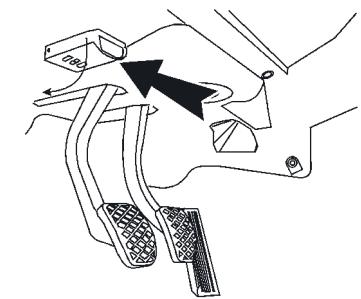
Under the dashboard:

Not there?
Try looking on the passenger side of the center console, or to the left of the drivers left leg. Note: A small number of 2001 and later models also have the 20 pin connector, such as the 2001 X5 and the Z3 up to 2003. See pg 3.
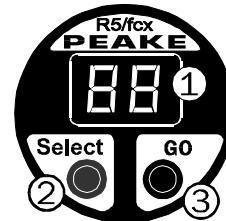
1. **Display**: Shows menu selections, activity and fault codes.

2. **Select button**: Used to review and select the available functions. (See page 5)

3. **GO button:** After using "Select" to choose a function (see page 5). The GO button causes the function to execute.

1.) Turn on key (DO NOT START ENGINE)
2.) Plug tool into diagnostic connector (see page 3 and 4 for description, and page 40 for warning)- Tool is ready to use when it displays "Fc".
3.) Use the "Select" button to select one of the functions shown below
4.) Press "GO" to execute the function

Function Reference

Fault Code Read. The tool automatically starts in this mode, (though it won't read the fault codes until you press the "GO" button). When GO is pressed the unit will attempt to read the fault codes. If there are no faults it will display "--". If it finds faults, it will automatically display the number of the code table to use (see pages 6 through 36). To then view the faults press GO, repeat until the end of the fault list - (tool will show a double dash line. Press GO to return to "Fc")

MIL Reset. (Resets "Check Engine" or "Service Engine Soon") When you have selected cE in the display, you are now ready to reset the MIL "malfunction indicator lamp". Pressing GO will execute the reset. When finished it will return to "Fc". This clears all faults and extinguishes the MIL. To verify the reset, <u>UNPLUG</u> the tool and start the engine- MIL should be off. *(Note: After a MIL reset on some models with Automatic Transmission, the Automatic Transmission Light will be on. To clear it, simply start the engine twice.)*

Oilservice Reset. When you have selected oL in the display, you are now ready to reset the "oilservice" light. Pressing GO will execute the reset. During the reset procedure the display will count from 0 to 2. When finished the display will return to "Fc". Si indicator will indicate a successful reset when finished. (See page 39 for trouble shooting)

Inspection reset. When you have selected "in" in the display, you are now ready to reset the "inspection" light. Pressing GO will execute reset. During the reset procedure the display will count from 0 to 9. When finished the display will return to "Fc". Si indicator will indicate a successful reset when finished. (See page 39 for troubleshooting)

Fii and Cii apply only to 12 cylinder BMWs, all of which have two Engine ECU's. It is the exact same procedure as Fc and cE (see above), except you are reading the 2nd ECU.

Tip 1: The first number is not a code! After pressing "GO" to read codes, the first number shown is the code table to use. See Tip 2.

Tip 2: There is no code table "FF". BMWs built 1995 and earlier will not tell the tool which code table to use, so the tool just says "FF" See below.

Tip 3: Is that a b or a 6? The tool displays a "B" as "b" which looks like a "6". Case does not matter; a "b" on the tool = "B" in the table.

"6B"

When codes starts with a "c" *(applies only to 2002 and later BMWs)*
A "c" indicates a four digit code is coming. Example: code 8888 would be shown as follows.

"c" means code!   This is the code.
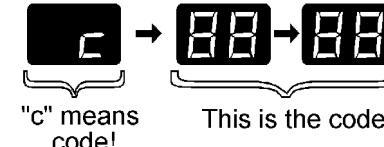
Repeats in loop until GO is pressed.

(If there is no "c" then the codes are only two digits in length.)

1995 and Older BMWs:
If the tool displays "FF" for the table designator, note the year and model of the BMW (and the VDS number if necessary) and find the car in table 1.

Note: VDS number is digit 4 thru 7 in the vin: **WBAAA13LAE57862**

Table 1: "FF" Fault Table Locator

Year	Model	VDS	Table
1987			
1987	325is	AA13	K1
1987	325is A	AA23	K1
1987	325i/4	AD13	K1
1987	325iA/4	AD23	K1
1987	325iC	BB13	K1
1987	325iCA	BB23	K1
1988			
1988	325is	AA13	K1
1988	325is A	AA23	K1
1988	325iX A/2	AB03	K1
1988	325/2	AB54	K1

Year	Model	VDS	Table
1988	325 A/2	AB64	K1
1988	325iX/2	AB93	K1
1988	325i/4	AD13	K1
1988	325iA/4	AD23	K1
1988	325/4	AE54	K1
1988	325 A/4	AE64	K1
1988	325iC	BB13	K1
1988	325iCA	BB23	K1
1988	528e	DK73	K1
1988	528e A	DK83	K1
1988	635CSi	EC74	K1
1988	635CSi A	EC84	K1
1988	735i	GB33	K1
1988	735i A	GB43	K1
1988	735iL A	GC43	K1
1988	750iL A	GC83	K15

Year	Model	VDS	Table
1988 M3			K1
1989			
1989	325i/is	AA13	K1
1989	325iA/2	AA23	K1
1989	325iX A/2	AB03	K1
1989	325iX/2	AB93	K1
1989	325i/4	AD13	K1
1989	325iA/4	AD23	K1
1989	325iX A/4	AE03	K1
1989	325iX/4	AE93	K1
1989	325iC	BB13	K1
1989	325iCA	BB23	K1
1989 M3			K1
1989	635CSi	EC74	K1

1989	635CSi A	EC84	K1
1989	735i	GB33	K1
1989	735i A	GB43	K1
1989	735iL A	GC43	K1
1989	750iL A	GC83	K15
1989	525i	HC13	K1
1989	525i A	HC23	K1
1989	535i	HD13	K1
1989	535i A	HD23	K1
1989	M5		K1

1990

Year	Model	VDS	Table
1990	325i/is/2	AA13	K1
1990	325iA/2	AA23	K1
1990	325iX A/2	AB03	K1
1990	325iX/2	AB93	K1
1990	325i/4	AD13	K1
1990	325iA/4	AD23	K1
1990	325iX A/4	AE03	K1
1990	325iX/4	AE93	K1
1990	325iC	BB13	K1
1990	325iCA	BB23	K1
1990	M3		K1
1990	735i	GB33	K1
1990	735i A	GB43	K1
1990	735iL A	GC43	K1
1990	750iL A	GC83	K15
1990	525i	HC13	K1
1990	525i A	HC23	K1
1990	535i	HD13	K1
1990	535i A	HD23	K1
1990	M5		K1

1991

Year	Model	VDS	Table
1991	325i/is/2	AA13	K1
1991	325iA/2	AA23	K1
1991	325iX A/2	AB03	K1
1991	325iX/2	AB93	K1
1991	325i/4	AD13	K1
1991	325iA/4	AD23	K1
1991	325iX A/4	AE03	K1
1991	325iX/4	AE93	K1
1991	318is/2	AF93	K13
1991	318i/4	AJ93	K13
1991	318iC/2	BA73	K13
1991	325iC	BB13	K1
1991	325iCA	BB23	K1
1991	M3		K1
1991	850i	EG13	K7
1991	850i A	EG23	K7
1991	735i A	GB43	K1
1991	735iL A	GC43	K1
1991	750iL A	GC83	K7
1991	535i	HD13	K1
1991	535i A	HD23	K1
1991	525i	HD53	K10
1991	525i A	HD63	K10
1991	M5	HD93	K1

1992

Year	Model	VDS	Table
1992	318iC/2	BA73	K13
1992	325iC	BB13	K1
1992	325iCA	BB23	K1
1992	318is	BE53	K6
1992	325is	BF33	K10
1992	325is A	BF43	K10
1992	318i	CA53	K6
1992	325i	CB33	K10
1992	325i A	CB43	K10
1992	M3		K1
1992	850i	EG13	K7
1992	850i A	EG23	K7
1992	735i A	GB43	K1
1992	735iL A	GC43	K1
1992	750iL A	GC83	K7
1992	535i	HD13	K1
1992	535i A	HD23	K1
1992	525i	HD53	K10
1992	525i A	HD63	K10
1992	M5	HD93	K1
1992	525iT	HJ63	K10

1993

Year	Model	VDS	Table
1993	325iC	BB13	K1
1993	325iCA	BB23	K1
1993	318is	BE53	K6
1993	318is A	BE63	K6
1993	325is	BF33	K5
1993	325is A	BF43	K5
1993	318i	CA53	K6
1993	318i A	CA63	K6
1993	325i	CB33	K5
1993	325i A	CB43	K5
1993	M3		K5
1993	850i	EG13	K7
1993	850i A	EG23	K7
1993	750iL A	GC83	K7
1993	740i A	GD43	K11
1993	740iL A	GD83	K11
1993	535i	HD13	K1
1993	535i A	HD23	K1
1993	525i	HD53	K5
1993	525i A	HD63	K5
1993	M5	HD93	K1
1993	525iT	HJ63	K5

1994

Year	Model	VDS	Table
1994	318is	BE53	K6
1994	318is A	BE63	K6
1994	325is	BF33	K5
1994	325is A	BF43	K5
1994	325iC	BJ53	K5
1994	325iCA	BJ63	K5
1994	318iC	BK53	K6
1994	318iC A	BK63	K6
1994	318i	CA53	K6
1994	318i A	CA63	K6

1994	325i	CB33	K5
1994	325i A	CB43	K5
1994	840Ci A	EF63	K11
1994	850i A	EG23	K7
1994	850CSi	EG93	K7
1994	750iL A	GC83	K7
1994	740i A	GD43	K11
1994	740iL A	GD83	K11
1994	525i	HD53	K5
1994	525i A	HD63	K5
1994	530i	HE13	K11
1994	530i A	HE23	K11
1994	540i A	HE63	K11
1994	525iT	HJ63	K5
1994	530iT A	HK23	K11

1995

Year	Model	VDS	Table
1995	318is	BE53	K6
1995	318is A	BE63	K6
1995	M3 A	BF03	K5
1995	325is	BF33	K5
1995	325is A	BF43	K5
1995	M3	BF93	K5
1995	325iC	BJ53	K5
1995	325iCA	BJ63	K5
1995	318iC	BK53	K6
1995	318iC A	BK63	K6
1995	318i	CA53	K6
1995	318i A	CA63	K6
1995	325i	CB33	K5
1995	325i A	CB43	K5
1995	318i	CC73	K6
1995	318i A	CC83	K6
1995	318ti	CG53	K6
1995	318ti A	CG63	K6
1995	840Ci A	EF63	K11
1995	850Ci A	EG43	K12
1995	850CSi	EG93	K7
1995	740i A	GD43	K11
1995	740iL A	GJ63	K11
1995	750iL A	GK23	K12
1995	525i	HD53	K5
1995	525i A	HD63	K5
1995	530i	HE13	K11
1995	530i A	HE23	K11
1995	540i	HE53	K11
1995	540i A	HE63	K11
1995	525iT	HJ63	K5
1995	530iT A	HK23	K11

For 1996 and later see page 10

A NOTE ABOUT NON-U.S. BMWS:

The above vehicle reference refers to US specification BMWs only, and does not include any non-US BMW variants. To best use the R5/FCX on your non-US BMW, you will need to determine which of the above most closely matches your BMW. For instance a 1991 320i, is a 3 series, four cylinder, made for non-US markets: In this case, the best table for you to use would be table K13, as the closest US spec car would be a 1991 318i (which is also a 4cyl, 3 series) This method doesn't always work, you may need to experiment to find the correct table.

USE THESE CODE DEFINITIONS WISELY:

The code definitions contained in this manual should be regarded as a starting point for diagnosing a problem. The codes that your BMW generates can be misleading. There may also be errors in this manual. Before spending your money on a repair or replacement parts, make sure you have a clear understanding of the problem by using additional sources of information, such as a good quality repair manual, expert advice, the Internet, etc... Note: Unfortunately, we are not staffed to answer your questions about codes, diagnostics, or BMW problems or offer repair advice. We apologize for any inconvenience this may cause.

"FF" CODE TABLES (FOR 1987-95):

Table K1

1	DME control unit selftest
3	Electrical fuel pump relay
4	Idle speed actuator (open)
5	Evaporative purge control valve
7	Air flow meter
0A	Emission (lambda) control
0F	Check engine lamp
10	Fuel Injectors (Cyl. 1,3,5)
11	Fuel Injectors (Cyl. 2,4,6)
16	Idle speed actuator (close)
17	Oxy sensor heating relay
1C	Oxy sensor
1d	Vehicle speed signal not present
21	AT kick-down prevent solenoid valve
25	Control unit supply
26	Automatic Stability Control / DWA
28	A/C Compressor
2b	Idle CO Potentiometer
2C	Intake air temperature sensor
2d	Coolant temperature sensor
32	Engine drag torque control (MSR)
33	Ignition timing intervention
34	Idle switch
35	Full load switch
36	Torque Convertor Clutch
64	Unspecified DME Output Stage

Table K5

1	Electrical fuel pump relay
2	Idle speed actuator (close)
3	Fuel Injector, Cyl #5
4	Fuel Injector, Cyl #6
5	Fuel Injector, Cyl #4
6	Fuel Injector, Unknown
7	VANOS (Solenoid)
8	Check engine lamp
0d	Oxy sensor
0F	Ignition secondary monitor
10	Crankshaft sensor
11	Camshaft sensor
17	Ignition Coil, Cyl #4
18	Ignition Coil, Cyl #6
19	Ignition Coil, Cyl #5
1A	Control unit supply

Table K6

1	Electrical fuel pump relay
3	Fuel Injectors (Cyl 2,4)
8	Check engine lamp
0C	Throttle position sensor
0F	Knock sensor, Cyl 1-2
10	Camshaft/Cylinder ID sensor
12	Intake air resonance (DISA) valve
1d	Idle Control Valve
20	Fuel Injectors (Cyl 1,3)
24	Evaporative purge control valve
25	Oxy sensor heating relay
29	Air flow sensor

1d	Idle speed actuator (open)
1F	Fuel Injector, Cyl #3
20	Fuel Injector, Cyl #2
21	Fuel Injector, Cyl #1
24	Evaporative purge control valve
26	Oxy sensor heating relay
29	Air mass sensor
2A	Vehicle speed signal not present
30	A/C Compressor control
32	Ignition Coil, Cyl #1
33	Ignition Coil, Cyl #2
34	Ignition Coil, Cyl #3
36	Battery voltage / DME main relay
37	Misfire, Cyl #6
39	Ignition timing intervention
41	A/C Compressor
42	DWA/EWS Input
45	Knock Sensor, Cyl 4-6
46	Knock Sensor, Cyl 1-3
49	Throttle position sensor
4C	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
52	Intervention, MSR
53	Intervention, ASC
64	Output Stage, Group #1
C8	DME Control Unit
C9	Lambda Control #1
CA	Fault code memory error
CC	Idle speed increase during MSR
CE	Knock control test pulse
dC	EWS message

2A	Knock sensor, Cyl 3-4
30	A/C Compressor control
36	Control unit supply
37	Ignition coils
40	Ignition timing intervention
46	Oxy sensor
49	Vehicle speed signal not present
4C	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
51	DWA/EWS input
55	A/C Compressor
64	Unspecfied DME Output Stage
C8	DME control unit selftest
C9	Emission (lambda) control
CE	Knock control test pulse
CF	Knock control regulation
dC	EWS message

Table K7

1	Electrical fuel pump relay
3	Fuel Injectors (Cyl 2,4,6 or 8,10,12)
8	Check engine lamp
10	Camshaft/Cylinder ID sensor
20	Fuel Injectors (Cyl 1,3,5 or 7,9,11)
24	Evaporative purge control valve
25	Oxy sensor heating relay
29	Air flow sensor
30	A/C Compressor control
36	Control unit supply
3F	Torque convertor clutch
40	Ignition timing intervention
46	Oxy sensor
49	Vehicle speed signal not present
4C	Idle CO Potentiometer
4d	Intake air temperature sensor
4E	Coolant temperature sensor
52	Engine drag torque control (MSR)
53	ASC / ZAB
64	Unspecfied DME Output Stage
C8	DME control unit selftest
C9	Emission (lambda) control

Table K10

1	Electrical fuel pump relay

2 Idle speed actuator (close)
3 Fuel Injector, Cyl #1
4 Fuel Injector, Cyl #3
5 Fuel Injector, Cyl #2
6 Fuel Injector, Unknown
8 Check engine lamp
0C Throttle position sensor
10 Camshaft sensor
12 Output Stage, Group #1
13 Output Stage, Group #2
17 Ignition Coil, Cyl #2
18 Ignition Coil, Cyl #3
19 Ignition Coil, Cyl #1
1A Control unit supply
1d Idle speed actuator (open)
1F Fuel Injector, Cyl #5
20 Fuel Injector, Cyl #6
21 Fuel Injector, Cyl #4
24 Evaporative purge control valve
25 Oxy sensor heating relay
29 Air mass sensor
2E Output Stage
30 A/C Compressor control
32 Ignition Coil, Cyl #4
33 Ignition Coil, Cyl #6
34 Ignition Coil, Cyl #5
36 Battery voltage / DME main relay
37 Ignition output stage
3E EML Signal
3F Torque convertor clutch lockup
40 Ignition timing intervention
43 Crankshaft sensor
46 Oxy sensor
49 Vehicle speed signal not present
4C Idle CO Potentiometer
4d Intake air temperature sensor
4E Coolant temperature sensor
51 DWA Input
52 Engine drag torque control (MSR)
53 Intervention, ASC
55 A/C Compressor
64 Output Stage
C8 DME Control Unit
C9 Lambda Control
CA Fault code memory error
Cb Ignition circuit primary monitor
CC Stall protection

Table K11
1 Electrical fuel pump relay
2 Idle speed actuator (close)
3 Fuel Injector, Cyl #1
4 Fuel Injector, Cyl #4
5 Fuel Injector, Cyl #6
6 Fuel Injector, Unknown
7 Fuel Injector, Cyl #7
8 Check engine lamp
0C Oxy sensor, #2
0d Oxy sensor, #1
0F Ignition secondary monitor
10 Crankshaft sensor
11 Camshaft sensor
13 Secondary air pump relay
16 Ignition Coil, Cyl #7
17 Ignition Coil, Cyl #6
18 Ignition Coil, Cyl #4
19 Ignition Coil, Cyl #1
1A Control unit supply
1d Idle speed actuator (open)
1F Fuel Injector, Cyl #5
20 Fuel Injector, Cyl #8
21 Fuel Injector, Cyl #3

23 Fuel Injector, Cyl #2
24 Evaporative purge control valve
25 Oxy sensor heating relay
29 Air mass sensor
2A Vehicle speed signal not present
30 A/C Compressor control
31 Ignition Coil, Cyl #2
32 Ignition Coil, Cyl #3
33 Ignition Coil, Cyl #8
34 Ignition Coil, Cyl #5
36 Battery voltage / DME main relay
3E EML Signal
41 A/C Compressor
42 DWA/EWS Input
43 Knock Sensor, Cyl 7-8
44 Knock Sensor, Cyl 5-6
45 Knock Sensor, Cyl 3-4
46 Knock Sensor, Cyl 1-2
49 Throttle position sensor
4C Idle CO Potentiometer
4d Intake air temperature sensor
4E Coolant temperature sensor
52 Intervention, MSR
53 Intervention, ASC
64 Output Stage, Group #1
65 Output Stage, Group #2
C8 DME Control Unit
C9 Lambda Control #1
CA Fault code memory error
Cb Lambda Control #2
CC Idle speed increase - CAN Bus
Cd Ignition timing intervention
CE Knock control test pulse
d2 CAN message
dC EWS message

Table K12
4 PreCat oxy sensor heater, Bank 2
5 AfterCat oxy sensor heater, Bank 2
8 Misfire w/ low fuel
0A PreCat oxy sensor, Bank 1
0C AfterCat oxy sensor, Bank 1
0d PreCat oxy sensor heater, Bank 1
0E AfterCat oxy sensor heater, Bank 1
0F PreCat oxy sensor response time, Bank 1
10 PreCat oxy sensor aging, Bank 1
11 AfterCat oxy sensor response time, Bank 1
12 PreCat oxy sensor, Bank 2
14 AfterCat oxy sensor, Bank 2
15 PreCat oxy sensor response time, Bank 2
16 PreCat oxy sensor aging, Bank 2
17 AfterCat oxy sensor response time, Bank 2
18 A/C Compressor
1A Fuel trim, multiplicative, Bank 1
1b Fuel trim, QL additive, Bank 1
1C Fuel trim, Ti additive, Bank 1
20 Idle control valve stuck mechanically
22 Fuel trim, multiplicative, Bank 2
23 Fuel trim, QL additive, Bank 2
24 Fuel trim, Ti additive, Bank 2
27 EWS message
28 Catalyst efficiency, Bank 1
2d Catalyst efficiency, Bank 2
32 Misfire, Cyl #1
33 Misfire, Cyl #2
34 Misfire, Cyl #3
35 Misfire, Cyl #4
36 Misfire, Cyl #5
37 Misfire, Cyl #6
38 Misfire, Cyl #7
39 Misfire, Cyl #8
3A Misfire, Cyl #9

3b Misfire, Cyl #10
3C Misfire, Cyl #11
3d Misfire, Cyl #12
3E Misfire, random or unknown cylinder
3F Misfire, catalyst damaging, Cyl #1
40 Misfire, catalyst damaging, Cyl #2
41 Misfire, catalyst damaging, Cyl #3
42 Misfire, catalyst damaging, Cyl #4
43 Misfire, catalyst damaging, Cyl #5
44 Misfire, catalyst damaging, Cyl #6
45 Misfire, catalyst damaging, Cyl #7
46 Misfire, catalyst damaging, Cyl #8
47 Misfire, catalyst damaging, Cyl #9
48 Misfire, catalyst damaging, Cyl #10
49 Misfire, catalyst damaging, Cyl #11
4A Misfire, catalyst damaging, Cyl #12
4b Misfire det, ctlyst damaging, random/unknown Cyl.
4E Crankshaft position sensor (too many teeth)
50 Secondary air control, Bank 1
54 Secondary air pump final stage
55 Secondary air valve final stage
5d EVAP emission control system
5E EVAP large leak
61 EVAP small leak
62 EVAP purge control valve circuit
65 DME, internal RAM failure
66 DME, external RAM failure
67 DME, ROM failure
68 Fault code memory error
6b Control unit supply voltage
6C Battery disconnected
6F Crankshaft position sensor
70 Camshaft position sensor
73 Air mass sensor
75 Throttle position sensor
78 Vehicle speed signal not present
79 Load calculation crosscheck (HFM vs TPS)
7b Coolant temperature sensor
7C Intake air temperature sensor
87 Torque reduction: Transmission
8A A/C Compressor torque reduction
8b Electric thermostat control final stage
8d ASC signal plausibility
8F Intervention, MSR
90 Intervention, ASC
93 Electric thermostat control performance
94 EWS Input
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #2
98 Fuel Injector, Cyl #3
99 Fuel Injector, Cyl #4
9A Fuel Injector, Cyl #5
9b Fuel Injector, Cyl #6
9C Fuel Injector, Cyl #7
9d Fuel Injector, Cyl #8
9E Fuel Injector, Cyl #9
9F Fuel Injector, Cyl #10
A0 Fuel Injector, Cyl #11
A1 Fuel Injector, Cyl #12
A5 Check engine lamp
A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control
d0 Secondary air control, Bank 2
d2 Knock Sensor #1
d3 Knock Sensor #2
d4 Knock Sensor #3
d5 Knock Sensor #4
d8 CAN timeout, ASC
dC Knock control test pulse

dE Knock control test pulse
EA Automatic start input
EC CAN timeout, EGS
Ed Automatic start output
Fd Coolant fan final stage

Table K13
1 Electrical fuel pump relay
3 Fuel Injectors (Cyl 1,3)
8 Check engine lamp
0C Throttle position sensor
10 Camshaft/Cylinder ID sensor
1d Idle Control Valve
20 Fuel Injectors (Cyl 2,4)
24 Evaporative purge control valve
25 Oxy sensor heating relay
29 Air flow sensor

30 A/C Compressor control
36 Control unit supply
40 Ignition timing intervention
46 Oxy sensor
49 Vehicle speed signal not present
4C Idle CO Potentiometer
4d Intake air temperature sensor
4E Coolant temperature sensor
55 A/C Compressor request
64 Unspecfied DME Output Stage
C8 DME control unit selftest
C9 Emission (lambda) control

Table K15
1 DME control unit selftest
3 Electric fuel pump relay / TR Signal
5 Evaporative purge control valve

7 Air flow meter
0A Emission (lambda) control
0F Check engine lamp
10 Fuel Injectors (Cyl. 1,3,5 or 7,9,11)
11 Fuel Injectors (Cyl. 2,4,6 or 8,10,12)
17 Oxy sensor heating relay
1C Oxy sensor
25 Control unit supply
2b Idle CO Potentiometer
2C Intake air temperature sensor
2d Coolant temperature sensor
33 Ignition angle
36 Torque Convertor Clutch
64 Unspecified DME Output Stage

CODE TABLES (FOR 1996 AND LATER)

USE THESE CODE DEFINITIONS WISELY:

The code definitions contained in this manual should be regarded as a starting point for diagnosing a problem. The codes that your BMW generates can be misleading. There may also be errors in this manual. Before spending your money on a repair or replacement parts, make sure you have a clear understanding of the problem by using additional sources of information, such as a good quality repair manual, expert advice, the Internet, etc... Note: Unfortunately, we are not staffed to answer your questions about codes, diagnostics, or BMW problems or offer repair advice. We apologize for any inconvenience this may cause.

Important: If the tool displayed "FF" you are in the wrong table section. Please go back and read page 6

When codes starts with a "c" *(applies only to 2002 and later BMWs)*
A "c" indicates a four digit code is coming. Example: code 8888 would be displayed as follows:
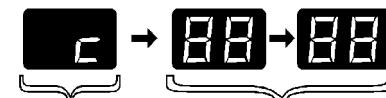
"c" means code!   This is the code.   Until Go — Loops. "Go" displays next code.

If 8888 were a real code, it would cycle "c-88-88" in a loop until "GO" is pressed. If there is no "c" then the codes are only two digits long.

Begin Tables for 1996-2006 BMWs

Table 00
01 Electrical fuel pump relay
02 Idle speed actuator (close)
03 Fuel Injector, Cyl #1
04 Fuel Injector, Cyl #4
05 Fuel Injector, Cyl #6
06 Fuel Injector, Unknown
07 Fuel Injector, Cyl #7
08 Check engine lamp
0C 02 sensor, #2
0D 02 sensor, #1

0F Ignition secondary monitor
10 Crankshaft sensor
11 Camshaft sensor
13 Secondary air pump relay
16 Ignition Coil, Cyl #7
17 Ignition Coil, Cyl #6
18 Ignition Coil, Cyl #4
19 Ignition Coil, Cyl #1
1A Control unit supply
1D Idle speed actuator (open)
1F Fuel Injector, Cyl #5
20 Fuel Injector, Cyl #8
21 Fuel Injector, Cyl #3

23 Fuel Injector, Cyl #2
24 Evaporative purge control valve
25 02 sensor heating relay
29 Air mass sensor
2A Vehicle speed signal not present
30 A/C Compressor control
31 Ignition Coil, Cyl #2
32 Ignition Coil, Cyl #3
33 Ignition Coil, Cyl #8
34 Ignition Coil, Cyl #5
36 Battery voltage - DME main relay
3E EML Signal
41 A/C Compressor

42 DWA/EWS Input
43 Knock Sensor, Cyl 7-8
44 Knock Sensor, Cyl 5-6
45 Knock Sensor, Cyl 3-4
46 Knock Sensor, Cyl 1-2
49 Throttle position sensor
4C Idle CO Potentiometer
4D Intake air temperature sensor
4E Coolant temperature sensor
52 Intervention, MSR
53 Intervention, ASC
64 Output Stage, Group #1
65 Output Stage, Group #2
C8 DME Control Unit
C9 Lambda Control #1
CA Fault code memory error
CB Lambda Control #2
CC Idle speed increase - CAN Bus
CD Ignition timing intervention
CE Knock control test pulse
D2 CAN message
DC EWS message

Table 06

04 PreCat 02 sensor heater, Cyl 5-8
05 AfterCat 02 sensor heater, Cyl 5-8
08 Misfire w/ low fuel
0A PreCat 02 sensor, Cyl 1-4
0C AfterCat 02 sensor, Cyl 1-4
0D PreCat 02 sensor heater, Cyl 1-4
0E AfterCat 02 sensor heater, Cyl 1-4
0F PreCat 02 sensor response time, Cyl 1-4
10 PreCat 02 sensor aging, Cyl 1-4
11 AfterCat 02 sensor response time, Cyl 1-4
12 PreCat 02 sensor, Cyl 5-8
14 AfterCat 02 sensor, Cyl 5-8
15 PreCat 02 sensor response time, Cyl 5-8
16 PreCat 02 sensor aging, Cyl 5-8
17 AfterCat 02 sensor response time, Cyl 5-8
18 A/C Compressor
1A Fuel trim, multiplicative, Cyl 1-4
1B Fuel trim, QL additive, Cyl 1-4
1C Fuel trim, Ti additive, Cyl 1-4
20 Idle control valve stuck mechanically
22 Fuel trim, multiplicative, Cyl 5-8
23 Fuel trim, QL additive, Cyl 5-8
24 Fuel trim, Ti additive, Cyl 5-8
27 EWS message
28 Catalyst efficiency, Cyl 1-4
2D Catalyst efficiency, Cyl 5-8
32 Misfire, Cyl #1
33 Misfire, Cyl #2
34 Misfire, Cyl #3
35 Misfire, Cyl #4
36 Misfire, Cyl #5
37 Misfire, Cyl #6
38 Misfire, Cyl #7
39 Misfire, Cyl #8
3E Misfire, random or unknown cylinder
3F Misfire, catalyst damaging, Cyl #1
40 Misfire, catalyst damaging, Cyl #2
41 Misfire, catalyst damaging, Cyl #3
42 Misfire, catalyst damaging, Cyl #4
43 Misfire, catalyst damaging, Cyl #5
44 Misfire, catalyst damaging, Cyl #6
45 Misfire, catalyst damaging, Cyl #7
46 Misfire, catalyst damaging, Cyl #8
4B Misfire, catalyst damaging, random or unknown cylinder
4E Crankshaft position sensor (too many teeth)
50 Secondary air control, Cyl 1-4
54 Secondary air pump final stage
55 Secondary air valve final stage
5D EVAP emission control system
5E EVAP large leak

61 EVAP small leak
62 EVAP purge control valve circuit
65 DME, internal RAM failure
66 DME, external RAM failure
67 DME, ROM failure
68 Fault code memory error
6B Control unit supply voltage
6C Battery disconnected
6F Crankshaft position sensor
70 Camshaft position sensor
73 Air mass sensor
75 Throttle position sensor
78 Vehicle speed signal not present
79 Load calculation crosscheck (HFM vs TPS)
7B Coolant temperature sensor
7C Intake air temperature sensor
87 Torque reduction: Transmission
8A A/C Compressor torque reduction
8B Electric thermostat control final stage
8D ASC signal plausibility
8F Intervention, MSR
90 Intervention, ASC
93 Electric thermostat control performance
94 EWS Input
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #2
98 Fuel Injector, Cyl #3
99 Fuel Injector, Cyl #4
9A Fuel Injector, Cyl #5
9B Fuel Injector, Cyl #6
9C Fuel Injector, Cyl #7
9D Fuel Injector, Cyl #8
A5 Check engine lamp
A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control
AF DISA (intake resonance) flap
D2 Knock Sensor, Cyl 1-2
D3 Knock Sensor, Cyl 3-4
D4 Knock Sensor, Cyl 5-6
D5 Knock Sensor, Cyl 7-8
D8 CAN timeout, ASC
DC Knock control test pulse
DE Knock control test pulse
EA Automatic start input
EC CAN timeout, EGS
ED Automatic start output
FD Coolant fan final stage

Table 07

08 Misfire w/ low fuel
0A PreCat 02 sensor
0C AfterCat 02 sensor
0D PreCat 02 sensor heater
0E AfterCat 02 sensor heater
0F PreCat 02 sensor response time
10 PreCat 02 sensor aging
11 AfterCat 02 sensor response time
18 A/C Compressor
1A Fuel trim, multiplicative
1B Fuel trim, QL additive
1C Fuel trim, Ti additive
20 Idle control valve stuck mechanically
27 EWS message
28 Catalyst efficiency
32 Misfire, Cyl #1
33 Misfire, Cyl #2
34 Misfire, Cyl #3
35 Misfire, Cyl #4
3E Misfire, random or unknown cylinder
3F Misfire, catalyst damaging, Cyl #1
40 Misfire, catalyst damaging, Cyl #2
41 Misfire, catalyst damaging, Cyl #3
42 Misfire, catalyst damaging, Cyl #4

4B Misfire, catalyst damaging, random or unknown cylinder
4E Crankshaft position sensor (too many teeth)
50 Secondary air control
5D EVAP emission control system
5E EVAP large leak
61 EVAP small leak
62 EVAP purge control valve circuit
65 DME, internal RAM failure
66 DME, external RAM failure
67 DME, ROM failure
68 Fault code memory error
6B Control unit supply voltage
6C Battery disconnected
6F Crankshaft position sensor
70 Camshaft position sensor
73 Air mass sensor
75 Throttle position sensor
78 Vehicle speed signal not present
79 Load calculation crosscheck (HFM vs TPS)
7B Coolant temperature sensor
7C Intake air temperature sensor
87 Torque reduction: Transmission
8F Intervention, MSR
90 Intervention, ASC
94 EWS Input
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #2
98 Fuel Injector, Cyl #3
99 Fuel Injector, Cyl #4
A5 Check engine lamp
A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control
D2 Knock Sensor, Cyl 1-2
D3 Knock Sensor, Cyl 3-4
DC Knock control zero test
DE Knock control test pulse
EC CAN timeout, EGS

Table 09

04 PreCat 02 sensor heater, Bank 2
05 AfterCat 02 sensor heater, Bank 2
08 Misfire w/ low fuel
0A PreCat 02 sensor, Bank 1
0C AfterCat 02 sensor, Bank 1
0D PreCat 02 sensor heater, Bank 1
0E AfterCat 02 sensor heater, Bank 1
0F PreCat 02 sensor response time, Bank 1
10 PreCat 02 sensor aging, Bank 1
11 AfterCat 02 sensor response time, Bank 1
12 PreCat 02 sensor, Bank 2
14 AfterCat 02 sensor, Bank 2
15 PreCat 02 sensor response time, Bank 2
16 PreCat 02 sensor aging, Bank 2
17 AfterCat 02 sensor response time, Bank 2
18 A/C Compressor
1A Fuel trim, multiplicative, Bank 1
1B Fuel trim, QL additive, Bank 1
1C Fuel trim, Ti additive, Bank 1
20 Idle control valve stuck mechanically
22 Fuel trim, multiplicative, Bank 2
23 Fuel trim, QL additive, Bank 2
24 Fuel trim, Ti additive, Bank 2
27 EWS message
28 Catalyst efficiency, Bank 1
2D Catalyst efficiency, Bank 2
32 Misfire, Cyl #1
33 Misfire, Cyl #2
34 Misfire, Cyl #3
35 Misfire, Cyl #4
36 Misfire, Cyl #5
37 Misfire, Cyl #6

38 Misfire, Cyl #7
39 Misfire, Cyl #8
3A Misfire, Cyl #9
3B Misfire, Cyl #10
3C Misfire, Cyl #11
3D Misfire, Cyl #12
3E Misfire, random or unknown cylinder
3F Misfire, catalyst damaging, Cyl #1
40 Misfire, catalyst damaging, Cyl #2
41 Misfire, catalyst damaging, Cyl #3
42 Misfire, catalyst damaging, Cyl #4
43 Misfire, catalyst damaging, Cyl #5
44 Misfire, catalyst damaging, Cyl #6
45 Misfire, catalyst damaging, Cyl #7
46 Misfire, catalyst damaging, Cyl #8
47 Misfire, catalyst damaging, Cyl #9
48 Misfire, catalyst damaging, Cyl #10
49 Misfire, catalyst damaging, Cyl #11
4A Misfire, catalyst damaging, Cyl #12
4B Misfire, catalyst damaging, random or unknown cylinder
4E Crankshaft position sensor (too many teeth)
50 Secondary air control, Bank 1
54 Secondary air pump final stage
55 Secondary air valve final stage
5D EVAP emission control system
5E EVAP large leak
61 EVAP small leak
62 EVAP purge control valve circuit
65 DME, internal RAM failure
66 DME, external RAM failure
67 DME, ROM failure
68 Fault code memory error
6B Control unit supply voltage
6C Battery disconnected
6F Crankshaft position sensor
70 Camshaft position sensor
73 Air mass sensor
75 Throttle position sensor
78 Vehicle speed signal not present
79 Load calculation crosscheck (HFM vs TPS)
7B Coolant temperature sensor
7C Intake air temperature sensor
87 Torque reduction: Transmission
8A A/C Compressor torque reduction
8B Electric thermostat control final stage
8D ASC signal plausibility
8F Intervention, MSR
90 Intervention, ASC
93 Electric thermostat control performance
94 EWS Input
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #2
98 Fuel Injector, Cyl #3
99 Fuel Injector, Cyl #4
9A Fuel Injector, Cyl #5
9B Fuel Injector, Cyl #6
9C Fuel Injector, Cyl #7
9D Fuel Injector, Cyl #8
9E Fuel Injector, Cyl #9
9F Fuel Injector, Cyl #10
A0 Fuel Injector, Cyl #11
A1 Fuel Injector, Cyl #12
A5 Check engine lamp
A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control
D0 Secondary air control, Bank 2
D2 Knock Sensor #1
D3 Knock Sensor #2
D4 Knock Sensor #3
D5 Knock Sensor #4
D8 CAN timeout, ASC
DC Knock control test pulse
DE Knock control test pulse

EA Automatic start input
EC CAN timeout, EGS
ED Automatic start output
FD Coolant fan final stage

Table 0b

01 EVAP LDP Valve final stage
02 EVAP Running losses valve final stage
03 EVAP Reed switch not closed, doesn't open/close
04 PreCat 02 sensor heater, Cyl 5-8
05 AfterCat 02 sensor heater, Cyl 5-8
06 CAN timeout, instrument cluster
07 Engine coolant temperature, radiator outlet
08 Misfire w/ low fuel
0A PreCat 02 sensor, Cyl 1-4
0C AfterCat 02 sensor, Cyl 1-4
0D PreCat 02 sensor heater, Cyl 1-4
0E AfterCat 02 sensor heater, Cyl 1-4
0F PreCat 02 sensor response time, Cyl 1-4
10 PreCat 02 sensor aging, Cyl 1-4
11 AfterCat 02 sensor response time, Cyl 1-4
12 PreCat 02 sensor, Cyl 5-8
14 AfterCat 02 sensor, Cyl 5-8
15 PreCat 02 sensor response time, Cyl 5-8
16 PreCat 02 sensor aging, Cyl 5-8
17 AfterCat 02 sensor response time, Cyl 5-8
18 A/C Compressor
1A Fuel trim, multiplicative, Cyl 1-4
1B Fuel trim, QL additive, Cyl 1-4
1C Fuel trim, Ti additive, Cyl 1-4
1D Air containment valve, shrouded injectors, Cyl 1-4
20 Idle control valve stuck mechanically
22 Fuel trim, multiplicative, Cyl 5-8
23 Fuel trim, QL additive, Cyl 5-8
24 Fuel trim, Ti additive, Cyl 5-8
27 EWS message
28 Catalyst efficiency, Cyl 1-4
2D Catalyst efficiency, Cyl 5-8
32 Misfire, Cyl #1
33 Misfire, Cyl #2
34 Misfire, Cyl #3
35 Misfire, Cyl #4
36 Misfire, Cyl #5
37 Misfire, Cyl #6
38 Misfire, Cyl #7
39 Misfire, Cyl #8
3E Misfire, random or unknown cylinder
3F Misfire, catalyst damaging, Cyl #1
40 Misfire, catalyst damaging, Cyl #2
41 Misfire, catalyst damaging, Cyl #3
42 Misfire, catalyst damaging, Cyl #4
43 Misfire, catalyst damaging, Cyl #5
44 Misfire, catalyst damaging, Cyl #6
45 Misfire, catalyst damaging, Cyl #7
46 Misfire, catalyst damaging, Cyl #8
4B Misfire, catalyst damaging, random or unknown cylinder
4D Air containment valve, shrouded injectors, Cyl 5-8
4E Crankshaft position sensor (too many teeth)
50 Secondary air control, Cyl 1-4
54 Secondary air pump final stage
55 Secondary air valve final stage
5B EVAP purge control valve, Cyl 5-8
5D EVAP emission control system
5E EVAP large leak
61 EVAP small leak
62 EVAP purge control valve circuit
65 DME, internal RAM failure
66 DME, external RAM failure
67 DME, ROM failure
68 Fault code memory error
69 DME, EEPROM failure

6B Control unit supply voltage
6C Battery disconnected
6F Crankshaft position sensor
70 Camshaft position sensor
73 Air mass sensor
75 Throttle position sensor
78 Vehicle speed signal not present
79 Load calculation crosscheck (HFM vs TPS)
7B Coolant temperature sensor
7C Intake air temperature sensor
87 Torque reduction: Transmission
8A A/C Compressor torque reduction
8B Electric thermostat control final stage
8D ASC signal plausibility
8F Intervention, MSR
90 Intervention, ASC
93 Electric thermostat control performance
94 EWS Input
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #2
98 Fuel Injector, Cyl #3
99 Fuel Injector, Cyl #4
9A Fuel Injector, Cyl #5
9B Fuel Injector, Cyl #6
9C Fuel Injector, Cyl #7
9D Fuel Injector, Cyl #8
A4 EVAP Barometric tank pressure sensor
A5 Check engine lamp
A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control
B7 EVAP large leak
B8 EVAP pinched hose check
CB Ignition feedback failed
CC EWS rolling code storage
D0 Secondary air control, Cyl 5-8
D2 Knock Sensor, Cyl 1-2
D3 Knock Sensor, Cyl 3-4
D4 Knock Sensor, Cyl 5-6
D5 Knock Sensor, Cyl 7-8
D6 CAN index verification
D7 CAN timeout, left/right DME
D8 CAN timeout, ASC
D9 CAN signal, EML
DC Knock control test pulse
DE Knock control test pulse
E4 Automatic start output
E9 Automatic start output
EA Automatic start input
EC CAN timeout, EGS
ED Automatic start output
FD Coolant fan final stage

Table 0E

1 EVAP LDP Valve final stage
2 EVAP Running losses valve final stage
3 EVAP Reed switch not closed, doesn't open/close
4 PreCat oxy sensor heater, Bank 2
5 AfterCat oxy sensor heater, Bank 2
6 CAN timeout, instrument cluster
7 Engine coolant temperature, radiator outlet
8 Misfire w/ low fuel
0A PreCat oxy sensor, Bank 1
0C AfterCat oxy sensor, Bank 1
0d PreCat oxy sensor heater, Bank 1
0E AfterCat oxy sensor heater, Bank 1
0F PreCat oxy sensor response time, Bank 1
10 PreCat oxy sensor aging, Bank 1
11 AfterCat oxy sensor response time, Bank 1
12 PreCat oxy sensor, Bank 2
13 CAN timeout, EKAT
14 AfterCat oxy sensor, Bank 2

15 PreCat oxy sensor response time, Bank 2
16 PreCat oxy sensor aging, Bank 2
17 AfterCat oxy sensor response time, Bank 2
18 A/C Compressor
1A Fuel trim, multiplicative, Bank 1
1b Fuel trim, QL additive, Bank 1
1C Fuel trim, Ti additive, Bank 1
1d Air containment valve, shrouded injectors, Bank 1
1E EKAT - Status 7 - power switch control
20 Idle control valve stuck mechanically
21 EKAT - Status 8 - EKAT ECU
22 Fuel trim, multiplicative, Bank 2
23 Fuel trim, QL additive, Bank 2
24 Fuel trim, Ti additive, Bank 2
27 EWS message
28 Catalyst efficiency, Bank 1
2A EKAT - Status 1 - heater disconnection, Catalyst #1
2b EKAT - Status 2 - Switch on operation condition for Catalyst #1
2C EKAT - Status 3 - Power switch for Catalyst #1
2d Catalyst efficiency, Bank 2
2E EKAT - Status 4 - Heater disconnection, Catalyst #2
2F EKAT - Status 5 - Switch on operation condition for Catalyst #2
30 EKAT - Status 6 - Power switch for Catalyst #2
32 Misfire, Cyl #1
33 Misfire, Cyl #2
34 Misfire, Cyl #3
35 Misfire, Cyl #4
36 Misfire, Cyl #5
37 Misfire, Cyl #6
38 Misfire, Cyl #7
39 Misfire, Cyl #8
3A Misfire, Cyl #9
3b Misfire, Cyl #10
3C Misfire, Cyl #11
3d Misfire, Cyl #12
3E Misfire, random or unknown cylinder
3F Misfire, catalyst damaging, Cyl #1
40 Misfire, catalyst damaging, Cyl #2
41 Misfire, catalyst damaging, Cyl #3
42 Misfire, catalyst damaging, Cyl #4
43 Misfire, catalyst damaging, Cyl #5
44 Misfire, catalyst damaging, Cyl #6
45 Misfire, catalyst damaging, Cyl #7
46 Misfire, catalyst damaging, Cyl #8
47 Misfire, catalyst damaging, Cyl #9
48 Misfire, catalyst damaging, Cyl #10
49 Misfire, catalyst damaging, Cyl #11
4A Misfire, catalyst damaging, Cyl #12
4b Misfire detctd, catlyst dmg, random/unknown cyl.
4d Air containment valve, shrouded injectors, Bank 2
4E Crankshaft position sensor (too many teeth)
50 Secondary air control, Bank 1
51 EKAT - Status 9 - Sensor check temperature sensor 1 in batt.
52 EKAT - Status 10 - Sensor check temperature sensor 2 in batt.
53 EKAT - Status 11 - plausibility check of sensor temp. in batt.
54 Secondary air pump final stage
55 Secondary air valve final stage
5b EVAP purge control valve, Bank 2
5d EVAP emission control system
5E EVAP large leak

61 EVAP small leak
62 EVAP purge control valve circuit
64 Transmission/coolant heat exchanger
65 DME, internal RAM failure
66 DME, external RAM failure
67 DME, ROM failure
68 Fault code memory error
69 DME, EEPROM failure
6b Control unit supply voltage
6C Battery disconnected
6F Crankshaft position sensor
70 Camshaft position sensor
73 Air mass sensor
75 Throttle position sensor
78 Vehicle speed signal not present
79 Load calculation crosscheck (HFM vs TPS)
7b Coolant temperature sensor
7C Intake air temperature sensor
82 Swapped oxy sensors, PreCat
85 DME bank identification input
87 Torque reduction: Transmission
8A A/C Compressor torque reduction
8b Electric thermostat control final stage
8C Torque imbalance
8d ASC signal plausibility
8F Intervention, MSR
90 Intervention, ASC
93 Electric thermostat control performance
94 EWS Input
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #2
98 Fuel Injector, Cyl #3
99 Fuel Injector, Cyl #4
9A Fuel Injector, Cyl #5
9b Fuel Injector, Cyl #6
9C Fuel Injector, Cyl #7
9d Fuel Injector, Cyl #8
9E Fuel Injector, Cyl #9
9F Fuel Injector, Cyl #10
A0 Fuel Injector, Cyl #11
A1 Fuel Injector, Cyl #12
A3 Electrical fuel pump relay, Bank 2
A4 EVAP barometric tank pressure sensor
A5 Check engine lamp
A7 Electrical fuel pump relay
A8 Idle speed actuator (open)
A9 Idle speed actuator (close)
AA A/C Compressor control
b3 A/C Compressor control, Bank 2
b7 EVAP large leak
b8 EVAP pinched hose
Cb Ignition feedback failed
CC EWS rolling code storage
d0 Secondary air control, Bank 2
d2 Knock Sensor #1
d3 Knock Sensor #2
d4 Knock Sensor #3
d5 Knock Sensor #4
d6 CAN index verification
d7 CAN timeout, left/right DME
d8 CAN timeout, ASC
d9 CAN timeout, EML
dC Knock control test pulse
dE Knock control test pulse
E1 EKAT - Status 12 - temperature sensor - plausibility power switch
E2 EKAT - Status 13 - temperature sensor - plausibility power switch
E3 EKAT - Status 14 - plausibility check of battery disconnect switch
E4 Automatic start output
E9 Automatic start output

EA Automatic start input

Table 0F

01 LDP control circuit
02 DM-TL solenoid control circuit
03 PreCat 02 sensors swapped
04 AfterCat 02 sensor heater, Cyl#5-8
05 PreCat 02 sensor heater, Cyl#5-8
0A PreCat 02 sensor, Cyl#1-4
0C AfterCat 02 sensor heater, Cyl#1-4
0D PreCat 02 sensor heater, Cyl#1-4
0E AfterCat 02 sensor heater, Cyl#1-4
0F PreCat 02 sensor slow response, Cyl#1-4
10 PreCat 02 sensor aging, Cyl#1-4
11 AfterCat 02 sensor aging, Cyl#1-4
12 PreCat 02 sensor, Cyl#5-8
14 AfterCat 02 sensor, Cyl#5-8
15 PreCat 02 sensor slow response, Cyl#5-8
16 PreCat 02 sensor aging, Cyl#5-8
17 AfterCat 02 sensor aging, Cyl#5-8
18 Mixture Control, higher load, Cyl #1-4
19 Mixture Control, higher load, Cyl #5-8
1A Mixture Control, off idle, Cyl #1-4
1B Mixture Control, off idle, Cyl #5-8
1C Mixture Control, idle, Cyl #1-4
1D Mixture Control, idle, Cyl #5-8
1E Mixture Control, idle, Cyl #1-4
1F Mixture Control, idle, Cyl #5-8
20 Idle speed control
21 Camshaft VANOS control, Cyl#1-4
22 Camshaft VANOS control, Cyl#5-8
27 EWS, manipulation detected
28 Catalyst efficiency, Cyl#1-4
2D Catalyst efficiency, Cyl#5-8
32 Misfire, Cyl #1
33 Misfire, Cyl #5
34 Misfire, Cyl #4
35 Misfire, Cyl #8
36 Misfire, Cyl #6
37 Misfire, Cyl #3
38 Misfire, Cyl #7
39 Misfire, Cyl #2
3E Misfire, random/multiple cylinders
50 Secondary air system, Cyl #1-4
51 Secondary air system, Cyl #5-8
52 Secondary air valve
54 Secondary air control circuit
55 Secondary air valve
5D Evaporative emission system
62 Evaporative emission system purge valve
65 Torque monitoring
66 MFL interface
67 Safety concept monitoring
68 Clutch switch
69 Control unit self-test, RAM faulty
6A Brake switch
6B Control unit self-test, ROM faulty
6C Control unit self-test, reset
6D Battery voltage
6E Torque control
6F Crankshaft sensor
70 Timing reference high resolution signal
71 Camshaft position sensor, Cyl#1-4
72 Camshaft position sensor, Cyl#5-8
73 Air mass sensor
75 Throttle position sensors
76 Throttle position sensor 1
77 Throttle position sensor 2

78 Vehicle speed
79 Wheel sensor failure
7A Ambient temperature sensor
7B Engine coolant temperature sensor
7C Intake air temperature sensor
7D Radiator outlet temperature sensor
7F Coolant temperature plausibility
82 Drive-by-wire throttle position monitoring
83 Drive-by-wire throttle control
84 Drive-by-wire throttle control output stage
85 Drive-by-wire throttle controller, spring check
86 Drive-by-wire throttle controller, lower adaptation
87 Drive-by-wire throttle controller, amplifer check
88 Drive-by-wire throttle, emergency air position test
8B Map controlled thermostat jammed
8C Map controlled thermostat circuit/control
8D Engine cooling fan control
8E Exhaust flap control
94 EWS signal/interface
96 Fuel Injector, Cyl #1
97 Fuel Injector, Cyl #5
98 Fuel Injector, Cyl #8
99 Fuel Injector, Cyl #8
9A Fuel Injector, Cyl #6
9B Fuel Injector, Cyl #3
9C Fuel Injector, Cyl #7
9D Fuel Injector, Cyl #2
A3 Throttle position / air mass plausibility
A4 Ambient pressure sensor
A5 VANOS output stage, Cyl #1-4
A6 VANOS output stage, Cyl #5-8
A7 Fuel pump relay control
A8 Check engine lamp/MIL
AA A/C compressor control
B7 LDP diagnosis
B8 LDP dystem
B9 LDP pressure sensor
BA DM-TL pump control circuit
BB DM-TL small leak
BC DM-TL large leak
BD DM-TL pump current
C9 DM-TL heater
CC EWS exhange code stored
D2 Knock sensor, Cyl #1-2
D3 Knock sensor, Cyl #3-4
D4 Knock sensor, Cyl #5-6
D5 Knock sensor, Cyl #7-8
D6 Knock control zero test
D7 Knock control offset
D8 Knock control test pulse
DB CAN timeout
DC CAN timeout, EGS
DD CAN timeout, ASC/DSC
DE CAN timeout, instrument cluster
DF CAN timeout, ACC
E0 MSR intervention plausibility
E1 ACC intervention plausibility
E2 Fuel level plausibility
E5 Pedal position sensor supply voltage
E6 Pedal position sensors
E7 Pedal position sensor 1
E8 Pedal position sensor 2
E9 Automatic starter control output
EA Automatic starter input signal
EC Intake air flap control
ED Automatic starter

Table 11 (& 16)

01 Ignition Coil, Cyl #2
02 Ignition Coil, Cyl #4
03 Ignition Coil, Cyl #6
05 Fuel Injector, Cyl #2
06 Fuel Injector, Cyl #1
08 Air mass sensor
0A Coolant temperature sensor
0B EVAP system pressure sensor
0C Throttle position sensor
0E Intake air temperature sensor
10 A/C compressor PWM signal
12 EWS Signal
14 Check engine lamp
15 VANOS (Solenoid)
16 Fuel Injector, Cyl #3
17 Fuel Injector, Cyl #6
18 Fuel Injector, Cyl #4
19 PreCat 02 sensor heater, Cyl #1-3
1B Idle speed actuator (close)
1D Ignition Coil, Cyl #1
1E Ignition Coil, Cyl #3
1F Ignition Coil, Cyl #5
21 Fuel Injector, Cyl #5
23 Secondary air system relay/pump
2E Fuel level signal (reserve lamp)
2F Catalyst temperature after start-up
32 EVAP system running losses valve
33 EVAP system shutoff valve
34 Rear exhaust valve flap
35 Idle speed actuator (open)
37 PreCat 02 sensor heater, Cyl #4-6
38 Ignition feedback - shunt resistor
39 Knock Sensor, Cyl #1-3
3B Knock Sensor, Cyl #4-6
3D AfterCat 02 sensor heater, Cyl #4-6
3E Secondary air system, switching valve
41 Camshaft sensor
44 EVAP system, purge control valve ckt.
45 Electrical fuel pump relay
4A A/C compressor relay
4B PreCat 02 sensor voltage, Cyl #1-3
4C PreCat 02 sensor voltage, Cyl #4-6
4D AfterCat 02 sensor voltage, Cyl #1-3
4E AfterCat 02 sensor voltage, Cyl #4-6
4F AfterCat 02 sensor heater, Cyl #1-3
50 ASC signal, active too long
51 MSR signal, active too long
52 EML signal, active too long
53 Crankshaft Sensor
64 DME Control Unit
BE EVAP reed switch not closed
BF EVAP reed switch doesn't open
C0 EVAP reed switch doesn't close
C1 EVAP clamped tube check
C2 EVAP large leak detected
C3 EVAP small leak detected
C4 EVAP electrical LDP valve
C5 EVAP barometric pressure sensor
C8 PreCat 02 sensor no activity, Cyl #1-3
C9 PreCat 02 sensor no activity, Cyl #4-6
CA 02 sensor control limit, Cyl #1-3
CB 02 sensor control limit, Cyl #4-6
CC Idle control system, idle speed not plausible
D1 EWS message
D2 Ignition feedback faulty (>2 cylinders)
D3 Idle control valve mechanically stuck

D4 VANOS mechanically stuck
D6 Vehicle speed signal not present
D7 ASC/MSR/EML - interface not plausible
D8 Gear selector signal, signal undefined
D9 CAN bus timeout
DA CAN controller - warning level reached
DB CAN bus offline
DE Time to closed loop temperature too long
E3 02 sensor adaption limit, Cyl #1-3
E4 02 sensor adaption limit, Cyl #4-6
E5 PreCat 02 sensor response time, Cyl #1-3
E6 PreCat 02 sensor response time, Cyl #4-6
E7 PreCat 02 sensor switching Time, Cyl #1-3
E8 PreCat 02 sensor switching Time, Cyl #4-6
E9 Catalyst efficiency below threshold, Cyl #1-3
EA Catalyst efficiency below threshold, Cyl #4-6
EB AfterCat 02 sensor heater power, Cyl #1-3
EC AfterCat 02 sensor heater power, Cyl #4-6
EE Misfire, Cyl #1
EF Misfire, Cyl #2
F0 Misfire, Cyl #3
F1 Misfire, Cyl #4
F2 Misfire, Cyl #5
F3 Misfire, Cyl #6
F4 Flywheel adaption, segment timing faulty
F5 Secondary air system flow too low, Cyl #1-3
F6 Secondary air system flow too low, Cyl #4-6
F7 Secondary air system injector valve jammed
FA EVAP TEV not operating
FB EVAP small leak detected
FC EVAP incorrect flow
FD EVAP shut off valve stuck closed
FE EVAP large leak detected
FF EVAP TEV stuck open

Table 14

01 Relay Fuel pump
02 Idle adjuster closing coil
03 Injector valve 1
04 Injector valve 3
05 Injector valve 2
07 input camshaft sensor
09 ignition current Bank 2
0A output camshaft sensor
0C Lambda probe 2
0D Lambda probe 1
0F ignition current Bank 1
10 Error crankshaft-sensor
13 Relay Secondary air pump
15 output-VANOS-late valve
16 output-VANOS-early valve
17 ignition output transistor 2
18 ignition output transistor 3
19 ignition output transistor 1
1D Idle adjuster opening coil
1F Injector valve 5
20 Injector valve 6
21 Injector valve 4
24 Tank ventilation valve
25 Relay Lambda probe heating
29 air mass flow meter
2A speed sensor
2C active Oil level sensor
2E consumption signal
2F Engine speed signal
30 Relay Air conditioning compressor
32 ignition output transistor 4
33 ignition output transistor 6
34 ignition output transistor 5

35 Relay electric fan
36 battery voltage
40 aircondition switch AC/KO
42 EWS-interface
43 output-VANOS-early valve
44 Knock sensor 3
45 Knock sensor 2
46 Knock sensor 1
48 output-VANOS-late valve
49 Throttle valve potentiometer
4D intake air temperature sensor
4E cooling water temperature sensor
50 Switch Gear
52 starter switch KL50
56 CAN-bus Off
82 EWS-signal manipulation
88 Error idle speed controller
89 CAN-protocol error
8A CAN-Timeout message 1
8B CAN-Timeout message 2
8C CAN-Timeout message 3
90 lambda controller 1
91 lambda controller 2
96 internal: memory test Master
97 internal: driver diagnosis
98 internal: Communikation Master
9B internal: error memory Master
9C internal: error memory slave
9D internal: memory test slave
9E internal: Communikation slave
9F internal: knock module 1
A0 internal: knock module 2
A1 internal: knock module 3
A2 synchronisation camshaft sensor
A3 internal: ecu-reset

Table 15 (not the same as table K15)

01 Ignition Coil, Cyl #2
02 Ignition Coil, Cyl #4
03 Ignition Coil, Cyl #6
05 Fuel Injector, Cyl #2
06 Fuel Injector, Cyl #1
08 Air mass sensor
0A Coolant temperature sensor
0B Radiator outlet temperature sensor
0E Intake air temperature sensor
12 Camshaft sensor, exhaust cam
13 VANOS solenoid, exhaust
15 VANOS solenoid, intake
16 Fuel Injector, Cyl #3
17 Fuel Injector, Cyl #6
18 Fuel Injector, Cyl #4
19 PreCat 02 sensor heater, Cyl #1-3
1B Idle speed actuator (close)
1D Ignition Coil, Cyl #1
1E Ignition Coil, Cyl #3
1F Ignition Coil, Cyl #5
21 Fuel Injector, Cyl #5
23 Secondary air system electrical pump
26 Clutch switch
27 Brakelight switch (BLS) / brake light test plausibility
28 Brake light switch (BLS) / pedal sensor plausibility
29 Multi-function steering wheel (MFL) signal
2A Multi-function steering wheel (MFL) redundant code transmission
2B Multi-function steering wheel (MFL) control switch
2D Multi-function steering wheel (MFL) toggle bit
32 Running loss (3/2) valve final stage
34 Rear exhaust valve flap
35 Idle speed actuator (open)
37 PreCat 02 sensor heater, Cyl #4-6
38 Ignition feedback - shunt resistor
39 Knock Sensor, Cyl #1-3
3B Knock Sensor, Cyl #4-6
3D AfterCat 02 sensor heater, Cyl #4-6
3E Secondary air system, switching valve
41 Camshaft sensor, intake cam
44 EVAP system, purge control valve circuit
45 Electrical fuel pump relay
4A A/C compressor relay
4F AfterCat 02 sensor heater, Cyl #1-3
53 Crankshaft Sensor
64 DME Control Unit
67 VANOS, faulty intake reference value
68 VANOS, faulty exhaust reference value
69 VANOS, intake mechanically stuck
6A VANOS, exhaust mechanically stuck
6D Motorized Throttle Valve (MDK), PWM not plausible
6E Pedal sensor (PWG) potentiometer #1
6F Pedal sensor (PWG) potentiometer #2
70 Motorized Throttle Valve (MDK) potentiometer #1
71 Motorized Throttle Valve (MDK) potentiometer #2
72 Motorized Throttle Valve (MDK) final stage
73 Reference voltage (5v) source for #1 potentiometers
74 Reference voltage (5v) source for #2 potentiometers
75 Pedal sensor (PWG) potentiometer plausibility
76 Motorized Throttle Valve (MDK) feedback plausibility
77 Motorized Throttle Valve (MDK) mechanically stuck
78 PWG / MDK potentiometers not plausible
7A Oil temperature sensor
7B Electric thermostat control final stage
7C DISA flap control
7D Coolant fan final stage
7E LDP solenoid valve
7F Electrical fuel pump
80 EWS signal
82 CAN timeout (ASC1)
83 CAN timeout (instr2)
84 CAN timeout (instr3)
85 CAN timeout (ASC3)
8C EVAP LDP reed switch not closed
8D EVAP LDP reed switch doesn't open
8E EVAP LDP reed switch doesn't close
8F EVAP clamped tube check
90 EVAP large leak detected
91 EVAP small leak detected
92 EVAP capillary leak (0.5mm) detected
95 MDK position and airmass signal not plausible
96 PreCat 02 sensor short to B+, Cyl #1-3
97 PreCat 02 sensor short to ground, Cyl #1-3
98 PreCat 02 sensor disconnection, Cyl #1-3
99 PreCat 02 sensor short to B+, Cyl #4-6
9A PreCat 02 sensor short to ground, Cyl #4-6
9B PreCat 02 sensor disconnection, Cyl #4-6
9C AfterCat 02 sensor short to B+, Cyl #1-3
9D AfterCat 02 sensor short to ground, Cyl #1-3
9F AfterCat 02 sensor short to B+, Cyl #4-6
A0 AfterCat 02 sensor short to ground, Cyl #4-6
A8 Electrical thermostat mechanically jammed open
A9 Motorized Throttle (MDK) final stage failure
AA Communication with safety controller disturbed
AB Safety controller has shut down MDK function
AC Pedal sensor (PWG) short between potientiometers
AD Motorized Throttle (MDK) short between potientiometers
AE Motorized Throttle (MDK) idle position not plausible
AF Pedal sensor (PWG) pot. #1 idle position not plausible
B0 Pedal sensor (PWG) pot. #2 idle position not plausible
BB O2 sensor ckt, no activity detected, bank2, sens1
BC PreCat 02 sensor heater insufficient, Cyl #1-3
BD PreCat 02 sensor heater insufficient, Cyl #4-6
BE AfterCat 02 sensor heater insufficient, Cyl #1-3
BF AfterCat 02 sensor heater insufficient, Cyl #4-6
CA 02 sensor control limit, Cyl #1-3
CB 02 sensor control limit, Cyl #4-6
CC Idle control system, idle speed not plausible
D0 EWS engine speed check not ok
D1 EWS message
D2 Ignition feedback faulty (>2 cylinders)
D3 Idle control valve mechanically stuck
D6 Vehicle speed signal not present
D7 AfterCat 02 sensor disconnection, Cyl #1-3
D8 AfterCat 02 sensor disconnection, Cyl #4-6
D9 CAN timeout (EGS1)
DB CAN bus offline
DC AfterCat 02 sensor slow response time, Cyl #1-3
DD AfterCat 02 sensor slow response time, Cyl #4-6
DE Coolant temp too low for closed loop operation
DF AfterCat 02 sensor slow switching time, Cyl #1-3
E0 AfterCat 02 sensor slow switching time, Cyl #4-6
E1 AfterCat 02 sensor trim control, Cyl #1-3
E2 AfterCat 02 sensor trim control, Cyl #4-6
E3 02 sensor adaption limit, Cyl #1-3
E4 02 sensor adaption limit, Cyl #4-6
E5 PreCat 02 sensor slow response time, Cyl #1-3
E6 PreCat 02 sensor slow response time, Cyl #4-6
E7 PreCat 02 sensor slow switching Time, Cyl #1-3
E8 PreCat 02 sensor slow switching Time, Cyl #4-6
E9 Catalyst efficiency below threshold, Cyl #1-3
EA Catalyst efficiency below threshold, Cyl #4-6

EB PreCat 02 sensor trim control, Cyl #1-3
EC PreCat 02 sensor trim control, Cyl #4-6
EE Misfire, Cyl #1
EF Misfire, Cyl #2
F0 Misfire, Cyl #3
F1 Misfire, Cyl #4
F2 Misfire, Cyl #5
F3 Misfire, Cyl #6
F4 Flywheel adaption, segment timing faulty
F5 Secondary air system flow too low, Cyl #1-3
F6 Secondary air system flow too low, Cyl #4-6
F7 Secondary air system valve stuck open
F8 AfterCat 02 sensor, signal after decel not plausible, Cyl #1-3
F9 AfterCat 02 sensor, signal after decel not plausible, Cyl #4-6
FA Functional check purge valve

Table 16 (see table 11)

Table 18

01 Fuel pump relay
02 Idle speed actuator (close)
03 Fuel Injector, Cyl #1
04 Fuel Injector, Cyl #3
05 Fuel Injector, Cyl #2
06 Timeout SMG-CAN
07 Intake camshaft position sensor, Cyl #1-4
08 Intake camshaft position sensor, Cyl #5-8
09 Knock sensor, Cyl #1-2
0A Exhaust camshaft position sensor, Cyl #1-4
0B Exhaust camshaft position sensor, Cyl #5-8
0C PreCat 02 sensor, Cyl #5-8
0D PreCat 02 sensor, Cyl #1-4
0E Tank small leak
0F Crankshaft/Camshaft position correlation, Cyl #1-4
10 Crankshaft sensor
12 Map controlled thermostat actuator
13 Secondary air pump relay
14 Starter relay
15 Exhaust camshaft VANOS retard valve, Cyl #1-4
16 Exhaust camshaft VANOS advance valve, Cyl #1-4
17 Ignition Coil, Cyl #2
18 Ignition Coil, Cyl #3
19 Ignition Coil, Cyl #1
1A Ignition Coil, Cyl #8
1B DM-TL switching valve
1C Map controlled thermostat control
1D Idle speed actuator (open)
1E Control unit self-test, A/D converter monitoring
1F Fuel Injector, Cyl #5
20 Fuel Injector, Cyl #6
21 Fuel Injector, Cyl #4
22 Fuel Injector, Cyl #7
23 Fuel Injector, Cyl #8
24 Evaporative emission purge control valve
25 PreCat 02 sensor heater control, Cyl #1-4
26 PreCat 02 sensor heater control, Cyl #5-8
27 AfterCat 02 sensor heater control, Cyl #1-4
28 AfterCat 02 sensor heater control, Cyl #5-8
29 Air mass sensor, Cyl #1-4
2A Vehicle speed input signal, hardwired A
signal
2B Radiator outlet temperature sensor
2C Thermal oil level sensor
2D Drive-by-wire throttle actuator driver
2E Fuel consumption (KVA) signal output
2F Engine RPM (TD) signal output
30 A/C Compressor relay
32 Ignition Coil, Cyl #4
33 Ignition Coil, Cyl #6
34 Ignition Coil, Cyl #5
35 Electronic fan (relay)
36 Battery voltage behind main relay
37 Ignition Coil, Cyl #7
39 Air mass sensor, Cyl #5-8
3A Sensor voltage supply 1
3B Sensor voltage supply 2
3C Pedal position sensor 1, master measurement
3D Pedal position sensor 2, master measurement
3F Secondary air switching valve
41 Throttle position sensor 2, slave measurement
42 EWS interface
43 Intake camshaft VANOS advance valve, Cyl #1-4
45 Knock sensor, Cyl #5-6
46 Knock sensor, Cyl #3-4
47 Knock sensor, Cyl #7-8
48 Intake camshaft VANOS retard valve, Cyl #1-4
49 Air mass sensor, plausibility
4A Intake camshaft VANOS advance valve, Cyl #5-8
4B Intake camshaft VANOS retard valve, Cyl #5-8
4C Intake air temperature sensor
4D Intake air temperature sensor
4E Coolant temperature sensor
4F Exhaust gas temperature sensor
50 Switch-chain grip
51 MFL interface signal
52 Muffler flap
53 Exhaust camshaft VANOS advance valve, Cyl #5-8
54 Exhaust camshaft VANOS retard valve, Cyl #5-8
55 Throttle position sensor, master measurement
56 CAN bus offline
57 AfterCat 02 sensor voltage, Cyl #1-4
58 AfterCat 02 sensor voltage, Cyl #5-8
59 Control unit self-test, Safety Concept slave check
5A PreCat 02 sensor aging, Cyl #1-4
5B PreCat 02 sensor aging, Cyl #5-8
5C AfterCat 02 sensor aging, Cyl #1-4
5D AfterCat 02 sensor aging, Cyl #5-8
63 Control unit self-test, Safety Concept master check
64 Tire pressure left front
65 Tire pressure right front
66 Tire pressure right back
67 Tire pressure left back
69 Engine coolant temperature, Plausibility
6A Brake light switch
6B Control unit self-test, pre-drive check of drive-by-wire system
6C Switching valve oil circuit left
6D Switching valve oil circuit right
6E Sport switch LED indicator
6F Pedal position sensor 1, cross check
70 Pedal position sensor 2, cross check
71 Intake camshaft VANOS position control, Cyl #5-8
72 Exhaust camshaft VANOS position control, Cyl #5-8
73 Control unit self-test, internal ECU temperature
74 Servotronic valve current
75 Servotronic speed signal
76 Throttle position sensor 1
77 Throttle position sensor 2
78 Throttle position sensors, cross check
79 Throttle position sensors, both bad
7A Control unit self-test, master processor
7B Bus offline, SMG-CAN
7C Active engine bearing
7D Spoiler adjustment
7E Fuel pump crash shut-off
7F DM-TL module
80 Idle speed deviation
82 EWS signal, manipulation detected
83 DSC intervention, plausibility
84 DSC message timeout
85 Steering angle sensor message timeout
86 Instrument Cluster message timeout
87 Vehicle speed signals (both Discrete & CAN)
88 Idle speed controller
89 Jet stream pump
8A Differential lock
8B Cruise control system
8C Engine noise too high
8D Fuel level, plausibility
8F E-box-fan
90 Fuel control, Cyl #1-4
91 Fuel control, Cyl #5-8
95 Misfire w/ empty fuel tank
96 Control unit self-test, memory test master
97 Control unit self-test, driver diagnostics chain
98 Control unit self-test, communication master
9B Control unit self-test, adaption EEPROM master
9C Control unit self-test, adaption EEPROM slave
9D Control unit self-test, memory test slave
9E Control unit self-test, communication slave
9F Control unit self-test, knock detection IC 1
A0 Control unit self-test, knock detection IC 2
A1 Knock control
A2 Crankshaft/Camshaft position correlation, Cyl #5-8
A3 Control unit self-test, master resets
AA Secondary air system, flow too low
AB Secondary air system, valve sticking
AC VANOS pressure storage valve
AD Starter switch input
AE Air-fuel adaptation, Cyl #1-4
AF Air-fuel adaptation, Cyl #5-8
B0 Air-fuel adaptation at idle, Cyl #1-4
B1 Air-fuel adaptation at idle, Cyl #5-8
B2 Catalyst system efficiency, Cyl #1-4
B3 Catalyst system efficiency, Cyl #5-8
B4 Tank leak detected
B5 Filler cap valve
B6 Injection driver 1, over temp.
B7 Injection driver 2, over temp.
B8 Intake camshaft VANOS position control, Cyl

#1-4

Code	Description
B9	Exhaust camshaft VANOS position control, Cyl #1-4
BA	Ignition output stage, Cyl #1
BB	Ignition output stage, Cyl #2
BC	Ignition output stage, Cyl #3
BD	Ignition output stage, Cyl #4
BE	Ignition output stage, Cyl #5
BF	Ignition output stage, Cyl #6
C0	Ignition output stage, Cyl #7
C1	Ignition output stage, Cyl #8
C2	Control unit self-test, cruise control shut-off
C3	Control unit self-test, torque manager monitoring
C4	Misfire, Cyl #1
C5	Misfire, Cyl #2
C6	Misfire, Cyl #3
C7	Misfire, Cyl #4
C8	Misfire, Cyl #5
C9	Misfire, Cyl #6
CA	Misfire, Cyl #7
CB	Misfire, Cyl #8
CC	Misfire, multiple cylinders
CD	Misfire during warm-up, Cyl #1
CE	Misfire during warm-up, Cyl #2
CF	Misfire during warm-up, Cyl #3
D0	Misfire during warm-up, Cyl #4
D1	Misfire during warm-up, Cyl #5
D2	Misfire during warm-up, Cyl #6
D3	Misfire during warm-up, Cyl #7
D4	Misfire during warm-up, Cyl #8
D5	Misfire during warm-up, multiple cylinders
D6	PreCat 02 sensor slow response, Cyl #1-4
D7	PreCat 02 sensor slow response, Cyl #5-8
D8	PreCat 02 sensor slow switching (rich to lean), Cyl #1-4
D9	PreCat 02 sensor slow switching (rich to lean), Cyl #5-8
DA	PreCat 02 sensor signal size/amplitude, Cyl #1-4
DB	PreCat 02 sensor signal size/amplitude, Cyl #5-8
E4	Drive-by-wire, throttle control failure
E5	Drive-by-wire, throttle control failure
E6	Drive-by-wire, throttle position failure
E7	Control unit self-test, slave processor check
E8	Evaporative emissions purge valve functional check
F7	VANOS pressure accumulator valve
F8	Intake camshaft VANOS moving time, Cyl #1-4
F9	Exhaust camshaft VANOS moving time, Cyl #1-4
FA	Intake camshaft VANOS sealing, Cyl #1-4
FB	Exhaust camshaft VANOS sealing, Cyl #1-4
FC	Intake camshaft VANOS moving time, Cyl #5-8
FD	Exhaust camshaft VANOS moving time, Cyl #5-8
FE	Intake camshaft VANOS sealing, Cyl #5-8
FF	Exhaust camshaft VANOS sealing, Cyl #5-8

Table 19

Code	Description
01	Ignition Coil, Cyl #2
02	Ignition Coil, Cyl #4
03	Ignition Coil, Cyl #6
05	Fuel Injector, Cyl #2
06	Fuel Injector, Cyl #1
08	Air mass sensor
0A	Engine coolant temperature
0B	Engine coolant temperature, radiator outlet
0C	Engine coolant temperature, Plausibility
0E	Intake air temperature
12	Exhaust camshaft position sensor
13	Exhaust camshaft solenoid valve
15	Intake camshaft solenoid valve
16	Fuel Injector, Cyl #3
17	Fuel Injector, Cyl #6
18	Fuel Injector, Cyl #4
19	PreCat 02 sensor heater insufficient, Cyl #1-3
1B	Idle speed actuator (close)
1D	Ignition Coil, Cyl #1
1E	Ignition Coil, Cyl #3
1F	Ignition Coil, Cyl #5
21	Fuel Injector, Cyl #5
23	Secondary air pump relay
24	Main relay
25	Main relay switching delay
26	Clutch switch
27	BLS/BTS plausibility
2A	MFL signal redundancy
2B	MFL seesaw key
2D	MFL bit toggle
2F	Torque limitation, safety level 1
30	Control module self-test, control module defective
31	Control module self-test, torque monitoring
32	Control module self-test, speed monitoring
33	Control module self-test, speed monitoring
34	Exhaust flap
35	Idle speed actuator (open)
37	PreCat 02 sensor heater insufficient, Cyl #4-6
38	Ignition feedback - shunt resistor
39	Knock Sensor, Cyl #1-3
3A	Control module self-test, control module defective
3B	Knock Sensor, Cyl #4-6
3D	AfterCat 02 sensor heater insufficient, Cyl #4-6
3E	Secondary air system, switching valve circuit
3F	Control module self-test, control module defective
41	Intake camshaft position sensor
42	Control module self-test, control module defective
43	Control module self-test, control module defective
44	Evaporative emission system, purge control valve
45	Fuel pump relay
46	Control module self-test, control module defective
47	Control module self-test, control module defective
48	Control module self-test, control module defective
4A	A/C compressor relay
4F	AfterCat 02 sensor heater insufficient, Cyl #1-3
53	Crankshaft Sensor
5E	Secondary air system, air mass
5F	Secondary air system, tube blocked
60	Secondary air system, pump not active
61	Secondary air system, flow too low
62	Secondary air system, flow too high
63	Secondary air system, valve jammed open
64	Memory self-test, control module defective
67	Intake camshaft VANOS, over-advanced or system perf.
68	Exhaust camshaft VANOS, over-advanced or system perf.
69	Intake camshaft VANOS, over-retarded
6A	Exhaust camshaft VANOS, over-retarded
6D	Throttle valve control circuit
6E	Pedal position sensor 1
6F	Pedal position sensor 2
70	Throttle position sensor 1
71	Throttle position sensor 2
72	Pedal position sensor, plausibility
73	Throttle position sensor, adaptation
75	Pedal position sensor, range/performance
76	Throttle position sensor 1, plausibilty, range, or performance
77	Throttle position sensor 2, plausibilty, range, or performance
78	Brake and Pedal positions not plausible
7A	Oil temperatur sensor
7B	Map controlled thermostat
7C	DISA control
7D	E-fan
7E	DM-TL Switching solenoid
80	EWS signal
81	Timeout, SSG
82	Timeout, CAN - ASC1
83	Timeout, CAN - INSTR2
84	Timeout, CAN - INSTR3
85	Timeout, CAN - ASC3
86	SSG intervention, plausibility
87	Throttle position sensor, adaptation selftest
88	Throttle position sensor, adaptation selftest
8C	DM-TL pump control circuit
8E	DM-TL pump current
8F	DM-TL leak detected
92	Pedal position sensor 1, supply voltage
93	Pedal position sensor 2, supply voltage
95	Air mass sensor, range/performance
96	PreCat 02 sensor voltage, Cyl #1-3
97	PreCat 02 sensor voltage, Cyl #4-6
98	AfterCat 02 sensor voltage, Cyl #1-3
99	AfterCat 02 sensor voltage, Cyl #4-6
A0	Throttle valve position controller, stuck temporarily
A1	Throttle valve position controller, stuck permanently
A2	Throttle valve position controller, control deviation
A8	Coolant thermostat jammed open
BA	02 sensor heating during regulation, Cyl #1-3
BB	02 sensor heating during regulation, Cyl #4-6
BC	PreCat 02 sensor heater circuit, Cyl #1-3
BD	PreCat 02 sensor heater circuit, Cyl #4-6
BE	AfterCat 02 sensor heater circuit, Cyl #1-3
BF	AfterCat 02 sensor heater circuit, Cyl #4-6
C4	Pressure sensor circuit
C5	Pressure sensor circuit
C6	Catalytic convertor efficiency, Cyl #1-3
C7	Catalytic convertor efficiency, Cyl #4-6
CA	02 sensor control limit, Cyl #1-3
CB	02 sensor control limit, Cyl #4-6
CC	Idle control system, idle speed not plausible
D1	EWS message
D2	Ignition feedback faulty (>2 cylinders)
D3	Idle control valve mechanically stuck
D6	Vehicle speed signal not present
D7	AfterCat 02 sensor disconnection, Cyl #1-3
D8	AfterCat 02 sensor disconnection, Cyl #4-6
D9	CAN timeout (EGS1)
DB	CAN bus offline
DC	AfterCat 02 sensor slow resp time, Cyl #1-3
DD	AfterCat 02 sensor slow respe time, Cyl #4-6
DE	Coolant temp too low for closed loop operation
DF	AfterCat 02 sensor slow switching time, Cyl #1-3
E0	AfterCat 02 sensor slow switching time, Cyl #4-6
E1	AfterCat fuel trim system, Cyl #1-3
E2	AfterCat fuel trim system, Cyl #4-6
E3	02 sensor adaptation limit, Cyl #1-3
E4	02 sensor adaptation limit, Cyl #4-6
E5	PreCat 02 sensor slow resp time, Cyl #1-3
E6	PreCat 02 sensor slow resp time, Cyl #4-6
E7	PreCat 02 sensor slow switching Time, Cyl #1-3
E8	PreCat 02 sensor slow switching Time, Cyl #4-6
E9	Catalyst efficiency below threshold, Cyl #1-3
EA	Catalyst efficiency below threshold, Cyl #4-6
EB	PreCat fuel trim system, Cyl #1-3
EC	PreCat fuel trim system, Cyl #4-6
EE	Misfire, Cyl #1
EF	Misfire, Cyl #2
F0	Misfire, Cyl #3
F1	Misfire, Cyl #4
F2	Misfire, Cyl #5
F3	Misfire, Cyl #6
F4	Flywheel adaption, segment timing faulty
F5	Secondary air system flow too low, Cyl #1-3
F6	Secondary air system flow too low, Cyl #4-6
F7	Secondary air system valve stuck open
F8	AfterCat 02 sensor, signal after decel not plausible, Cyl #1-3
F9	AfterCat 02 sensor, signal after decel not plausible, Cyl #4-6
FA	Functional check purge valve

Table 1b

Code	Description
01	Fuel pump relay
02	Idle speed actuator (close)
03	Fuel Injector, Cyl #1
04	Fuel Injector, Cyl #3
05	Fuel Injector, Cyl #2
06	Timeout SMG-CAN
07	Intake camshaft position sensor
09	Knock sensor, Cyl #1-2
0A	Exhaust camshaft position sensor
0C	PreCat 02 sensor, Cyl #4-6
0D	PreCat 02 sensor, Cyl #1-3
0E	Tank small leak
0F	Crankshaft/Camshaft position correlation
10	Crankshaft sensor
11	SMG shifting
12	Map controlled thermostat actuator
13	Secondary air pump relay
14	Starter relay
15	Exhaust camshaft VANOS retard valve, Cyl #1-4
16	Exhaust camshaft VANOS advance valve, Cyl #1-4
17	Ignition Coil, Cyl #2
18	Ignition Coil, Cyl #3
19	Ignition Coil, Cyl #1
1B	DM-TL switching valve
1C	Map controlled thermostat control
1D	Idle speed actuator (open)
1E	Control unit self-test, A/D converter monitoring
1F	Fuel Injector, Cyl #5
20	Fuel Injector, Cyl #6
21	Fuel Injector, Cyl #4
25	PreCat 02 sensor heater control, Cyl #1-3
26	PreCat 02 sensor heater control, Cyl #4-6
27	AfterCat 02 sensor heater control, Cyl #1-3
28	AfterCat 02 sensor heater control, Cyl #4-6
29	Air mass sensor
2A	Vehicle speed signal
2B	Radiator outlet temperature sensor
2C	Thermal oil level sensor
2D	Drive-by-wire throttle actuator driver
2E	Fuel consumption (KVA) signal output
2F	Engine RPM (TD) signal output
30	A/C Compressor relay
32	Ignition Coil, Cyl #4
33	Ignition Coil, Cyl #6
34	Ignition Coil, Cyl #5
35	Electronic fan (relay)
36	Battery voltage behind main relay
3A	Sensor voltage supply 1
3B	Sensor voltage supply 2
3C	Pedal position sensor 1, master measurement
3D	Pedal position sensor 2, master measurement
3F	Secondary air switching valve
41	Throttle position sensor 2, slave measurement
42	EWS interface
43	Intake camshaft VANOS advance valve
44	SMG Safety concept
45	Knock sensor, Cyl #5-6
46	Knock sensor, Cyl #3-4
48	Intake camshaft VANOS retard valve
49	Air mass sensor, plausibility
4C	Ambient pressure sensor
4D	Intake air temperature sensor
4E	Coolant temperature sensor
4F	Exhaust gas temperature sensor
50	Switch-chain grip
51	MFL interface signal
52	Muffler flap
55	Throttle position sensor, master measurement
56	CAN bus offline
57	AfterCat 02 sensor voltage, Cyl #1-3
58	AfterCat 02 sensor voltage, Cyl #4-6
59	Control unit self-test, Safety Concept slave check
5A	PreCat 02 sensor aging, Cyl #1-3
5B	PreCat 02 sensor aging, Cyl #4-6
5C	AfterCat 02 sensor aging, Cyl #1-3
5D	AfterCat 02 sensor aging, Cyl #4-6
60	Radiator outlet temp plausibility
63	Control unit self-test, Safety Concept master check
69	Engine coolant temperature, Plausibility
6A	Brake light switch
6B	Control unit self-test, pre-drive check of drive-by-wire system
6C	Switching valve oil circuit left
6D	Switching valve oil circuit right
6E	Sport switch LED indicator
6F	Pedal position sensor 1, cross check
70	Pedal position sensor 2, cross check
73	Control unit self-test, internal ECU temperature
76	Throttle position sensor 1
77	Throttle position sensor 2
78	Throttle position sensors, cross check
79	Throttle position sensors, both bad
7A	Control unit self-test, master measurement
7B	Bus offline, SMG-CAN
7E	Fuel pump crash shut-off
7F	DM-TL module
80	Idle speed deviation
81	Low fuel catalyst protection
82	EWS signal, manipulation detected
83	DSC intervention, plausibility
84	DSC message timeout
85	LWS message timeout
86	Instrument Cluster message timeout
87	Vehicle speed signal
88	Idle speed controller
8B	Cruise control system
8C	Engine noise too high
8D	Fuel level, plausibility
8F	E-box-fan
90	Fuel control, Cyl #1-3
91	Fuel control, Cyl #4-6
95	Misfire w/ empty fuel tank
96	Control unit self-test, memory test master
97	Control unit self-test, driver diagnostics chain
98	Control unit self-test, communication master
9A	Crankcase venting
9B	Control unit self-test, adaption EEPROM master
9C	Control unit self-test, adaption EEPROM slave
9D	Control unit self-test, memory test slave
9E	Control unit self-test, communication slave
9F	Control unit self-test, knock detection IC 1
A0	Control unit self-test, knock detection IC 2
A1	Knock control
A3	Control unit self-test, master resets
AA	Secondary air system, flow too low
AB	Secondary air system, valve sticking
AC	VANOS pressure storage valve
AD	Starter switch input
AE	Mixture adaptation, Cyl #1-3
AF	Mixture adaptation, Cyl #4-6
B0	DM-TL error
B2	Catalyst system efficiency, Cyl #1-3
B3	Catalyst system efficiency, Cyl #4-6
B4	Tank leak detected
B5	Filler cap open
B6	Injection driver 1, over temp.
B7	Injection driver 2, over temp.
B8	Intake camshaft VANOS position control
B9	Exhaust camshaft VANOS position control
BA	Ignition output stage, Cyl #1
BB	Ignition output stage, Cyl #2
BC	Ignition output stage, Cyl #3
BD	Ignition output stage, Cyl #4
BE	Ignition output stage, Cyl #5
BF	Ignition output stage, Cyl #6
C2	Control unit self-test, cruise control shut-off
C3	Control unit self-test, torque manager monitoring
C4	Misfire w/ fuel cutoff, Cyl #1
C5	Misfire w/ fuel cutoff, Cyl #2

C6 Misfire w/ fuel cutoff, Cyl #3
C7 Misfire w/ fuel cutoff, Cyl #4
C8 Misfire w/ fuel cutoff, Cyl #5
C9 Misfire w/ fuel cutoff, Cyl #6
CC Misfire, multiple cylinders w/ fuel cutoff
CD Misfire during warm-up, Cyl #1
CE Misfire during warm-up, Cyl #2
CF Misfire during warm-up, Cyl #3
D0 Misfire during warm-up, Cyl #4
D1 Misfire during warm-up, Cyl #5
D2 Misfire during warm-up, Cyl #6
D5 Misfire during warm-up, multiple cylinders
D6 PreCat 02 sensor slow response, Cyl #1-3
D7 PreCat 02 sensor slow response, Cyl #4-6
D8 PreCat 02 sensor slow switching (rich to lean), Cyl #1-3
D9 PreCat 02 sensor slow switching (rich to lean), Cyl #4-6
DA PreCat 02 sensor signal size/amplitude, Cyl #1-3
DB PreCat 02 sensor signal size/amplitude, Cyl #4-6
DD System check, crankcase venting
DE CAN timeout, ZSG
E0 Load signal plausibility
E1 Ambient temperature
E2 Instrument cluster, relative time
E4 Drive-by-wire, throttle control failure
E5 Drive-by-wire, throttle control failure
E6 Drive-by-wire, throttle position failure
E7 Control unit self-test, slave processor check
E8 Evaporative emissions purge valve functional check
F7 VANOS pressure accumulator valve
F8 Intake camshaft VANOS moving time
F9 Exhaust camshaft VANOS moving time
FA Intake camshaft VANOS sealing
FB Exhaust camshaft VANOS sealing

Table 20

2712 DMTL magnetic valve
2715 PreCat 02 sensor heater control, Bank 2
2716 AfterCat 02 sensor heater control, Bank 1
2717 AfterCat 02 sensor heater control, Bank 2
2718 Camshaft generator: positioning
2719 crank shaft sensor: cycle duration
271A PreCat 02 sensor signal, Bank 1
271C AfterCat 02 sensor signal, Bank 1
271D PreCat 02 sensor heater control, Bank 1
271F 02 sensor aging bank 1: period duration
2720 02 sensor aging bank 1: switching time
2721 AfterCat 02 sensor aging, Bank 1
2722 PreCat 02 sensor aging, Bank 2
2724 AfterCat 02 sensor signal, Bank 2
2725 02 sensor aging bank 2: period duration
2726 02 sensor aging bank 2: switching time
2727 AfterCat 02 sensor aging, Bank 2
2734 TPS 1: signal not plausible against MAF
2735 TPS 2: signal not plausible against MAF
2737 EWS 3.3 manipulation protection
2738 Catalyst bank 1
273B Catalyst bank 1 via NOx-sensor
273C Catalyst bank 2 via NOx-sensor
273D Catalyst bank 2
2740 Pedal 1: voltage supply
2741 Pedal 2: voltage supply
2742 misfire Cyl. 1

2743 misfire Cyl. 5
2744 misfire Cyl. 3
2745 misfire Cyl. 6
2746 misfire Cyl. 2
2747 misfire Cyl. 4
274E misfire on several cylinders
2750 Electronic throttle controller: momentarily sticking
2751 Electronic throttle controller: permanently sticking
2752 Electronic throttle controller: hard movement
2753 Ignition coil cyl. 1
2754 Ignition coil cyl. 5
2755 Ignition coil cyl. 3
2756 Ignition coil cyl. 6
2757 Ignition coil cyl. 2
2758 Ignition coil cyl. 4
2760 Secondar air system
2761 Secondar air system
2762 Secondary air valve
2764 Relay sec.air pump: controller
2765 solenoid valve secondary air: activation
2766 Camshaft sensor inlet: signal time
2767 Camshaft sensor outlet: signal time
2768 Camshaft sensor inlet: phase positon
276C Camshaft sensor outlet: phase positon
276D function-check control venting
2770 secondary air heated film air mass sensor
2772 TEV: controller
2774 engine cut off time
2777 DME-selftest: AD-converter
2778 clutch switch
2779 DME-selftest: RAM
2783 heated film at air mass measuring sensor
2786 TPS 1
2787 TPS 2
2788 Vehicle speed
278B Coolant temp sensor
278C Inlet air sensor
278D Radiator outlet temp sensor
278F generator: under upror
2790 coolant-outlet-temperature: implausible
2794 Electronic throttle controller
2796 Electronic throttle controller: adaption wrong
279B Mapped thermostat cooling: mechanical
279C Mapped thermostat cooling: control
279D engine fan: activation
279E Exhaust flap: control
27A0 E-box fan: control
27A1 Electronic throttle controller: start check
27A4 Interface EWS 3.3 - DME
27A5 throttle valve: new adaption
27A6 Injection valve cyl. 1
27A7 Injection valve cyl. 5
27A8 Injection valve cyl. 3
27A9 Injection valve cyl. 6
27AA Injection valve cyl. 2
27AB Injection valve cyl. 4
27B2 brake-light-switch: signal
27B4 Ambient-pressure sensor
27B5 Camshaft control inlet bank1: controller
27B7 Gas pump relay: control
27B9 PreCat 02 sensor voltage increase, Bank 1
27BA PreCat 02 sensor voltage increase, Bank 2
27BD Camshaft control outlet bank1: controller

27C2 AC-compressor controller
27C3 Thermal oil level sensor
27C4 main relay
27C5 brale-light-test-switch: signal
27C7 Main relay: switching delay
27CA DMTL pump: controlled
27CC DMTL: leakage
27CD DMTL: module failure
27CF Ignition cyl. 1
27D0 Ignition cyl. 5
27D1 Ignition cyl. 3
27D2 Ignition cyl. 2
27D3 Ignition cyl. 2
27D4 Ignition cyl. 4
27D6 Idle controller: position closed
27D7 Idle controller: position open
27D9 DMTL heater: controlled
27DA BSD-generator
27DB accelerator pedal and brake pedal: signal implausible
27DC EWS 3.3 exchange code storing
27DD temperature sensor engine coolant: gradient
27DE temperature sensor engine coolant: signal
27DF temperature sensor engine coolant: constant signal
27E0 crankshaft sensor: segment time measurement
27E2 knock sensor 1
27E3 knock sensor 2
27EB Telegram (EGS 2) missing from EGS-ECU
27EC Telegram (EGS 1) missing from EGS-ECU
27F2 petrol tank level implausible
27F7 Pedal input sensor 1
27F8 Pedal input sensor 2
27F9 Start auto.: control
27FB controlled air managment: activation
2800 Telegram (I-combi 2) missing from combi-ECU
2801 idle-speed implausible (air leakage)
2804 driving speed regulation: requirement
2805 switch driving speed regulation: signal
2806 driving speed regulation: time limit data transmission reached
2807 PWM-potentiometer: signal
2808 PWM: signal
2809 Telegram (I-combi 3) missing from combi-ECU
280B Telegram (ASC 1) missing from ASC-ECU
280C Telegram (ASC 3) missing from ASC-ECU
280D Telegram (LWS) missing from LWS-ECU
280E Telegram (SMG 1) missing from SMG-ECU
280F message (ASC 4) missing from ASC-ECU
2811 local CAN communication error
2812 oil temperature
281A telegramm (TxU) missing
281B Telegram (EKP) missing from EKP-ECU
281C bit serial data interface (BSD): signal
281D BSD generator: signal
281E variable air intake system: activation
282F PT-CAN communication error
2830 DME-selftest: checksum
2831 DME self diagnostics: CPU monitoring
283A Oil condition sensor

283F Oil pressure switch: signal implausible
2869 DME self diagnostics: RAM-check failed
286A DME self diagnostics: knock sensor module
286B DME self diagnostics: multi output module
2882 mixture preparation bank1
2883 mixture preparation bank2
2892 misfire with low tank volume
2893 internal ECU temperature
2894 irreversible ecu error
2895 crank shaft sensor: signal
2896 camshaft sensor: input-signal
2897 camshaft sensor: output-signal
2898 AfterCat 02 sensor signal, Bank 1
2899 AfterCat 02 sensor signal, Bank 2
289A PreCat 02 sensor heater function, Bank 1
289B PreCat 02 sensor heater function, Bank 2
289C AfterCat 02 sensor heater function, Bank 1
289D AfterCat 02 sensor heater function, Bank 2
289E PreCat 02 sensor, Bank 1
289F PreCat 02 sensor, Bank 2
28A1 driving speed regulation
28A2 air path
28A4 engine-speed
28A5 Pedal value
28A7 telegram monitoring: NOx-sensor 1
28A8 telegram monitoring: NOx-sensor 2
28AA idle speed regulator
28AB external torque requirement: monitoring
28AC nominal torque
28AD actual torque
28AE torque limit
28B1 rpm limit
28B2 rpm limiting: reset
28B3 Throttle flap: cont. adaption
28B4 Sport button
28B5 Soundflap: signal
28B6 Inlet-camshaft bank1: mechanical
28B8 exhaust camshaft bank1: mechanical
28BA Inlet-camshaft bank1: rough-running
28BC exhaust camshaft bank1: stiff
28BD intake camshaft sensor: latching
28BE exhaust camshaft sensor: latching
28BF NOx-sensor 1
28C0 NOx-sensor 2
28C1 PreCat 02 sensor, Bank 1
28C2 PreCat 02 sensor, Bank 2
28C3 PreCat 02 sensor heater function, Bank 1
28C4 PreCat 02 sensor heater function, Bank 2
28C5 AfterCat 02 sensor systemcheck, Bank 1
28C6 AfterCat 02 sensor systemcheck, Bank 2
28CA Ozone exchange: too low
28CB Ozone sensor 2
28CC Ozone sensor 1
28CF Fuel pump: emergency switch off
28D0 Fuel pump
28DD air mass system
28E6 02 sensor analysis unit/self test, Bank 1
28E7 02 sensor analysis unit/self test, Bank 2
28E8 02 sensor trim control, Bank 1
28E9 02 sensor trim control, Bank 2
28EA AfterCat 02 sensor signal, Bank 1
28EB AfterCat 02 sensor signal, Bank 2
28EC AfterCat 02 sensor (after full load) Bank 1
28ED AfterCat 02 sensor (after full load) Bank 2
28F0 AfterCat 02 sensor systemcheck, Bank 1
28F1 AfterCat 02 sensor systemcheck, Bank 2

28F2 02 sensor trim control, Bank 1
28F3 02 sensor trim control, Bank 2
28F4 PreCat 02 sensor cold test, Bank 1
28F5 PreCat 02 sensor cold test, Bank 2
28F6 AfterCat 02 sensor cold test, Bank 1
28F7 AfterCat 02 sensor cold test, Bank 2
28F9 roughness: segment time measurement
28FA torque in shift phase
28FB Active Cruise Control (ACC)
28FF DME-selftest
2900 DME-selftest
293C telegram monitoring: torque requirement AFS
293D telegram monitoring: EKP
2947 Telgram monitoring: torque request ACC
2948 Telegram monitoring: ARS
2949 Telegram monitoring: CAS
294A Telegram monitoring: torque request SMG
294B Telegram monitoring: speed DSC
294C Telegram monitoring: status DSC
294D Telegram monitoring: torque request EGS
294E Telegram monitoring: transmition data EGS/SMG
294F Telgram monitoring: torque request SMG
2950 Telegram monitoring: AC
2951 Telegram monitoring: temp. combi
2952 Telegram monitoring: km-count combi
2953 Telegram monitoring: status combi
2954 Telegram monitoring: batt.voltage powermodul
2955 Telegram monitoring: charge voltage powermodul
2956 Telegram monitoring: cruise control
2957 Telegram monitoring: steering angle
2958 Telegram monitoring: sport switch
2960 PreCat 02 sensor, Bank 1
2961 PreCat 02 sensor, Bank 2
2962 PreCat 02 sensor dynamics, Bank 1
2963 PreCat 02 sensor dynamics, Bank 2
2964 PreCat 02 sensor ceramic temp, Bank 1
2965 PreCat 02 sensor ceramic temp, Bank 2
2966 PreCat 02 sensor signal, Bank 1
2967 PreCat 02 sensor signal, Bank 2
296A PreCat 02 sensors switched
296B AfterCat 02 sensors switched
2973 PreCat 02 sensor wires/lines, Bank 1
2974 PreCat 02 sensor wires/lines, Bank 2
2986 PreCat 02 sensor systemcheck, Bank 1
2987 PreCat 02 sensor systemcheck, Bank 2
2988 PreCat 02 sensor systemcheck, Bank 1
2989 PreCat 02 sensor systemcheck, Bank 2
2990 NOx-sensor 1: systemcheck
2991 NOx-sensor 2: systemcheck
2992 NOx-sensor 1: systemcheck dynamic
2993 NOx-sensor 2: systemcheck dynamic
2994 NOx-sensor 1: heater power
2995 NOx-sensor 2: heater power
2996 NOx-sensor 1: systemcheck plausibility
2997 NOx-sensor 2: OBD-II-diagnostics plausibility
2998 NOx-sensor 1: systemcheck
2999 NOx-sensor 2: systemcheck
299A error managment EGS
299B battery sensor: signal
299C batterysensor: Function
299D battery sensor: data transmission
299E AfterCat 02 sensor signal, Bank 1
299F AfterCat 02 sensor signal, Bank 1
29A0 AfterCat 02 sensor signal, Bank 1

29A1 AfterCat 02 sensor signal, Bank 1
29A2 PreCat 02 sensor signal, Bank 2
29A3 PreCat 02 sensor signal, Bank 2
29A4 PreCat 02 sensor heater control, Bank 1
29A5 PreCat 02 sensor heater control, Bank 2
29A6 PreCat 02 sensor signal, Bank 1
29A7 PreCat 02 sensor signal, Bank 1
29A8 telegram monitoring failure: network failure power management
29A9 telegram monitoring failure: battery Powermanagement
29AB torque request with CAN
29AE Tank flap
29AF telegram and signal monitoring KL.15
29B5 Secondar air system
29B6 Cyl. switch off
29CC Misfire, several Cyls
29CD Misfire, Cyl. 1
29CE Misfire, Cyl. 2
29CF Misfire, Cyl. 3
29D0 Misfire, Cyl. 4
29D1 Misfire, Cyl. 5
29D2 Misfire, Cyl. 6
29D9 Misfire in case of tank filling level too low
29DA crankshaft sensor, segment adaptation
29DB engine roughness, segment time measurment
29DC Cyl. injection switch-off
29E0 fuel mixture control
29E1 fuel mixture control 2
29E2 fuel injection rail, pressure sensor signal
29E5 fuel mixture adaptation, upper speed range
29E6 fuel mixture adaptation 2, upper speed range
29F1 fuel pressure, plausibility
29F2 fuel high pressure system, fuel pressure
29F3 fuel pressure sensor, electrical
29F4 Cat conversion
29F5 Cat conversion 2
29F6 Cat conversion, complete system: below threshold
29F7 Cat conversion 2, complete system: below threshold
29FF secondary air system
2A00 secondary air system
2A01 secondary air valve, mechanics
2A02 secondary air valve, input signal
2A03 secondary air pump relay, input signal
2A04 secondary air mass sensor, plausibility
2A07 secondary air valve, mechanics
2A0C exhaust fume return, systemfunction
2A0D exhaust fume return valve, input signal
2A0E exhaustfume returnvalve, deviation postioncontroling
2A0F exhaust fume return valve, adaptation
2A10 exhaust fume return valve, signal
2A12 DMTL diagnosis module tank leakage, magnetic valve, input signal
2A13 DMTL diagnosis module tank leakage, leakage diagnosis pujmp, input signal
2A15 DMTL diagnosis module tank leakage, fine leakage
2A16 DMTL diagnosis module tank leakage, finest leakage
2A17 DMTL diagnosis module tank leakage, system failure
2A18 DMTL diagnosis module tank leakage, heating: input signal

Code	Description
2A19	tank ventilation valvel, input signal
2A1A	tank ventilation system, function
2A1B	tank lid
2A1C	tank filling level, plausibility
2A26	Cat conversion during shift operation
2A27	Cat 2, conversion during shift operation
2A29	Fuel low pressure sensor, Signal
2A2B	fuel mixture control
2A2C	fuel mixture control 2
2A2D	fuel low pressure system, fuel pressure
2A2E	mixture control
2A2F	mixture control 2
2A30	Valvetronic, eccentric shaft sensor: power supply
2A31	Valvetronic, eccentric shaft sensor: guidance
2A32	Valvetronic, eccentric shaft sensor: reference
2A33	Valvetronic, eccentric shaft sensor: guidance
2A34	Valvetronic, eccentric shaft sensor: reference
2A35	Valvetronic, eccentric shaft sensor: guidance
2A36	Valvetronic, eccentric shaft sensor: reference
2A37	Valvetronic, eccentric shaft sensor: plausibility
2A38	Valvetronic, actuator: sluggish or open circuit
2A39	Valvetronic, adjustable range
2A3A	Valvetronic, internal error
2A3B	Valvetronic, servo motor: rotation direction
2A3C	Valvetronic relay, input signal
2A3D	Valvetronic, adjustment motor: input signal
2A3E	Valvetronic, servo motor: overload
2A3F	Valvetronic, servo motor: power supply
2A40	Valvetronic, thermic overload protection
2A41	Valvetronic, electronic overload protection
2A42	Valvetronic, position at restart: plausibility
2A43	Valvetronic, thermic overload protection: warning threshold
2A44	Valvetronic, output limitation
2A45	Valvetronic, adjustment motor: plausibility
2A46	Valvetronic, adaption
2A47	Valvetronic, eccentric shaft sensor: plausibility
2A48	Valvetronic, Temp. Plausibility
2A49	Valvetronic, mechanical
2A4A	Valvetronic-servo motor
2A76	Valvetronic, matching voltage
2A77	ecu, internal error: Valvetronic-output
2A80	Intake Vanos variable cam control test, input signal
2A81	Intake VANOS, Control 2
2A82	Intake Vanos variable cam control test
2A85	Exhaust VANOS variable cam control test
2A86	Exhaust VANOS, Control 2
2A87	Exhaust Vanos variable cam control test, mechanics
2A8A	Intake VANOS, Adaption limit stop
2A8C	Exhaust VANOS, Adaption limit stop
2A92	Exhaust VANOS 1, control
2A93	Intake VANOS, control
2A94	crankshaft sensor, signal
2A95	crankshaft sensor, synchronisation
2A96	crankshaft sensor, tooth failure
2A97	crankshaft sensor, gap failure
2A98	crank shaft - intake camshaft, correlation
2A99	crank shaft - exhaust camshaft, correlation
2A9A	camshaft sensor intake, signal
2A9B	camshaft sensor exhaust, signal
2A9C	crank shaft sensor, electric
2A9E	camshaft sensor intake, synchonization
2A9F	camshaft sensor exhaust, synchronization
2AA0	camshaft sensor intake, signal
2AA1	camshaft sensor exhaust, signal
2AA2	camshaft sensor intake, gap loss
2AA3	camshaft sensor exhaust, loss
2AA4	camshaft sensor intake, tooth failure
2AA5	camshaft sensor exhaust, tooth failure
2AA8	variable suction unit adjustment motor: input signal
2AA9	variable suction unit adjustment motor 2: input signal
2AAA	variable suction unit, plausibility
2AAB	variable suction unit, self diagnosis
2AAC	variable suction unit 2, self diagnosis
2AAD	fuel pump, emergency off
2AAE	Fuel pump
2AAF	fuel pump, plausibility
2AB2	DME, internal error: RAM
2AB3	DME, internal error: checksum
2AB4	DME, internal error: RAM-checksum
2AB5	DME, internal error: knocksensor
2AB6	DME, internal error: output chip
2ABC	charging pressure sensor, electrical
2ABD	intake pressure sensor, re-running
2AC1	sound flap, control
2AC6	Sport switch signal
2AC7	Sport switch illumination, electric
2ACB	DME digital motor electronics main relay, input signal
2ACC	DME digital motor electronics main relay, switch delay
2AD0	gear control
2AD8	EAC-sensor, control
2AD9	EAC-sensor, coding
2ADA	EAC-sensor, electrical error
2ADB	EAC-sensor, communication
2ADC	EAC-Sensor, Communication
2ADF	idle running control, speed
2AE0	idle running control during cold start
2AE1	demand for power output in idle running too high
2AE4	engine ventilation-heater relais, control
2AE5	idle switch position OPEN
2AE6	idle switch position CLOSE
2AF0	nitric oxide sensor, heating
2AF2	nitric oxide sensor, Lambda linear
2AF4	NOXsensor, electrical
2AF6	nitric oxide sensor, Lambda binary
2B00	overspeed, lean-range
2C24	PreCat 02 sensors switched
2C27	PreCat 02 sensor systemcheck, Bank 1
2C28	PreCat 02 sensor systemcheck, Bank 2
2C2B	PreCat 02 sensor systemcheck, Bank 1
2C2C	PreCat 02 sensor systemcheck, Bank 2
2C2D	PreCat 02 sensor thrust control, Bank 1
2C2E	PreCat 02 sensor thrust control, Bank 2
2C31	PreCat 02 sensor trim control, Bank 1
2C32	PreCat 02 sensor trim control, Bank 2
2C37	PreCat 02 sensor heater connection, Bank 1
2C38	PreCat 02 sensor heater connection, Bank 2
2C39	PreCat 02 sensor dynamics, Bank 1
2C3A	PreCat 02 sensor dynamics, Bank 2
2C3B	PreCat 02 sensor disconnected, Bank 1
2C3C	PreCat 02 sensor disconnected, Bank 2
2C3D	PreCat 02 sensor lines/wires, Bank 1
2C3E	PreCat 02 sensor lines/wires, Bank 2
2C3F	DME, internal error: lambda probe (Bank 1) analysing chip
2C40	DME, internal error: lambda probe (Bank 2) analysing chip
2C41	DME, internal error: lambda probe Bank 1
2C42	DME, internal error: lambda probe Bank 2
2C6A	AfterCat 02 sensors switched
2C6B	AfterCat 02 sensor systemcheck, Bank 1
2C6C	AfterCat 02 sensor systemcheck, Bank 2
2C6D	AfterCat 02 sensor aging, Bank 1
2C6E	AfterCat 02 sensor aging, Bank 2
2C6F	AfterCat 02 sensor signal at full load, Bank 1
2C70	AfterCat 02 sensor signal at full load, Bank 2
2C73	AfterCat 02 sensor signal, Bank 1
2C74	AfterCat 02 sensor signal, Bank 2
2C75	AfterCat 02 sensor signal, Bank 1
2C76	AfterCat 02 sensor signal, Bank 2
2C77	AfterCat 02 sensor signal, Bank 1
2C78	AfterCat 02 sensor signal, Bank 2
2C79	AfterCat 02 sensor signal, Bank 1
2C7A	AfterCat 02 sensor signal, Bank 2
2C7B	AfterCat 02 sensor signal, Bank 1
2C7C	AfterCat 02 sensor signal, Bank 2
2C7E	AfterCat 02 sensor trim control, Bank 1
2C7F	AfterCat 02 sensor trim control, Bank 2
2C87	exhaust gas temp sensor signal
2C92	exhaust gas temperature sensor, electric
2C93	exhaust gas temperature sensor, plausibility
2C9C	PreCat 02 sensor heater input signal, Bank 1
2C9D	PreCat 02 sensor heater input signal, Bank 2
2C9E	AfterCat 02 sensor heater input signal, Bank 1
2C9F	AfterCat 02 sensor heater input signal, Bank 2
2CA6	PreCat 02 sensor function, Bank 1
2CA7	PreCat 02 sensor function, Bank 2
2CA8	AfterCat 02 sensor function, Bank 1
2CA9	AfterCat 02 sensor function, Bank 2
2CAA	PreCat 02 sensor temperature, Bank 1
2CAB	PreCat 02 sensor temperature, Bank 2
2CEC	throttle positioner, stuck for an intermediate time
2CED	throttle positioner, permanently stuck
2CEE	throttle positioner, sluggish
2CEF	throttle positioner, input signal
2CF6	throttle valve potentiometer 1, plausibility with regard to air mass
2CF7	throttle valve potentiometer 2, plausibility with regard to air mass
2CF9	throttle valve potentiometer 1
2CFA	throttle valve potentiometer 2
2CFB	throttle valve adaptation value
2CFC	throttle valve, start test
2CFD	throttle valve adaptation value missing
2CFE	throttle valve, continuous adaptation
2D06	air mass system
2D07	Throttle flap 1
2D09	Throttle valve
2D0B	throttle valve heater, Relay
2D0C	throttle valve, defrosting
2D0E	air mass meter, electrical
2D0F	air mass meter, signal
2D15	air mass sensor, metering range
2D16	air mass meter, signal
2D18	manipulation protection, max air mass
2D1B	accelerator pedal module, pedal sensor signal 1
2D1C	accelerator pedal module, pedal sensor signal 2
2D1D	accelerator pedal module, pedal sensor 1, voltage suppy
2D1E	accelerator pedal module, pedal sensor 2, voltage suppy
2D1F	accelerator pedal module, pedal sensor potentiometer, signal
2D20	accelerator pedal module, pedal sensor, plausibility between signal 1 and signal 2
2D28	differential pressure sensor, suction pipe: Signal
2D29	differential pressure sensor, suction pipe: plausibility
2D2A	differential pressure sensor, suction pipe: adaptation
2D2B	pressure sensor of the intake pipe, re-running
2D2E	angle of throttle valve - intake pipe underpressure, correlation
2D33	Absolute pressure sensor, intake pipe: Signal
2D35	Absolute pressure sensor, intake pipe: adaption
2D50	DME digital motor electronics, internal failure: driving speed contro
2D51	Air path control
2D52	DME digital motor electronics, internal failure: control motor speed
2D53	DME digital motor electronics, internal failure: control speed limitation
2D54	DME, internal error: control overspeed trip unit reset
2D55	DME digital motor electronics, internal failure: control driver pedal module
2D56	DME digital motor electronics, internal failure: control idle running
2D57	DME digital motor electronics, internal failure: control external torque requirement
2D58	DME digital motor electronics, internal failure: control nominal torque?
2D59	DME digital motor electronics, internal failure: control actual torque??
2D5A	control motor torque limitation
2D5B	DME, internal error: torque control
2D5C	DME digital motor electronics, internal failure: control hardware
2D5F	ECU, internal error: Reset
2D60	fuel mass, monitoring
2D61	throttle valve, monitoring
2D64	control stoichiometric mixture
2D67	DME digital motor electronics, internal failure: control processors
2DB5	driving speed control, signal
2DB6	cruise control, switch multifunction steering wheel
2DB7	driving speed control, time limit of data transfer achieved
2DBE	active speed control, locked for driving cycle
2DC0	longitudinal dynamics management
2DC3	control Klemme 15
2DC5	torque requirement over CAN, plausibility
2DC6	fuel tank level, plausibility
2DC8	message of electronic gear control? missing, electronic gear control? 1
2DC9	message of electronic gear control? missing, electronic gear control? 2
2DCC	message of ASC/DSC anti slip control/dynamic stability control missing, ASCanti slip control 1
2DCD	message of ASC/DSC anti slip control/dynamic stability control missing, ASCanti slip control 3
2DCE	message of ASC/DSC anti slip control/dynamic stability control missing, ASC 4
2DD0	message of instrument cluster missing, I-Kombi 2
2DD1	message of instrument cluster missing, I-Kombi 3
2DD2	message of LWS steering angle sensor control unit missing, LWS
2DD3	message of SMG-control unit missing, SMG 1
2DD4	telegramm (TxU) missing
2DD5	message from EKP missing
2DE0	message of electrical fuel pump missing, EKP
2DE1	fuel level sensor, right: Signal
2DE2	fuel level sensor, left: Signal
2DE3	message instrument panel missing, I-Kombi 7
2DEB	power management, vehicle wiring system control
2DEC	power management, battery control
2DED	power management, standby current control
2E18	ignition, Cyl. 1
2E19	ignition, Cyl. 2
2E1A	ignition, Cyl. 3
2E1B	ignition, Cyl. 4
2E1C	ignition, Cyl. 5
2E1D	ignition, Cyl. 6
2E24	ignition coil, Cyl. 1
2E25	ignition coil, Cyl. 2
2E26	ignition coil, Cyl. 3
2E27	ignition coil, Cyl. 4
2E28	ignition coil, Cyl. 5
2E29	ignition coil, Cyl. 6
2E30	injection valve Cyl. 1, input signal
2E31	injection valve Cyl. 2, input signal
2E32	injection valve Cyl. 3, input signal
2E33	injection valve Cyl. 4, input signal
2E34	injection valve Cyl. 5, input signal
2E35	injection valve Cyl. 6, input signal
2E68	knock sensor signal 1
2E69	knock sensor signal 2
2E6A	knock sensor signal 3
2E74	mixture adaption, injector ageing: Bank 1
2E75	mixture adaption, injector ageing: Bank 2
2E77	ignition, voltage suppy
2E7C	bit serial data interface, signal
2E81	electrical coolant pump, speed deviation
2E82	electrical coolant pump, shut down
2E83	electrical coolant pump, power reduced operation
2E84	electrical coolant pump, communication
2E85	electrical coolant pump, communication
2E8B	intelligent battery sensor, signal
2E8C	intelligent battery sensor, function
2E8D	intelligent battery sensor, signal transmission
2E8E	intelligent battery sensor, communication
2E96	generator, under excitation
2E97	Generator
2E98	generator, communication
2E9F	oil condition sensor
2EA1	oil condition sensor, communication
2EAE	message of nitrogen oxide sensor 1 missing
2EAF	message of nitrogen oxide sensor 2 missing
2EC2	LIN-Bus, communication
2ECB	Generator, emission worsening
2ECC	generator, communication
2ECD	Generator, electric
2ECE	Generator, Plausibility: electrical
2ECF	Generator, overtemperature
2ED0	Generator, plausibility: temperature
2ED1	Generator, mechanical
2ED2	Generator, controller false
2ED3	Generator, type false
2EE0	coolant temperature sensor, Signal
2EE1	coolant temperature sensor, plausibility
2EE2	coolant temp sensor, plausibility: Signal constant
2EE3	coolant temp sensor, plausibility: Gradient
2EE6	coolant temperature sensor, metering range
2EEA	temperature sensor radiator outlet, signal
2EEB	temperature sensor radiator outlet, plausibility, gradient
2EEC	temperature sensor radiator outlet, plausibility
2EF4	map thermostat, mechanics
2EF5	map thermostat, input signal
2EFE	electrical fan, input signal
2EFF	electrical fan, self diagnosis
2F08	inlet air temperature sensor, signal
2F09	inlet air temperature sensor, plausibility
2F0A	inlet air temperature sensor turbo charger, signal
2F0C	intake airtemperature, signal: Gradient
2F0D	radiator blind, input signal, (GLF)
2F0F	radiator blind, bottom
2F10	radiator blind, bottom
2F11	radiator blind, top
2F12	air conditioning compressor, input signal
2F44	EWS manipulation protection
2F45	interface EWS-DME
2F46	EWS code-saving
2F47	EWS irreversible ecu error
2F49	EWS manipulation protection
2F4A	interface EWS-DME electronic vehicle immobilization/digital motor electronics
2F4B	DME digital motor electronics, internal failure: EWS (electronic vehicle immobilization) data
2F4C	message EWS-DME digital motor electronics electronic vehicle immobilization-digital motor electronics failure
2F4E	vehicle speed, signal
2F4F	vehicle speed, plausibility
2F58	start automatics, input signal
2F63	brake light switch, plausibility

Code	Description
2F64	brake light test switch, plausibility
2F65	brake booster, system check
2F66	brake booster, electric ATIC39
2F67	clutch switch, signal
2F6C	exhaust flap, input signal
2F71	E-box-fan, input signal
2F76	ambient pressure sensor, signal
2F77	ambient pressure sensor, plausibility
2F79	ambient pressure sensor, re-running
2F7A	ambient pressure sensor, re-running
2F7B	oil pressure switch, plausibility
2F80	motor shutoff time, plausibility
2F85	DME digital motor electronics, internal failure: inside temperature sensor, signal
2F8F	accelerator pedal module and brake pedal, plausibility
2F94	fuel pump relay, input signal
2F99	ambient temperature sensor, plausibility
2F9A	ambient temperature sensor, communication
2F9E	thermal oil level sensor
2FA3	coding missing
2FA4	wrong data set
2FAB	active engine bearing
2FAC	Active engine bearing 2, electrical
2FBC	fuel pressure control valve, signal
2FBD	fuel pressure steuer ventil, plausibility
2FBE	fuel pressure after motorstop
2FBF	fuel pressure at injection release
2FC0	fuel pressure, measurement range
2FC3	fuel pressure steuer ventil, plausibility
2FC6	energy save mode active
2FC7	power saving mode 2, active
2FDA	cank case ventilation, system check
2FDB	cank case ventilation, electric ATIC39
3070	Cyl. same adjustment via irregular running Cyl. 1
3071	Cyl. same adjustment via irregular running Cyl. 2
3072	Cyl. same adjustment via irregular running Cyl. 3
3073	Cyl. same adjustment via irregular running Cyl. 4
3074	Cyl. same adjustment via irregular running Cyl. 5
3075	Cyl. same adjustment via irregular running Cyl. 6
307C	Cyl. same adjustment via Lambda Cyl. 1
307D	Cyl. same adjustment via Lambda Cyl. 2
307E	Cyl. same adjustment via Lambda Cyl. 3
307F	Cyl. same adjustment via Lambda Cyl. 4
3080	Cyl. same adjustment via Lambda Cyl. 5
3081	Cyl. same adjustment via Lambda Cyl. 6
30A0	ignition coil Cyl. 1, input signal
30A1	ignition coil Cyl. 2, input signal
30A2	ignition coil Cyl. 3, input signal
30A3	ignition coil Cyl. 4, input signal
30A4	ignition coil Cyl. 5, input signal
30A5	ignition coil Cyl. 6, input signal
30AC	injection valve Cyl. 1, input signal
30AD	injection valve Cyl. 2, input signal
30AE	injection valve Cyl. 3, input signal
30AF	injection valve Cyl. 4, input signal
30B0	injection valve Cyl. 5, input signal
30B1	injection valve Cyl. 6, input signal
30BA	Injector bank 1 or ECU, internal error
30BB	Injector bank 2 or ECU, internal error
30BE	injector, calibration: plausibility
30C0	motor oil pressure control, dynamically

Code	Description
30C1	motor oil pressure control, statically
30C2	oil pressure regulating valve, control
30C3	motor oil pressure sensor, signal
30C4	motor oil pressure control, mechanically
30C5	engine oil pump, mechanical: engine oil pressure
30C6	motor oil pressure sensor, plausibility
30C7	motor oil pressure system
30C8	motor oil pressure, final stage (preliminary)
30C9	engine oil pump, control
30CF	Wastegate, input signal
30D0	Wastegate 2, input signal
30D6	nitric oxide sensor, plausibility
30D8	NOX sensor, Sensor damaged
30DA	NOX sensor, Signal
30DC	nitric oxide senor, heating
30DE	NOX sensor - PreCat 02 sensor, Correlation
30E0	NOX sensor, Offset
30E2	NOX sensor, thrust test
30E4	NOX sensor, aging
30E6	NOX, dynamics
30E9	NOX Cat, aging
30EA	NOX Cat, sulfurated
30ED	extreme knock Cyl. 1
30EE	extreme knock Cyl. 2
30EF	extreme knock Cyl. 3
30F0	extreme knock Cyl. 4
30F1	extreme knock Cyl. 5
30F2	extreme knock Cyl. 6
30FC	Turbo charger, density
30FE	Turbo charger, high pressure side
30FF	Turbo charger, low pressure side
3100	Air charge control, shut-down
3104	engine roughness, layer charging operation
3105	engine roughness, layer charging operation: warming
3C1D	crank shaft sensor: signal
3C1E	camshaft sensor: input-signal
3C1F	camshaft sensor: output-signal
3D33	torque request with CAN
CD87	PT-CAN communication failure
CD8B	local-CAN communication failure
CD8F	PT-CAN communication error
CD94	message (outside temperature/relative time, 310)
CD95	Message (handling FGR / ACC, 194)
CD96	message (torque requirement ACCactive cruise control, B7)
CD97	Message (speed demand AFS, B1)
CD98	message (torque requirement DSCdynamic stability control, B6)
CD99	message (torque requirement EGSelectronic gear control?, B5)
CD9A	message (torque requirement SMG, BD)
CD9B	message (vehicle mode, 315)
CD9C	message (speed, 1A0)
CD9D	message (gear data, BA)
CD9E	message (gear data 2, 1A2)
CD9F	message (kilometer reading/coverage, 330)
CDA0	message (terminal state, 130)
CDA1	message (steering wheel angle, C4)
CDA2	message (power management battery voltage, 3B4)
CDA3	message power management load voltage, 334)

Code	Description
CDA4	message (status ARSactive roll stabilizing module, 1AC)acceleration?
CDA5	message (status DSCdynamic stability control, 19E)
CDA6	message (status electrical fuel pump, 335)
CDA7	message (status reverse gear, 3B0)
CDA8	message (status KOMBI, 1B4)
CDA9	Message (heat stream/load AC, 1B5)
CDAA	message (status crash shut off EKPelectric fuel pump, 135)
CDAB	message (lamp condition, 21A)
CDAC	message (status water valve, 3B5)
CDAD	message (requirement road wheel torque drive line, BF)
CDAE	message (time/date, 2F8)
CDAF	message (status trailer, 2E4)
CDB0	message (display gear data)
CDB1	message (status central locking system, 2FC)
CDB3	Message (speed demand steering, B9)
CDB4	Message (transmission data 3, 3B1) missing
CDB5	PT-CAN communication failure
CDB8	Message speed demand DKG, B8)
CDB9	message (status EMF, 201)
CDBA	message (Stellanforderung EMF, 1A7)
CDBE	message, (torque demand from DSC)

Table 21

Code	Description
2711	DMTL pump final stage
2712	DMTL magnetic valve control
2713	Oxygen sensors switched
2714	Oxygen sensor heater after cat. (bank2)
2715	Oxygen sensor heater before cat. (bank2)
2716	Controller heater sensor after cat
2717	Controller heater sensor after cat (Bank2)
2718	Speed (rpm) sensor for missing tooth
2719	Speed (rpm) sensor for periode timing
271A	Oxygen sensor before cat.
271B	Oxygen sensor before cat.
271C	Oxygen sensor after cat.
271D	Oxygen sensor heater before cat.
271E	Oxygen sensor heater after cat.
271F	Lambda sensor periode duration ageing
2720	Lambda sensor ageing TV
2721	Lambda sensor ageing after cat
2722	Oxygen sensor2 before cat.
2723	output heater O2-sensor before catalyst bank2
2724	Oxygen sensor2 after cat.
2725	Lambda sensor periode duration ageing bank2
2726	Lambda sensor ageing TV bank2
2727	Lambda sensor ageing after cat bank2
2728	Adaption multipl. area2
2729	Adaption multipl. area2 (bank2)
272A	Adaption multipl. area1
272B	Adaption multipl. area1 (bank1)
272C	Adaption add. per time
272D	Adaption add. per time (Bank2)
272E	Adaption add. per ignition
272F	Adaption add. per ignition bank2
2730	failure within the idle-speed control
2731	Camshaft control inlet - VANOS
2732	NW-Control of inlet B2 (8cyl)/outlet (4cyl)
2733	NW-KW synchronfailure
2734	TPS/MAF plausibility
2735	TPS/MAF plausibility bank2

Code	Description
2736	Throttle controller PWM short test
2737	EWS-manipulation control
2738	Catalytic-converter conversion
2739	Catalytic-converter conversion LSU
273A	Catalytic-converter conversion LSU bank2
273B	Throttle controller PWM long test
273C	Throttle controller diff.
273D	Catalytic-converter conversion (bank2)
273E	Signal temper.sensor exhaust1
273F	Signal temper.sensor exhaust2
2740	Pedal-travel1 permanently
2741	Pedal-travel2 permanently
2742	Misfire detection cyl.1
2743	Misfire detection cyl.3
2744	Misfire detection cyl.4
2745	Misfire detection cyl.2
2746	Misfire detection cyl.
2747	Misfire detection cyl.
2748	Misfire detection cyl
2749	Misfire detection cyl
274A	Misfire detection cyl
274B	Misfire detection cyl
274C	Misfire detection cyl
274D	Misfire detection cyl
274E	Misfire detection, Checksum failure
274F	Misfire, Checksum failure, service rel.
2752	Pedal-travel half plausibility
2753	Monitoring ign. coil 1
2754	Monitoring ign. coil 3
2755	Monitoring ign. coil 4
2756	Monitoring ign. coil
2757	Monitoring ign. coil
2758	Monitoring ign. coil
2759	Monitoring ign. coil
275A	Monitoring ign. coil
275B	Monitoring ign. coil
275C	Monitoring ign. coil
275D	Monitoring ign. coil
275E	Monitoring ign. coil
275F	Pedal-travel defect
2760	Secondary air system
2761	Secondary air system bank2
2762	Secondary air valve
2763	Secondary air valve bank2
2764	Controll sek.air pump relay
2765	Controll sek.air valve
2766	Phase generator1 time duration
2767	Phase generator2 time duration
2768	Phase generator positioning failure
2769	Spring test DK-controller open spring
276A	Control-unit recognition
276B	Secondary air valve output stage bank2
276C	Phase generator2 positioning failure
276D	Tank-ventilation functional check
276E	Tank-ventilation functional check bank2
276F	failure within secondary air system
2770	failure within secondary air system
2771	Secondary air system locked
2772	Controll gas ventilation valve
2773	Tank-ventilation valve output stage bank2
2774	Monitoring cyc. failurestoring
2775	engine moment monitoring level 2
2776	Interface multifunction stearing wheel
2777	Monitoring controller function
2778	Switch clutch
2779	SG selftest RAM
277A	Switch break
277B	SG selftest ROM
277C	SG selftest reset

Code	Description
277D	Battery Voltage
277E	Moment restrictor level 1
277F	Crankshaft sensor
2780	Ref. marking generator
2781	Camshaft sensor inlet
2782	Camshaft sensor outlet
2783	Hot film air mass meter
2784	Thermostat diag. THM
2785	DK-Potentiometer
2786	Throttle-valve potentiometer 1
2787	Throttle-valve potentiometer 2
2788	Vehicle speed
2789	Bad way detection
278A	Ambient temperature
278B	Engine temperature
278C	Intake air temperature
278D	Temp. sensor coolant temperature
278E	Diff. pressure sensor suction tube
278F	LowRange signal not plausible
2790	transmission temp.
2791	Parts exchange without adaption
2792	Drosselklappe - Positionsüberwachung
2793	DK-Actuator regulator area
2794	DK-Actuator controlled
2795	Spring test DK-controller closing spring
2796	Throttle flap lower stop
2797	DK-Controller failure booster
2798	Throttle flap emergency air point
2799	Abort DV-adaption because of enviroment
279A	Throttle flap adation - abort after reteaching
279B	Thermostat jammed
279C	Control heater cooler
279D	Control engine fan
279E	Output exhaust flap
279F	Output fanA
27A0	Controll E-box fan
27A1	failure within secondary air system 2
27A2	Temp.sensor engine LR
27A3	CAN timeout HDEV2 SG
27A4	EWS3.3 Schnittstelle EWS-DME
27A6	Ansteuerung Einspritzventil 1
27A7	Ansteuerung Einspritzventil 3
27A8	Ansteuerung Einspritzventil 4
27A9	Ansteuerung Einspritzventil 2
27AA	Ansteuerung Einspritzventil
27AB	Ansteuerung Einspritzventil
27AC	Ansteuerung Einspritzventil
27AD	Ansteuerung Einspritzventil
27AE	Ansteuerung Einspritzventil
27AF	Ansteuerung Einspritzventil
27B0	Ansteuerung Einspritzventil
27B1	Ansteuerung Einspritzventil
27B3	Diagnose DK/HFM adjustment
27B4	Ambient-pressure sensor
27B5	Control inlet-VANOS
27B6	Control inlet-VANOS bank2
27B7	Controll gas pump relay
27B8	Plausibility diff. pressure sensor
27B9	BLS/BTS Plausibility
27BA	Output AC-kompr. enable from AC-SG
27BB	Camshaft control outlet-VANOS
27BC	Camshaft control outlet-VANOS bank2
27BD	Control outlet-VANOS
27BE	Output outlet-VANOS bank2
27BF	Camshaft sensor inlet bank2
27C0	Camshaft sensor outlet bank2
27C1	Master camshaft sensor
27C2	Controll AC-compressor relay

Code	Description
27C3	Signal oil level sensor (TOENS)
27C6	LDP Diagnose 0.5mm leak
27C7	LDP Diagnose 1.0mm leak
27C8	LDP system
27C9	Leak diag. module
27CA	Ansteuerung DM-TL Pumpenmotor
27CB	DM-TL 0.5mm leak MIL off
27CC	DM-TL 1mm & 0.5mm leak
27CD	DM-TL module
27CE	Load sensor monitoring
27CF	Ignition time Cyl.1
27D0	Ignition time Cyl.3
27D1	Ignition time Cyl.4
27D2	Ignition time Cyl.2
27D5	failure within the idle-speed control
27D6	Output idle-speed controller OFF
27D7	Output idle-speed controller ON
27D8	Failure depressure pump
27D9	Output DM-TL heater
27DA	generator failure
27DC	EWS3.3 Random-code storing
27E1	monitoring pedal-travel sensor
27E2	Knock sensor 1
27E3	knock sensor2 bank1
27E4	Knock sensor 3
27E5	Knock sensor 4
27E6	Knock sensor zero test
27E7	Knock sensor offset
27E8	Knock regulation Test impulse
27E9	Knock sensor zero test bank2
27EA	CAN-Timeout HDEV
27EB	CAN-Timeout TCU
27EC	CAN-Timeout EGS
27ED	CAN-Timeout ASC/DSC
27EE	CAN-Timeout Instrumentenkombination
27EF	CAN ACC-Signalfehler
27F0	Plausibility MSR-control
27F1	Plausibility ACC-control
27F2	Plausibility gas level
27F3	CAN-Timeout VVT-Control unit
27F4	CAN-Timeout VVT-Control-unit bank2
27F5	CAN-Timeout DME-Control unit
27F6	Pedal-travel
27F7	Pedal-travel Poti1
27F8	Pedal-travel Poti2
27F9	Start automatic control
27FA	Input starter automatic
27FB	Output controlled airflow
27FD	Starter automatic
27FE	Knock control offset bank2
27FF	Knock control test signal bank2
280A	Assign. camshaft to crankshaft
280D	Control unit monitoring
280E	Control unit monitoring
280F	Camshaft control
2810	Engine speed monitoring
2811	Local CAN Bus Off
2812	oil temperature
2813	Control unit monitoring group A
2814	Control unit monitoring group B
2815	Control unit monitoring group C
2816	engine rpm monitor
2818	voltage-monitoring O2-sensor on air
281C	BSD wire failure
281D	Controll DISA
281E	DISA-mount response
2820	Failure DISA
2821	DISA temp. warn level engine protection model

Code	Description
2822	Forced switched EGS
2823	Heating lambda sensor befor Cat
2824	Heating lambda sensor befor Cat bank2
2825	Lambdasensor aging after Cat
2826	Lambdasensor aging after Cat bank2
2827	heater link at signal-path
2828	CAN ARS-Signalfehler
2829	CAN CAS-Signalfehler
282A	CAN IHKA-Signalfehler
282B	CAN PWML-Signalfehler
282C	CAN SZL-Signalfehler
282D	heater link at signal-path bank2
282E	PWG-movement
2830	aging of O2-sensor behind catalyst (Bank 2)
2832	Plausibility ASR-Torque
2833	Plausibility CAS
2834	Plausibility IHKA
2835	Plausibility PWML
2836	Plausibility SZL
2837	Plausibility EMF
2838	Output-stage AAV
2839	AAV-Functionality
283A	Failure oil quality sensor
283B	Camshaft control output bank2
283C	Camshaft control output
283D	PT - CAN bus off
283E	VVT enable controll
283F	Plausibilitaet Oeldruckschalter
2841	Air flushed injector valves control
2843	plausibility diagnostics LSU by LSH after catalyst
2844	internal diagnostics CJ125 SPI communication
2849	power break at pump-current
284A	short circuit to minus or to plus at sensor-line
284C	LSU dynamic too slow
284F	failure at speed-display kombi
2850	VVT-guiding sensor
2851	VVT-guiding sensor (bank2)
2852	VVT-ref. sensor
2853	VVT-ref. sensor (bank2)
2854	VVT-Sensor plausibility
2855	VVT-Sensor plausibility (bank2)
2856	VVT-Supply volatge for the sensor
2857	VVT-Supply volatge for the sensor (bank2)
2858	VVT-Teaching function at stop
2859	VVT-Teaching function at stop (bank2)
285A	VVT-Actuator monitoring
285B	VVT-Actuator monitoring (Bank2)
285C	VVT-CAN-communication
285D	VVT-CAN-communication (bank2)
285E	VVT-Control unit internal failure
285F	VVT-Control unit internal failure (bank2)
2860	VVT-Controll
2861	VVT-Controll (bank2)
2862	VVT-Power supply
2863	VVT-Power supply (bank2)
2864	DM-TL-Pump control failure
2865	Power supply limit VVT-emergency
2866	VVT-stops leaning necessary
2867	VVT system overload
2868	VVT system overload (bank2)
286F	AGR Valve output
2870	AGR Valve monitoring
2871	AGR Valve positioning sensor
2872	Diagnose AGR valve
2873	Output-stage HDEV-SG1 bank1
2874	Output-stage HDEV-SG1 bank2
2875	Output-stage HDEV-SG1 bank3
2876	Output-stage HDEV-SG2 bank1
2877	Output-stage HDEV-SG2 bank2
2878	Output-stage HDEV-SG2 bank3
2879	Signal exhaust temp. sensor 4
287A	Output pressure control valve
287B	Signal exhaust temp. sensor 3
287C	Pressure sensor suction tube
287D	Signal rail-pressure sensor
287E	Pressure control valve
287F	High pressure sensor test
2880	AGR system
2881	CDKBKE Output twist generator controller
2882	Output pressure control valve
2883	Rail-pressure regulation
2889	plausibility monitoring of the RAM backup
2893	DME- Temperature
2898	lambda sensor after cat bank1: signal
28A0	Output gas circuit switch
28C8	Lambdacontrol mismatch
28C9	Lambdacontrol mismatch bank2
28D2	Pressure sensor charge-air
28D3	Plausibility ambient- to charge pressure
28D4	Pressure control valve
28D5	Output charge pressure control valve
28D6	HO-Proc.failure, coding missing
28D7	Generator communication
28D8	RAM backup-failure
28D9	elec. heater
28DA	CAN timeout elec. heater
28DB	min. Lift adaption repeat. ran over
28DC	generator 2 communication
2906	AGR valve monitoring
2907	AGR valve monitoring
2908	CAN timeout DSG SG
2909	CAN timeout EGS
290A	active front steering torque
292B	LSU adjustment line
292C	LSU adjustment line bank2
292D	LSU Nernst cell break
292E	LSU Nernst cell break bank2
2930	LSU virtual mass break
2931	LSU virtual mass break bank2
2936	fuel pressure sensor
2937	funktion monitoring: Lambda Plausibility
296B	inverted lambda sensors of front cat
2972	Control pump for breaks
297D	CAN SSG signal failure
2981	Control controlled airflow
299B	IBS communication
299C	IBS general error
299D	IBS plausibility
29A8	power management network failure
29A9	power management
29AE	tank-ventilation-system major leak
29CC	misfire detection summation error
29CD	misfire detection cylinder 1 in 1. ignition sequence
29CE	misfire detection cylinder 2 in 4. ignition sequence
29CF	misfire detection cylinder 3 in 2. ignition sequence
29D0	misfire detection cylinder 4 in 3. ignition sequence
29D9	misfire at too low fuel filling level
29DD	Bad way detection
29E5	LR-Adaption multiplicative area2 (Bank1)
29E6	LR-Adaption multiplicative area2 (Bank2)
29E7	LR-Adaption additive per time (Bank1)
29E8	LR-Adaption additive per time (Bank2)
29E9	LR-Adaption add. per ignition
29EA	LR-Adaption add. per ignition bank2
29EB	LR-Deviation
29EC	LR-Deviation bank2
29ED	LR-Adaption multiplicative area1 (Bank1)
29EE	LR-Adaption multiplicative area1 (Bank2)
29F4	Catalytic-converter conversion
29F5	Catalytic-converter conversion (bank2)
29F8	Cat-konversion LSU
29F9	Catalytic-converter conversion LSU bank2
29FE	secondary air injection system
29FF	secondary air system (Bank2)
2A01	secondary air injection control valve
2A02	Control air system valve
2A03	secondary air pump relay
2A05	Secondary air valve bank2
2A0E	AGR valve
2A12	magnetic valve DMTL control
2A13	Control DMTL pump motor
2A14	DM-TL Fine leak
2A15	tank-ventilation-system major leak
2A16	DM-TL 0.5mm leak MIL off
2A17	DM-TL module
2A18	Control DMTL heater
2A19	Tank ventilation
2A1A	Tank-ventilation functional check
2A1D	Tank leakage monitoring
2A1E	Leackage diagnostic pump
2A58	VVT-Enable control
2A59	VVT-leading sensor
2A5A	VVT-leading sensor bank2
2A5B	VVT-ref. sensor
2A5C	VVT-ref. sensor (bank2)
2A5D	VVT-Sensor plausibility
2A5E	VVT-Sensor plausibility (bank2)
2A5F	VVT-Supply volatge for the sensor
2A60	VVT-Supply volatge for the sensor (bank2)
2A61	VVT-Teaching function at stop
2A62	VVT-Teaching function at stop (bank2)
2A63	VVT-Actuator monitoring
2A64	VVT-Actuator monitoring (Bank2)
2A65	VVT-Control unit internal failure
2A66	VVT-Control unit internal failure (bank2)
2A67	VVT-activation
2A68	VVT-Output-stage (bank2
2A69	VVT-Power supply
2A6A	VVT-Power supply (bank2)
2A6B	Power supply limit VVT-emergency
2A6C	VVT-stops leaning necessary
2A6D	VVT-system overload
2A6E	VVT-system overload bank2
2A6F	multip. min lift adaption stop
2A70	error current plausibility
2A71	output stage diagnostics of discharge relay VVT
2A72	Actuator control VVT throw adjustment
2A80	injector-VANOS
2A81	Control inlet-VANOS bank2
2A83	camshaft control- Input
2A85	outlet-VANOS
2A86	Control outlet-VANOS bank2
2A88	camshaft control outlet
2A89	camshaft control outlet-VANOS bank2
2B5C	Crankshaft sensor
2B5D	Ref. marking generator
2B61	Assign. camshaft to crankshaft
2B62	camshaft sensor inlet
2B63	camshaft sensor outlet
2B64	camshaft sensor inlet bank2
2B65	camshaft sensor outlet bank2
2B66	Master camshaft sensor
2B70	DISA
2B71	Failure DISA
2B72	DISA temp. warn level engine protection model
2B7F	Diagnose DK/HFM adjustment
2B80	idle running controling
2B8A	Knock sensor zero test
2B8B	Knock sensor offset
2B8C	Knock regulation Test impulse
2B8D	Knock sensor zero test bank2
2B8E	Knock control offset bank2
2B8F	Knock control test signal bank2
2B98	plausibility monitoring of the RAM backup
2B99	RAM Backup
2B9A	ECU self-test RAM
2B9B	ECU self-test ROM
2B9C	ECU self-test Reset
2B9D	overvoltage detection on VCC
2B9E	Energy saving mode active
2BA7	torque restrictor level 1
2BB6	Control main relay
2C24	interchanged O2-sensors
2C37	heater link at signal-path
2C38	heater link at signal-path bank2
2C39	LSU dynamic too slow
2C3A	LSU dynamic too slow bank2
2C3B	voltage-monitoring O2-sensor on air
2C3C	voltage-monitoring O2-sensor on air bank2
2C45	lambda sensor in front of cat
2C46	Lambda sensor of front cat bank2
2C47	short circuit to minus or to plus at sensor-line
2C48	short circuit to minus or to plus at sensor-line bank2
2C49	plausibility diagnostics LSU by LSH after catalyst
2C4A	plausibility diagnostics LSU by LSH after catalyst bank2
2C4B	internal diagnostics CJ125 SPI communication
2C4C	internal diagnostics CJ125 SPI communication bank2
2C4D	power break at pump-current
2C4E	power break at pump-current bank2
2C4F	LSU adjustment line
2C50	LSU adjustment line bank2
2C51	LSU Nernst cell break
2C52	LSU Nernst cell break bank2
2C53	LSU virtual mass break
2C54	LSU virtual mass break bank2
2C55	Lambda sensor periode duration ageing
2C56	Lambda sensor ageing TV
2C6A	inverted lambda sensors of front cat
2C6D	Lambda sensor aging of rear cat bank1
2C6E	Lambda sensor aging of rear cat bank2
2C6F	lambda sensor aging of rear cat (VL- test)
2C70	aging of O2-sensor behind catalyst (Bank 2)
2C71	lambda sensor in rear of cat
2C72	Lambda sensor of rear cat bank2
2C9C	output heater O2-sensor before catalyst
2C9D	output heater O2-sensor before catalyst bank2
2C9E	Control heater sensor after cat
2C9F	Control heater sensor after cat (bank2)
2CA0	lambda sensor heating in front of cat
2CA1	Oxygen sensor heater before cat. (bank2)
2CA2	heating lambda sensor of front cat (shearing stress)
2CA3	heating lambda sensor of front cat (shearing stress) Bank2
2CA8	Oxygen sensor heater after cat.
2CA9	Oxygen sensor heater after cat. (bank2)
2CEF	DK-actuator
2CF0	DK-Actuator regulator area
2CF1	DK position monitoring
2CF8	DK-poti sensor
2CF9	Throttle-valve potentiometer 1
2CFA	Throttle-valve potentiometer 2
2CFF	DK-Controller failure booster
2D00	spring-check throttle-valve-actuator closing spring
2D01	spring-check throttle-valve-actuator opening spring
2D02	error emergency air setpoint
2D03	Abort DV-adaption because of enviroment
2D04	throttle valve adaption
2D05	Abort at UMA-repeat learning
2D08	parts exchange without adaption
2D0F	Hot film air mass meter
2D10	Plausibility HFM
2D11	Plausibility, mass flow Lambda sensor
2D12	Plausibility, mass flow Lambda sensor BAnk2
2D19	PWG-movement
2D1A	accelarator potentiometer
2D1B	Pedal-travel Poti1
2D1C	Pedal-travel Poti2
2D28	Diff. pressure sensor suction tube
2D29	Plausibility diff. pressure sensor
2D32	Plausibility pressure sensor intake tube
2D6E	moment monitoring level 2
2D6F	Load sensor monitoring
2D70	Control unit monitoring group A
2D71	Control unit monitoring group B
2D72	Control unit monitoring group C
2D73	fuel pressure sensor
2D74	funktion monitoring: Lambda Plausibility
2D75	engine speed monitoring
2D76	pedal encoder monitoring (level2)
2D78	Control air mass flow adjustment
2DB4	interface MFL
2DBF	CAN ACC signal failure
2DC8	CAN- Timeout EGS
2DCA	CAN timeout EGS
2DCB	CAN SSG signal failure
2DCF	CAN- Timeout instrument combination
2DD6	CAN- Timeout ASC/DSC
2DD7	CAN timeout DSG SG
2DD8	active front steering torque
2DD9	CAN ARS signal failure
2DDA	CAN CAS signal failure
2DDB	CAN IHKA signal failure
2DDC	CAN SZL signal failure
2DDD	CAN-Timeout VVT-Control unit
2DDE	VVT-CAN-communication
2DDF	VVT-CAN-communication (bank2)
2DE6	CAN-Timeout DME-Control unit
2DEB	power management network failure
2DEC	power management
2DED	Powermanagement: quiescent current violation
2E24	spark coil cylinder 1 in 1. ignition sequence
2E25	spark coil cylinder 2 in 4. ignition sequence
2E26	spark coil cylinder 3 in 2. ignition sequence
2E27	spark coil cylinder 4 in 3. ignition sequence
2E30	injection valve cylinder 1 in 1. cylinder sequence
2E31	injection valve cylinder 2 in 4. cylinder sequence
2E32	injection valve cylinder 3 in 2. cylinder sequence
2E33	injection valve cylinder 4 in 3. cylinder sequence
2E68	Knock sensor 1
2E69	knock sensor2 (Bank1)
2E6A	Knock sensor 3
2E6B	Knock sensor 4
2E7C	BSD wire failure
2E86	Electrical water pump
2E8B	IBS communication
2E8C	IBS general error
2E8D	IBS plausibility
2E95	generator communication
2E97	CDKGEN/CDKGEN - BSD generator
2E9F	Failure oil quality sensor
2EA0	Oil status sensor
2EB8	BSD-message from IBS not existent
2EBC	BSD message from oil sensor missing
2EBD	BSD message from generator missing
2EBE	BSD message from generator missing
2EE0	Temperature sensor engine cooling liquid
2EEA	Temp. sensor coolant temperature
2EF4	Thermostat characteristic diagram cooling, mechanical
2EF5	Thermostat characteristic diagram cooling, activation
2EF6	characteristic diagram thermostat
2EFE	engine blower
2F08	Intake air temperature
2F0D	Control controlled airflow
2F12	Air conditioner compressor control
2F17	Forced switched EGS
2F1C	oil temperature sensor
2F21	engine controller, power reduction
2F44	EWS3.3 manipulation protection
2F45	EWS3.3 Interface DME-EWS
2F46	EWS3.3 Random-code storing
2F4E	Vehicle speed
2F50	failure at speed-display kombi
2F58	Control starter automatic
2F59	Input starter automatic
2F5A	Start automatic control
2F62	Switch brakes
2F67	Switch clutch
2F6C	Control exhaust flap
2F71	E-Box blower
2F76	Ambient-pressure sensor
2F7B	oil pressure switch
2F80	error CAN / relative timer
2F85	DME- Temperature
2F8A	Battery Voltage
2F94	fuelpump relay
2F99	Ambient temperature
2F9E	Thermical oillevel sensor
2FA3	HO-proc.failure, coding missing
2FB2	suction jet pump for brake force amplifier
2FB7	electr. under pressure pump for brake booster

Code	Description
CD87	PT - CAN bus off
CD8B	Local CAN Bus Off
CD9B	status vehicle-mode
CDA1	angle of steering wheel
CDA2	powermanagement battery voltage
CDA3	powermanagement charge voltage
CDA7	status gear reverse
CDAA	control crash-switch-off EKP
CDAC	status water valve

Table 22

Code	Description
2712	magnetic valve DMTL control
2713	interchanged O2-sensors
2714	Oxygen sensor heater after cat. (bank2)
2715	Oxygen sensor heater before cat. (bank2)
2716	Control heater sensor after cat
2717	Control heater sensor after cat (bank2)
271A	lambda sensor before catalyst bank 1
271B	output heater O2-sensor before catalyst
271C	Oxygen sensor after cat.
271D	Oxygen sensor heater before cat.
271E	Oxygen sensor heater after cat.
271F	Lambda sensor periode duration ageing
2720	Lambda sensor ageing TV
2721	Lambda sensor ageing after cat
2722	Oxygen sensor2 before cat.
2723	output heater O2-sensor before catalyst bank2
2724	Oxygen sensor2 after cat.
2725	Lambda sensor periode duration ageing bank2
2726	Lambda sensor ageing TV bank2
2727	Lambda sensor ageing after cat bank2
2728	LR-Adaption multiplicative area2
2729	LR-Adaption multiplicative area2 (bank2)
272A	LR-Adaption multiplicative area1
272B	LR-Adaption multiplicative area1 (bank1)
272C	LR-Adaption additive per time
272D	LR-Adaption additive per time (bank2)
272E	LR-Adaption add. per ignition
272F	LR-Adaption add. per ignition bank2
2731	camshaft control inlet
2732	NW-intaken control bank2
2737	EWS3.3 manipulation protection
2738	Catalytic-converter conversion
2739	Cat-konversion LSU
273A	Catalytic-converter conversion LSU bank2
273D	Catalytic-converter conversion (bank2)
273E	exhaust temperature sensor in front of catalyst
273F	exhaust temperature sensor in front of catalyst (Bank2)
2742	misfire detection cyl. 1
2743	misfire detection cyl. 5
2744	misfire detection cyl. 4
2745	misfire detection cyl. 8
2746	misfire detection cyl. 6
2747	misfire detection cyl. 3
2748	misfire detection cyl. 7
2749	misfire detection cyl. 2
274E	Misfire detection, Checksum failure
2753	monitoring igniter 1
2754	monitoring igniter 5
2755	monitoring igniter 4
2756	monitoring igniter 8
2757	monitoring igniter 6
2758	monitoring igniter 3
2759	monitoring igniter 7
275A	monitoring igniter 2
2760	secondary air injection system
2761	Secondary air system bank2
2762	secondary air injection control valve
2763	Secondary air valve bank2
2764	Control stagerelais secondary air pumpe
2765	Control air system valve
2769	spring-check throttle-valve-actuator opening spring
276B	Control secondary air valve bank2
276D	Tank-ventilation functional check
276E	Tank-ventilation functional check bank2
2772	Control tank-ventilation valve
2773	Control tank-ventilation valve bank2
2774	Engine Off Time
2775	engine moment monitoring level 2
2776	interface MFL
2777	Monitoring controller function
2778	Switch clutch
2779	ECU self-test RAM
277A	Switch brakes
277B	ECU self-test ROM
277C	ECU self-test Reset
277D	Battery Voltage
277E	torque restrictor level 1
277F	Crankshaft sensor
2780	Ref. marking generator
2781	camshaft sensor inlet
2782	camshaft sensor outlet
2783	Hot film air mass meter
2785	DK-poti sensor
2786	Throttle-valve potentiometer 1
2787	Throttle-valve potentiometer 2
2788	Vehicle speed
2789	Bad way detection
278A	Ambient temperature
278B	Engine temperature
278C	Intake air temperature
278D	Temp. sensor coolant temperature
278E	Diff. pressure sensor suction tube
278F	LowRange signal not plausible
2790	transmission temp.
2791	parts exchange without adaption
2792	DK position monitoring
2793	DK-Actuator regulator area
2794	DK-Actuator controlled
2795	spring-check throttle-valve-actuator closing spring
2796	check at lower stop
2797	DK-Controller failure booster
2798	error emergency air setpoint
2799	Abort DV-adaption because of enviroment
279A	Abort at UMA-repeat learning
279B	Thermostat jamming
279C	Control thermostat map cooling
279D	Control engine fan
279E	Control exhaust flap
279F	Control fan A
27A0	Control E-box fan
27A4	EWS3.3 Interface DME-EWS
27A6	activation EV1
27A7	activation EV5
27A8	activation EV4
27A9	activation EV8
27AA	activation EV6
27AB	activation EV3
27AC	activation EV7
27AD	activation EV2
27B3	Diagnose DK/HFM adjustment
27B4	Ambient-pressure sensor
27B5	Control inlet-VANOS
27B6	Control inlet-VANOS bank2
27B7	Control fuel pump relay
27B8	Plausibility diff. pressure sensor
27BB	camshaft control outlet-VANOS0
27BC	camshaft control outlet-VANOS bank2
27BD	Control outlet-VANOS
27BE	Control outlet-VANOS bank2
27BF	camshaft sensor inlet bank2
27C0	camshaft sensor outlet bank2
27C1	Master camshaft sensor
27C2	Control A/C-compressor control
27C3	Failure oil status sensor
27C8	tank-ventilation-system major leak
27CA	Control DMTL pump motor
27CB	DM-TL 0.5mm leak MIL off
27CC	DM-TL Fine leak
27CD	DM-TL module
27CE	Load sensor monitoring
27D5	failure within the idle-speed control
27D9	Control DMTL heater
27DA	generator failure
27DC	EWS3.3 Random-code storing
27E1	monitoring fuel-travel sensor
27E2	Knock sensor 1
27E3	Knock sensor 2
27E4	Knock sensor 3
27E5	Knock sensor 4
27E6	Knock sensor zero test
27E7	Knock sensor offset
27E8	Knock regulation Test impulse
27E9	Knock sensor zero test bank2
27EA	CAN-Timeout HDEV
27EB	CAN-Timeout TXU
27EC	CAN EGS signal failure
27ED	CAN ASC/DSC signal failure
27EE	CAN Instrument cluster signal failure
27EF	CAN ACC signal failure
27F0	Plausibility MSR-control
27F1	Plausibility ACC-control
27F2	Plausibility gas level
27F3	CAN-Timeout VVT-Control unit
27F5	CAN-Timeout DME-Control unit
27F6	accelarator potentiometer
27F7	Pedal-travel Poti1
27F8	Pedal-travel Poti2
27F9	Control starter automatic
27FA	Input starter automatic
27FB	controlled airflow
27FD	Start automatic control
27FE	Knock control offset bank2
27FF	Knock control test signal bank2
2812	oil temperature
2813	Control unit monitoring group A
2814	Control unit monitoring group B
2815	Control unit monitoring group C
2816	engine speed monitoring
2818	voltage-monitoring O2-sensor on air
281D	BSD wire failure
281E	Control DISA
281F	voltage-monitoring O2-sensor on air bank2
2820	Failure DISA
2821	DISA temp. warn level engine protection model
2822	Forced switched EGS
2823	Lambda sensor heater before cat (within accelaration)
2824	Lambda sensor heater before cat (within accelaration) bank2
2825	aging of O2-sensor behind catalyst
2826	aging of O2-sensor behind catalyst (Bank 2)
2827	heater link at signal-path
2828	CAN ARS signal failure
2829	CAN CAS signal failure
282A	CAN IHKA signal failure
282B	CAN PWML signal failure
282C	CAN SZL signal failure
282D	heater link at signal-path bank2
282E	PWG-movement
2830	aging of O2-sensor behind catalyst (Bank 2)
2832	plausibility diagnostics LSU by LSH after catalyst bank2
2833	internal diagnostics CJ125 SPI communication bank2
2834	power break at pump-current bank2
2835	short circuit to minus or to plus at sensor-line bank2
2836	LSU dynamic too slow bank2
283A	Failure oil quality sensor
283E	VVT-enable-wire control
283F	Plausibility oil pressure switch
2841	Containment injectors control
2842	2. generator error
2843	plausibility diagnostics LSU by LSH after catalyst
2844	internal diagnostics CJ125 SPI communication
2849	power break at pump-current
284A	short circuit to minus or to plus at sensor-line
284C	LSU dynamic too slow
284F	failure at speed-display kombi
2850	VVT-leading sensor
2851	VVT-leading sensor bank2
2852	VVT-ref. sensor
2853	VVT-ref. sensor (bank2)
2854	VVT-Sensor plausibility
2855	VVT-Sensor plausibility (bank2)
2856	VVT-Supply volatge for the sensor
2857	VVT-Supply volatge for the sensor (bank2)
2858	VVT-Teaching function at stop
2859	VVT-Teaching function at stop (bank2)
285A	VVT-Actuator monitoring
285B	VVT-Actuator monitoring (Bank2)
285C	VVT-CAN-communication
285D	VVT-CAN-communication (bank2)
285E	VVT-Control unit internal failure
285F	VVT-Control unit internal failure (bank2)
2860	VVT-Output
2861	VVT-Output-stage (bank2)
2862	VVT-Power supply
2863	VVT-Power supply (bank2)
2864	DM-TL-Pump control failure
2865	Power supply limit VVT-emergency
2866	VVT-stops leaning necessary
2867	VVT-system overload
2868	VVT-system overload bank2
287C	Pressure sensor suction tube
2880	AGR system
2889	plausibility monitoring of the RAM backup
28C8	LR-Deviation
28C9	LR-Deviation bank2
28D2	Pressure sensor charge-air
28D3	charge pressure sensor
28D4	charge pressure actuator
28D5	Control charge pressure control valve
28D6	HO-proc.failure, coding missing
28D7	generator communication
28D8	network-system switched off, error-memory deleted
28DB	multip. min lift adaption stop
28DC	generator 2 communication
2908	CAN Timeout DSC SG
2909	CAN timeout EGS
290A	active front steering torque
292B	LSU adjustment line
292C	LSU adjustment line bank2
292D	LSU Nernst cell break
292E	LSU Nernst cell break bank2
2930	LSU virtual mass break
2931	LSU virtual mass break bank2
297D	CAN SSG signal failure
2981	Control controlled airflow
2982	oil control light activation
299B	Communication DME - IBS
299C	IBS proprietary diagnostic 1
299D	IBS proprietary diagnostic 2
29A8	power management network failure
29A9	power management
29AE	Check Filler Cap
29CC	misfire, several cylinder
29CD	misfire, cylinder 1
29CE	misfire, cylinder 2
29CF	misfire, cylinder 3
29D0	misfire, cylinder 4
29D1	misfire, cylinder 5
29D2	misfire, cylinder 6
29D3	misfire, cylinder 7
29D4	misfire, cylinder 8
29D9	misfire with low fuel
29DD	Bad way detection
29E5	mixture adaption, upper speed range
29E6	mixture adaption 2, upper speed range
29E7	mixture adaption at idle speed per time
29E8	mixture adaption 2 at idle speed per time
29E9	mixture adaption at idle speed per ignition
29EA	mixture adaption 2 at idle speed per ignition
29EB	mixture adaption, deflection
29EC	mixture adaption 2, deflection
29ED	mixture adaption, lower speed range
29EE	mixture adaption 2, lower speed range
29EF	mixture adaption, total fault
29F0	mixture adaption 2, total fault
29F4	catalyst conversion
29F5	Catalyst convertion 2
29FE	Sekundary air system
2A01	Sekundary air valve, Mechanics
2A02	Sekundary air valve, Control
2A03	Sekundary air pump relais, Control
2A05	Sekundary luftventil 2, Mechanics
2A08	secondary air system 2
2A09	secondary airpump plausibility
2A12	DMTL-magnetic valve, control
2A13	DMTL-Leckdiagnosepumpe, control
2A14	DMTL, subtlest leakage
2A15	DMTL, fine leakage
2A16	DMTL, subtlest leakage
2A17	DMTL, system error
2A18	DMTL, Heizung: control
2A19	fuel evaporation valve, control
2A1A	fuel evaporation system, function
2A1B	gascap
2A1C	fuel level, plausibility
2A1D	fuel level, plausibility
2A1E	fuel level, signal
2A20	Tank ventilation valve, plausibility
2A23	DMTL, leakage diagnostic pump
2A58	Valvetronic, power supply
2A59	Valvetronic, eccentric shaft sensor: guide
2A5A	Valvetronic, eccentric shaft sensor 2: guide
2A5B	Valvetronic, eccentric shaft sensor: reference
2A5C	Valvetronic, eccentric shaft sensor 2: reference
2A5D	Valvetronic, eccentric shaft sensor: plausibility
2A5E	Valvetronic, eccentric shaft sensor 2: plausibility
2A5F	Valvetronic, eccentric shaft sensor: power supply
2A60	Valvetronic, eccentric shaft sensor 2: power supply
2A61	Valvetronic, adjustable range
2A62	Valvetronic, adjustable range 2
2A63	Valvetronic, servo motor: monitoring tightness, rotation direction
2A64	Valvetronic, servo motor 2: monitoring tightness, rotation direction
2A65	Valvetronic, internal error
2A66	Valvetronic, internal error 2
2A67	Valvetronic, servo motor: control
2A68	Valvetronic, servo motor 2: control
2A69	Valvetronic, servo motor: power supply
2A6A	Valvetronic, servo motor 2: power supply
2A6B	Valvetronic, power limitation
2A6C	Valvetronic, position at restart: plausibility
2A6D	Valvetronic, electric overload protection
2A6E	Valvetronic, electrical overload protection 2
2A6F	Valvetronic, minimal stroke
2A80	Intake-VANOS, control
2A81	Intake-VANOS, Control 2
2A83	intake-VANOS
2A84	Intake-VANOS 2
2A85	outlet-VANOS, control
2A86	Outlet-VANOS, Control 2
2A88	Outlet-VANOS
2A89	Outlet-VANOS 2
2A8A	intake-VANOS, Adaption limit stop
2A8B	intake-VANOS, Adaption limit stop 2
2A8C	outlet-VANOS, Adaption limit stop
2A8D	outlet-VANOS, Adaption limit stop 2
2A8E	intake camshaft, cog offset of crankshaft
2A8F	intake camshaft 2, cog offset of crankshaft
2A90	outlet camshaft, cog offset of crankshaft
2A91	outlet camshaft 2, cog offset of crankshaft
2B5C	crankshaft sensor, signal
2B5D	crankshaft sensor, plausibility
2B61	crankshaft - camshaft, correlation
2B62	camshaft sensor, intake
2B63	camshaft sensor, outlet
2B64	camshaft sensor 2, intake
2B65	camshaft sensor 2, outlet
2B66	camshaft sensor, master
2B70	variable intake system, control
2B71	Variable suction system
2B72	variable intake system, temperature warning limit
2B73	Variable intake system, plausibility
2B7F	trim throttle valve-air mass sensor
2B80	idle running control
2B84	Intake flap, Signal
2B98	ecu, internal error: RAM backup, plausibility
2B99	ecu, internal error: RAM backup

Code	Description
2B9A	ecu, internal error: RAM
2B9B	ecu, internal error: ROM
2B9C	ecu, internal error: reset
2B9D	ecu, internal error: overvoltage
2BA7	monitoring engine torque limit
2BBF	Oil control lamp Control
2BC0	Environment temperature sensor, Plausibility
2BC1	ambienttemperature sensor, signal
2C24	lambda probe front catalyst, exchanged
2C31	lambda probe front catalyst, adjustment control
2C32	lambda probe front catalyst 2, adjustment control
2C37	lambda probe front catalyst, heater interconnection
2C38	lambda probe front catalyst 2, heater interconnection
2C39	lambda probe front catalyst, dynamic
2C3A	lambda probe front catalyst 2, dynamic
2C3B	lambda probe front catalyst, not plugged
2C3C	lambda probe front catalyst 2, not plugged
2C45	lambda probe front catalyst
2C46	lambda probe front catalyst 2
2C47	lambda probe front catalyst, sensor line
2C48	lambda probe front catalyst 2, sensor line
2C49	lambda probe front catalyst, plausibility
2C4A	lambda probe front catalyst 2, plausibility
2C4B	ecu, internal error: lambda probe divice
2C4C	ecu, internal error: lambda probe divice 2
2C4D	lambda probe front catalyst, pumping electricity line
2C4E	lambda probe front catalyst 2, pumping electricity line
2C4F	lambda probe front catalyst, alignment line
2C50	lambda probe front catalyst 2, alignment line
2C51	lambda probe front catalyst, Nernst line
2C52	lambda probe front catalyst 2, Nernst line
2C53	lambda probe front catalyst, virtuell mass
2C54	lambda probe front catalyst 2, virtuell mass
2C61	lambda probe front catalyst, electrical error
2C62	lambda probe front catalyst 2, electrical error
2C6D	lambda probe rear catalyst, aging
2C6E	lambda probe rear catalyst 2, aging
2C71	lambda probe rear catalyst
2C72	lambda probe rear catalyst 2
2C9C	lambda probe heater front catalyst, control
2C9D	lambda probe heater front catalyst 2, control
2C9E	lambda probe heater rear catalyst, control
2C9F	lambda probe heater rear catalyst 2, control
2CA0	lambda probe heater front catalyst
2CA1	lambda probe heater front catalyst 2
2CA2	Lambda probe heating in front of catalyst, shearing stress
2CA3	Lambda probe heating in front of catalyst 2, shearing stress
2CA8	lambda probe heater rear catalyst, funktion
2CA9	lambda probe heater rear catalyst 2, funktion
2CEF	throttle valve actuator, control
2CF0	throttle valve actuator, control range
2CF1	throttle valve actuator, position monitoring
2CF8	throttle valve potentiometer
2CF9	throttle valve potentiometer 1
2CFA	throttle valve potentiometer 2
2CFF	throttle valve actuator, amplifier alignment
2D00	throttle valve actuator, spring check closing spring
2D01	throttle valve actuator, spring check opening spring
2D02	throttle valve actuator, auxiliary air point
2D03	throttle valve actuator, abort alignment because of environmental condition
2D04	throttle valve actuator, checking lower block
2D05	throttle valve actuator, abort at UMA relearn
2D08	throttle valve actuator, change detection without alignment
2D0F	airflow sensor, signal
2D10	Lair mass gauger, plausibility
2D11	Lair mass current, plausibility
2D13	Luftmassenmesser, rational
2D14	air mass gauger, correction rsignal
2D19	gas pedal device, gas pedal sensor
2D1A	gas pedal device, gas pedal sensor
2D1B	gas pedal device, gas pedal sensor 1
2D1C	gas pedal device, gas pedal sensor 2
2D28	differential airpressure, intake tube: signal
2D29	differential airpressure, intake tube: plausibility
2D32	differential pressure, intake tube: plausibility
2D6E	DME, internal error: monitoring actual torque
2D6F	monitoring airflow
2D70	DME, internal error: monitoring engine functions
2D71	DME, internal error: monitoring input variable
2D72	DME, internal error: monitoring hardware
2D75	DME, internal error: monitoring engine speed
2D76	DME, internal error: monitoring gas pedal device
2D78	air mass current alignment
2DB4	multifunction steering wheel, communication
2DBF	CAN, ACC: signal error
2DCA	EGS message missing, timeout
2DCB	CAN, SSG: signal error
2DCF	CAN, control panel: signal error
2DD7	DSC message missing, timeout
2DD8	AFS message missing, timeout
2DD9	CAN, ARS: signal error
2DDA	CAN, CAS: signal error
2DDB	CAN, IHKA: signal error
2DDC	Message from SZL is absent
2DDD	Valvetronic message missing
2DDE	Local-CAN communication
2DDF	Local-CAN communication 2
2DEB	Powermanagement, vehicle electrical system monitoring
2DEC	Powermanagement, battery monitoring
2DED	Powermanagement, quiescent current control
2E24	spark coil cylinder 1
2E25	spark coil cylinder 2
2E26	spark coil cylinder 3
2E27	spark coil cylinder 4
2E28	spark coil cylinder 5
2E29	spark coil cylinder 6
2E2A	spark coil cylinder 7
2E2B	spark coil cylinder 8
2E30	injection valve cylinder 1, control
2E31	injection valve cylinder 2, control
2E32	injection valve cylinder 3, control
2E33	injection valve cylinder 4, control
2E34	injection valve cylinder 5, control
2E35	injection valve cylinder 6, control
2E36	injection valve cylinder 7, control
2E37	injection valve cylinder 8, control
2E68	Knocking sensor signal 1
2E69	Knocking sensor signal 2
2E6A	Knocking sensor signal 3
2E6B	Knocking sensor signal 4
2E72	ecu, internal error: knock sensor device
2E73	ecu, internal error: knock sensor device
2E7C	Bitserial data interface, signal
2E86	Electrical water pump
2E8B	Intelligent Battery sensor, Signal
2E8C	Intelligent Battery sensor, Function
2E8D	Intelligent Battery sensor, Signal transmission
2E95	Generator
2E97	Generator
2E99	generator 2
2E9A	Generator 2, communication
2E9F	Oil status sensor
2EA0	Ölzustandssensor
2EB8	BSD message from intelligent battery sensor missing
2EB9	BSD message from glow ecu missing
2EBA	BSD message from electric coolant pump missing, electronic missing
2EBB	BSDmessage from electric coolant pump missing, motor missing
2EBC	BSD message from oil sensor missing
2EBD	BSD message from generator missing
2EBE	BSD message from generator 2 missing
2EBF	rate action: BSD message missing
2EE0	coolant temperature sensor, signal
2EE1	coolant temperature sensor, plausibility
2EE4	coolant temperature sensor, plausibility, shunt
2EEA	Temperature sensor coolant exhaust, Signal
2EEC	Temperature sensor radiator, plausibility
2EF4	engine characteristic map thermostat, Mechanics
2EF5	engine characteristic map thermostat, Control
2EF6	engine operating map thermostat
2EFE	e-fan, control
2F08	intake air temperature sensor, signal
2F09	intake air temperature sensor, plausibility
2F0D	cooler louver, control, (GLF)
2F0F	cooler jalousie, above
2F12	air-conditioning compressor, control
2F17	engine oil temperature, temporary to high, EGS-Zwangsschaltung
2F26	Koordinator thermal managment
2F44	EWS maipulation prevention
2F45	interface EWS-DME
2F46	EWS saving changing code
2F4E	vehicle speed, signal
2F4F	vehicle speed, plausibility
2F50	vehicle speed, plausibility
2F59	Start automatic, start signal
2F5A	Start automatic control
2F62	Brake light switch
2F67	clutch switch, Signal
2F6C	flue gas damper, control
2F71	E-Box-fan, control
2F76	ambient pressure, signal
2F77	ambient pressure, plausibility
2F78	DME, internal error: environment pressure sensor
2F7B	oil pressure switch, plausibility
2F80	engine turn off time, plausibility
2F8A	Battery Voltage
2F94	Fuel pump relay, actuation
2F99	Environment temperature sensor, Plausibility
2F9E	thermic oil level sensor
2FA3	coding is absence
CD87	PT-CAN communication error
CD8B	local CAN communication error
CD9B	telegram monitoring (vehicle mode, 315)
CDA1	telegram monitoring (stearing angle, C4)
CDA2	telegram monitoring (power management battery voltage, 3B4)
CDA3	telegram monitoring (power management charging voltage, 334)
CDA7	message (Status reverse gear, 3B0)
CDAA	Message (Status Crash shut off EKP, 135)
CDAC	message (status of water valve, 3B5)
CDEB	Message (lamp status, 21A)
CDED	Message (request wheel torque drivetrain, BF)
CDEE	Message (time/date, 2F8)
CDEF	Message (status of trailer, 2E4)

Table 23

Code	Description
2710	ECU internal INJ-error memory test
2711	Ambient pressure sensor
2712	Air mass meter bank 1
2713	Air mass meter bank 2
2714	Intake pipe pressure sensor bank 1
2715	Intake pipe pressure sensor bank 2
2716	Camshaft sensor inlet bank 1
2717	Camshaft sensor outlet bank 1
2718	Camshaft sensor inlet bank 2
2719	Camshaft sensor outlet bank 2
271A	VANOS control inlet bank 1
271B	VANOS control outlet bank 1
271C	VANOS control inlet bank 2
271D	VANOS control outlet bank 2
271E	Camshaft synchronisation bank 1
271F	Camshaft synchronisation bank 2
2720	SG internal error INJ process control
2721	Message (Moment request DKG)
2722	fuel pressure sensor electr. Diagnostics
2723	Message (Status reverse gear)
2724	Lambda sensor electric diagnostic VKAT bank 1
2725	Lambda sensor electric diagnostic VKAT bank 2
2726	Lambda sensor plausibility VKAT bank 1
2727	Lambda sensor plausibility VKAT bank 2
2728	Lambda sensor thrust diagnostic VKAT bank 1
2729	Lambda sensor thrust diagnostic VKAT bank 2
272A	Lambda sensor electric diagnostic NKAT bank 1
272B	Lambda sensor electric diagnostic NKAT bank 2
272C	Lambda sensor driver diagnostic heating NKAT bank 1
272D	Lambda sensor driver diagnostic heating NKAT bank 2
2737	Fill plausibility bank 1
2738	Fill plausibility bank 2
2739	secundary air Mini-HFM electr. Diagnostics
273A	Lambda sensor vibration test NKAT bank 1
273B	Lambda sensor vibration test NKAT bank 2
273C	Lambda sensor part/full diagnostic VKAT bank 1
273D	Lambda sensor part/full diagnostic VKAT bank 2
273E	Lambda sensor terminal stage heating VKAT bank 1
273F	Lambda sensor terminal stage heating VKAT bank 2
2740	Lambda sensor heating control diagnostic VKAT bank 1
2741	Lambda sensor heating control diagnostic VKAT bank 2
2742	Lambda sensor heater resistance diagnostic VKAT bank 1
2743	Lambda sensor heater resistance diagnostic VKAT bank 2
2744	Lambda sensor heater diagnostic after START VKAT bank 1
2745	Lambda sensor heater diagnostic after START VKAT bank 2
2746	Lambda probe Reference resistance diag. VKAT Bank 1
2747	Lambda probe Reference resistance diag. VKAT Bank 2
2748	Lambda probe Diag.via ATIC42-device VKAT Bank1
2749	Lambda probe Diag.via ATIC42-device VKAT Bank2
274A	Lambda sensor pump current assimilation error VKAT bank 1
274B	Lambda sensor pump current assimilation error VKAT bank 2
274C	Message (gear data)
274D	Message (gear data 2)
274E	Lambda sensor error Nernst cable VKAT bank 1
274F	Lambda sensor error Nernst cable VKAT bank 2
2750	Lambda sensor error pump current cable VKAT bank 1
2751	Lambda sensor error pump current cable VKAT bank 2
2752	SG internal error Inj working page
2753	Ignition cyl 1 actuation electric diagnostic
2754	Ignition cyl 2 actuation electric diagnostic
2755	Ignition cyl 3 actuation electric diagnostic
2756	Ignition cyl 4 actuation electric diagnostic
2757	Ignition cyl 5 actuation electric diagnostic
2758	Ignition cyl 6 actuation electric diagnostic
2759	Ignition cyl 7 actuation electric diagnostic
275A	Ignition cyl 8 actuation electric diagnostic
275B	Ignition cyl 9 actuation electric diagnostic
275C	Ignition cyl 10 actuation electric diagnostic
275D	Lambda control stop error bank 1
275E	Lambda control stop error bank 2
275F	VANOS maximum stop inlet bank 1
2760	VANOS maximum stop outlet bank 1
2761	VANOS maximum stop inlet bank 2
2762	VANOS maximum stop outlet bank 2
2763	VANOS valve inlet bank 1
2764	VANOS valve outlet bank 1
2765	VANOS valve inlet bank 2
2766	VANOS valve outlet bank 2
2767	Injection valve cyl 1 electric diagnostic
2768	Injection valve cyl 2 electric diagnostic
2769	Injection valve cyl 3 electric diagnostic
276A	Injection valve cyl 4 electric diagnostic
276B	Injection valve cyl 5 electric diagnostic
276C	Injection valve cyl 6 electric diagnostic
276D	Injection valve cyl 7 electric diagnostic
276E	Injection valve cyl 8 electric diagnostic
276F	Injection valve cyl 9 electric diagnostic
2770	Injection valve cyl 10 electric diagnostic
2771	Lambda sensor dynamic diagnostic VKAT bank 1
2772	Lambda sensor dynamic diagnostic VKAT bank 2
2776	DMTL pump
2777	DMTL valve
2778	DMTL heating
2779	DMTL leak detection
277A	DMTL pump moisture cut-out
277B	Tank cover message
277C	Lambda sensor trim control diagnostic bank 1
277D	Lambda sensor trim control diagnostic bank 2
277E	Main relay actuation electric diagnostic
277F	EKP module actuation electric diagnostic
2780	Intake jet pump actuation electric diagnostic
2781	TD signal actuation electric diagnostic
2782	Secondary air pump actuation electric diagnostic
2783	Secondary air valve actuation electric diagnostic
2786	Plausi fuel pressure sensor to mech. pressure actuator
2787	fuel pressure variance comparison at controled operation
2788	fuel pressure variance comparison at max pressure
2789	Catalytic converter conversion bank 1
278A	Catalytic converter conversion bank 2
278B	VANOS pressure accumulation valve actuation
278C	Generator
278D	BSD interface
278E	oil quality sensor
278F	IBS communication
2790	IBS implausible
2791	IBS general
2792	Power management vehicle electrical system
2793	Power management battery
2794	Unterdrucksensor Mastervac
2796	Motor emergency programm activated
2797	Intake jet pump system check
2798	EWS interface
2799	EWS
279A	IBS communication error
279B	Generator communication error
279C	BSD bus error (general)
279D	Power management battery closed-circuit current violation
279E	oil quality sensor
279F	box blower actuation electric diagnostic
27A0	SG internal error

Code	Description
27A1	Throttle valve actuator enable cable bank 1
27A2	Throttle valve actuator enable cable bank 2
27A3	Oil pressure switch electric diagnostic
27A4	Tank ventilation function test bank 1
27A5	Tank ventilation function test bank 2
27A6	Tank ventilation actuation bank 1
27A7	Tank ventilation actuation bank 2
27A8	SG internal monitor level 2
27A9	Crankshaft sensor
27AA	Lambda adaption at VKAT stop bank 1
27AB	Lambda adaption at VKAT stop bank 2
27AC	Crank housing ventilation diagnostic bank 1
27AD	Crank housing ventilation diagnostic bank 2
27AE	Tank fuel level implausible
27AF	Secondary air pump
27B0	Secondary air system throughput bank 1
27B1	Secondary air system throughput bank 2
27B2	Secondary air system throughput main section
27B3	Energy saving mode active
27B4	Gear leergassen switch of manual transmission
27B5	Clutch switch manual gearbox
27B6	VANOS oil pressure
27B7	elektrische Unterdruckpumpe fuer Mastervac
27B8	E blower actuation electric diagnostic
27BA	Fuel system diagnostic bank 1
27BB	Fuel system diagnostic bank 2
27BC	Catalyst protection Bank 1
27BD	Catalyst protection Bank 2
27BE	Message (Status Gear)
27BF	Message (Request wheel moment)
27C0	Tankgeber elektrischer Fehler
27C1	Info Tank leer bei Fehlereintrag
27C2	Message (wheel tolerance adjustment)
27C3	DMTL leak detection
27C4	environment pressure Plausibility
27C5	secundary air Mini-HFM Plausibility
27C6	Lambda probe AD-Diagnostics trim control Bank 1
27C7	Lambda sensor trim control AD diagnostic bank 2
27C8	Lambda probe electr. OPENLOAD-Diagnostics NKAT Bank1
27C9	Lambda probe electr. OPENLOAD-Diagnostics NKAT Bank2
27CA	Lambda probe Wiedereinsetz-Diagnose NKAT Bank 1
27CB	Lambda probe Wiedereinsetz-Diagnose NKAT Bank 2
27CC	Lambda probe heating energy NKAT Bank 1
27CD	Lambda probe heating energy NKAT Bank 2
27CE	fuel pressure/-Model comparison
27CF	building up of fuel pressure EKP-forward stroke
27D0	fuel pressure control adaption
27D1	Gear temperature sensor of manual transmission
27D2	Lambda probe VKAT/ATIC42 SPI-communication
27D3	INDEX_195_INJ
27D4	Message (OBD-Errortype)
27D5	tank sensor left electrical failure
27D6	tank sensor right electrical failure
27D7	Lambda sensor SLOPE diagnostics NKAT Bank 1
27D8	Lambda sensor SLOPE diagnostics NKAT Bank 2
27D9	Plausibility Difference-pressure-sensor Mastervac
27DA	Plausibility depressionpump Mastervac
27DB	INDEX_203_INJ
27DC	INDEX_204_INJ
27DD	INDEX_205_INJ
27DE	INDEX_206_INJ
27DF	INDEX_207_INJ
27E0	INDEX_208_INJ
27E1	INDEX_209_INJ
27E2	INDEX_210_INJ
27E3	INDEX_211_INJ
27E4	INDEX_212_INJ
27E5	INDEX_213_INJ
27E6	INDEX_214_INJ
27E7	INDEX_215_INJ
27E8	INDEX_216_INJ
27E9	INDEX_217_INJ
27EA	INDEX_218_INJ
27EB	INDEX_219_INJ
27EC	INDEX_220_INJ
27ED	INDEX_221_INJ
27EE	INDEX_222_INJ
27EF	INDEX_223_INJ
2AF8	ECU internal IGN-error memory test
2AF9	Coolant temperature sensor
2AFA	Coolant temperature sensor plausibility
2AFB	Intake air temperature sensor bank 1
2AFC	Intake air temperature sensor bank 2
2AFD	Relative time plausibility
2AFE	Voltage at terminal 87
2AFF	Radiator output temperature sensor
2B00	Control module temperature sensor
2B01	Voltage supply at PIN 111,219,514
2B02	Voltage supply at PIN 124,512
2B03	SG internal error Ign working page
2B04	Radiator outlet temperature plausibility
2B05	Pedal value sensor 1
2B06	Pedal value sensor 2
2B07	Pedal value sensor plausibility
2B08	SG internal error IGN processor control
2B0D	Idling speed control valve monitor bank 1
2B0E	Idling speed control valve monitor bank 2
2B0F	SMG switch process monitor
2B10	SMG module monitor
2B11	SMG engine speed monitor
2B12	Ambient temperature sensor plausibility
2B13	Speed registration
2B14	initialisation throttle positioner
2B15	Throttle valve actuator control monitor bank 1
2B16	Throttle valve actuator control monitor bank 2
2B17	Throttle valve adaption bank 1
2B18	Throttle valve adaption bank 2
2B19	Ion current signal amplification bank 1
2B1A	Ion current measurement voltage selection bank 1
2B1B	Ion current signal amplification bank 2
2B1C	Ion current measurement voltage selection bank 2
2B1D	Exhaust temperature sensor bank 1
2B1E	Exhaust temperature sensor bank 2
2B1F	Throttle valve sensor bank 1
2B20	Throttle valve sensor bank 2
2B21	Throttle valve actuator predrive check bank 1
2B22	Throttle valve actuator predrive check bank 2
2B23	Idling speed control valve control monitor bank 1
2B24	Idling speed control valve control monitor bank 2
2B25	Throttle valve monitor bank 1
2B26	Throttle valve monitor bank 2
2B27	Throttle valve test reset springs bank 1
2B28	Throttle valve test reset springs bank 2
2B29	Torque manager monitor
2B2A	Idling speed control valve initialisation
2B2B	DSC requirement plausibility
2B2C	Throttle valve initialisation bank 1
2B2D	Throttle valve initialisation bank 2
2B2E	Idling speed control valve initialisation bank 1
2B2F	Idling speed control valve initialisation bank 2
2B35	Combustion misfire with cut-out cyl 1
2B36	Combustion misfire with cut-out cyl 2
2B37	Combustion misfire with cut-out cyl 3
2B38	Combustion misfire with cut-out cyl 4
2B39	Combustion misfire with cut-out cyl 5
2B3A	Combustion misfire with cut-out cyl 6
2B3B	Combustion misfire with cut-out cyl 7
2B3C	Combustion misfire with cut-out cyl 8
2B3D	Combustion misfire with cut-out cyl 9
2B3E	Combustion misfire with cut-out cyl 10
2B3F	Ion current signal bank 1
2B40	Ion current signal bank 2
2B41	Combustion misfire with cut-out several cyl
2B42	Combustion misfire with emissions deterioration cyl 1
2B43	Combustion misfire with emissions deterioration cyl 2
2B44	Combustion misfire with emissions deterioration cyl 3
2B45	Combustion misfire with emissions deterioration cyl 4
2B46	Combustion misfire with emissions deterioration cyl 5
2B47	Combustion misfire with emissions deterioration cyl 6
2B48	Combustion misfire with emissions deterioration cyl 7
2B49	Combustion misfire with emissions deterioration cyl 8
2B4A	Combustion misfire with emissions deterioration cyl 9
2B4B	Combustion misfire with emissions deterioration cyl 10
2B4C	Ion current control module internal bank 1
2B4D	Ion current control module internal bank 2
2B4E	Combustion misfire with emissions deterioration several cyl
2B4F	Intake air temperature sensor plausibility bank 1
2B50	request Plausibility
2B51	Message (Status EKP)
2B52	Additional oil pump bank 1
2B53	Additional oil pump bank 2
2B54	SG internal error
2B55	SG internal monitor level 2
2B56	Brake light/test switch plausibility
2B57	Motor emergency programm activated
2B58	Idling control monitor
2B59	Coolant thermostat monitor
2B5A	Intake air temperature sensor plausibility bank 2
2B5B	throttle valve error status Bank 1
2B5C	throttle valve error status Bank 2
2B5D	Vehicle speed control release
2B5E	acknowledgement of accelerator and brake at the same time
2B5F	CAS Control electrical Diagnostics
2B60	longitudinal acceleration sensor Handschaltgetriebe
2B61	Gear input speed sensor / slipping clutch
2B62	environment temperature sensor
2B63	Idle running switch control - CSS
2B64	Shunt coolant temperature sensor
2B65	Post adaption longitudinal acceleration sensor HSG
2B66	INDEX_110_IGN
2B67	INDEX_111_IGN
2B68	INDEX_112_IGN
2B69	INDEX_113_IGN
2B6A	INDEX_114_IGN
2B6B	INDEX_115_IGN
2B6C	INDEX_116_IGN
2B6D	INDEX_117_IGN
2B6E	INDEX_118_IGN
2B6F	INDEX_119_IGN
2B70	INDEX_120_IGN
2B71	INDEX_121_IGN
2B72	INDEX_122_IGN
2B73	INDEX_123_IGN
2B74	INDEX_124_IGN
2B75	INDEX_125_IGN
2B76	INDEX_126_IGN
2B77	INDEX_127_IGN
CD87	CAN bus communication error
CD8B	Bus off idling speed control valve /SMG CAN
CD93	Bus off throttle valve CAN
CD94	Message (exterior temperature)
CD95	Message (control FGR)
CD98	Message (current requirement DSC)
CD9B	Message (vehicle mode)
CD9C	Message (vehicle speed)
CD9F	Message (mileage)
CDA0	Message (terminal status)
CDA1	Message (steering angle)
CDA5	Message (status DSC)
CDA8	Message (cluster status)
CDA9	Message (air-conditioning requirement)
CDAA	Message (crash cut-out)
CDAF	Message (trailer status)
CDBB	Message (wheel speeds)
CDBC	Message (audio telephone control)
CDBD	Idling speed control valve CAN message bank 1
CDBE	Idling speed control valve CAN message bank 2
CDBF	Throttle valve actuator CAN message bank 1
CDC0	Throttle valve actuator CAN message bank 2
CDC1	SMG CAN message 1
CDC2	SMG CAN message 2
CDC3	SMG CAN message 3
FFFF	Unknown error location

Table 24

Code	Description
2712	Actuation of solenoid valve DM-TL
2713	Reversed Lambda probes or plug assignment HDEV control module reversed
2716	Actuation of heating sensor downstream of cat
271A	Lambda probe upstream of cat
271B	Output heating probe upstream of catalytic converter
271C	Lambda probe downstream of cat
271D	Lambda probes heating upstream of cat
271E	Lambda probes heating downstream of cat
2721	Lambda probe ageing downstream of cat
2728	LR adaption multiplicative range2
272A	LR adaption multiplicative range1
272C	LR adaption additive per time
272E	LR adaption additive per ignition
2730	Mix adaption summ error
2731	camshaft controller inlet
2733	Mix adaption summ error Bank2
2736	Lamda probe in front of catalyst, electrical error
2737	EWS3.3 manipulation guard
2738	Catalytic conversion
2742	Failure recognition cyl.1
2743	Failure recognition cyl.7
2744	Failure recognition cyl.5
2745	Failure recognition cyl.11
2746	Failure recognition cyl.3
2747	Failure recognition cyl.9
2748	Failure recognition cyl.6
2749	Failure recognition cyl.12
274A	Failure recognition cyl.2
274B	Failure recognition cyl.8
274C	Failure recognition cyl.4
274D	Failure recognition cyl.10
274E	Failure recognition sum error
2753	Monitor magneto 1
2754	Control igniter 5
2755	Control igniter 3
2756	Control igniter 6
2757	Control igniter 2
2758	Control igniter 4
2759	Control igniter 7
275A	Control igniter 11
275B	Control igniter 9
275C	Control igniter 12
275D	Control igniter 8
275E	Monitor magneto 10
2760	Secondary air system
2762	Secondary air valve
2764	Activate relay for secondary air pump
2765	Activate secondary air valve
2769	Spring test throttle valve adjuster opening spring
276A	Control module selection
276D	Tank ventilation functional check
2772	Activate tank ventilation valve
2774	plausibility system clock power module
2775	Engine torque monitor level 2
2776	Multi-functional steering wheel interface
2778	Clutch switch
2779	Control module self-test RAM
277A	Brake switch
277B	Control module self-test ROM
277C	Control module self-test RESET
277D	Battery voltage
277E	Torque limitation level 1
277F	Crankshaft sensor
2780	Reference mark sensor
2781	Camshaft sensor inlet
2782	Camshaft sensor outlet
2783	Hot film air mass meter
2785	Throttle valve potentiometer
2786	Throttle valve potentiometer 1
2787	Throttle valve potentiometer 2
2788	Driving speed
2789	Poor road recognition
278A	Ambient temperature
278B	Engine temperature
278C	Intake air temperature
278D	Temperature sensor radiator outlet
278E	Differential pressure sensor intake pipe
2791	Exchanger code without adaption
2792	Throttle valve position monitor
2793	DK-Actuator Control devision
2794	Throttle valve adjuster activation
2795	Spring test throttle valve adjuster closing spring
2796	Check bottom stop
2797	Throttle valve adjuster error during amplifier matching
2798	Check emergency air point
2799	Cancel DV adaption because of environmental conditions
279A	Cancel during UMA relearn
279B	Thermostat jamming
279C	Activation of thermostat characteristic field cooling
279D	activation engine electric fan
279E	Activation of exhaust valve
279F	Output fanA
27A0	Activation of E box fan
27A2	engine fan 2 activated
27A4	EWS3.3 EWS-DME interface
27B0	environment temperature sensor, Signal
27B1	environment temperature sensor, Plausibility
27B3	Throttle valve/HFM matching activation
27B4	Pressure sensor activation
27B5	Activation of inlet VANOS
27B7	Activation of fuel pump relay
27B8	Plausibility differential pressure sensor
27B9	Environment pressure sensor, Signal
27BA	Environment pressure sensor, Plausibility
27BB	camshaft control outlet
27BD	Activation of outlet VANOS
27C1	Master camshaft sensor
27C2	Activation of air conditioning compressor controller
27C8	DM-TL rough leakage
27CA	Activation of DM-TL pump motor
27CB	DM-TL Very fine leak (0.5 mm) MIL off
27CC	DM-TL fine leak
27CD	DM-TL module
27CE	Load-sensor-, wire- or ECU-error
27D5	Idling control defective
27D9	Activation of DM-TL heating
27DA	Generator error
27DC	EWS3.3 altnerating code saving
27E1	Pedal value sensor monitor
27E2	Knocking sensor1
27E3	Knocking sensor2
27E4	Knocking sensor3
27E5	Knocking sensor3
27E6	Knocking control zero test
27E7	Knocking control offset
27E8	Knocking control test pulse
27E9	Knocking control zero test bank2
27EA	CAN timeout HDEV
27EC	CAN-EGS Signal error

Code	Description
27ED	CAN-ASC/DSC signal error
27EE	CAN-instrument cluster signal error
27EF	CAN-ACC signal error
27F2	Plausibility tank fill level
27F3	CAN-Timeout VVT control module
27F4	fuel level, signal
27F5	fuel level, plausibility
27F6	Pedal value sensor
27F7	Pedal value sensor potentiometer1
27F8	Pedal value sensor potentiometer2
27FA	Automatic start input
27FD	Automatic start
27FE	Knocking control offset bank2
27FF	Knocking control test pulse bank2
2813	Control module monitor group A
2814	Control module monitor group B
2815	Control module monitor group C
2816	Engine speed monitor
2818	Voltage monitor probe on air (probe not fitted but connected)
2819	time out ECU-coupling
281E	Activation of DISA
2822	Forced circuit EGS
2823	Lambda probe heating upstream of cat (in thrust)
2825	Lambda probe ageing downstream of cat
2827	Heating connection to signal path
2828	CAN-ARS signal error
2829	CAN-CAS signal error
282A	ICAN-HKA signal error
282B	CAN-PWML signal error
282C	CAN-SZL signal error
282E	PWG movement
283A	Error oil level sensor
283D	PT CAN bus off
283E	VVT enable cable activation
283F	Plausibility oil pressure switch
2841	Air-encased injection valves activation
2842	2. generator error
2843	Plausibility diagnostic LSU by LSH rear cat
2844	Self-diagnostic CJ125 SPI communication
2846	Activation of intake valve
2847	Pressure switch activation
2848	Output relay HDEV SG
2849	Cable break on pump current
284A	Short circuit probe cables against earth or Ub
284B	Control return blocking valve
284C	LSU dynamic too slow
284F	Speed display in cluster defective
2850	VVT guide sensor
2851	VVT-direction sensor (Bank2)
2852	VVT reference sensor
2853	VVT reference sensor (bank2)
2854	VVT sensor plausibilisation
2855	VVT sensor plausibilisation (bank2)
2856	VVT sensor supply voltage
2857	VVT sensor supply voltage (bank2)
2858	VVT learn function stop
2859	VVT learn function stop (bank2)
285A	VVT actuator monitor
285B	VVT actuator monitor (bank2)
285C	VVT-CAN communication
285D	VVT-CAN communication (bank2)
285E	VVT control module internal error
2860	VVT-output
2862	VVT-power supply
2864	DM-TL pump activation error
2865	Performance limit VVT emergency operation
2866	VVT stop learning necessary
2867	VVT system overload
286D	output HDEV9, cable 9
286E	output HDEV12, cable 12
286F	output HDEV8, cable 8
2870	output HDEV10, cable 10
2871	high pressure injection valve high side 7
2872	high pressure injection valve high side 11
2873	high pressure injection valve high side 9
2874	high pressure injection valve high side 12
2875	high pressure injection valve high side 8
2876	high pressure injection valve high side 10
2877	high pressure injection valve high side 7
2878	high pressure injection valve high side 11
287A	high pressure injection valve high side 9
287D	high pressure injection valve low side 12
287E	high pressure injection valve low side 8
287F	high pressure injection valve low side 10
2880	activation return ventilation-valve
2889	Plausibility monitor RAM backup
28C8	LR deviation
28D6	HO process error, no coding
28D7	Generator communication
28D8	RAM backup error
28DB	Min stroke adaption stop several times
28DC	2. generator communication
28DE	Boostertimeout high pressure injection valve cyl 1
28DF	Boostertimeout high pressure injection valve cyl 5
28E0	Boostertimeout high pressure injection valve cyl 3
28E1	Boostertimeout high pressure injection valve cyl 6
28E2	Boostertimeout high pressure injection valve cyl 2
28E3	Boostertimeout high pressure injection valve cyl 4
28E4	Boostertimeout high pressure injection valve cyl 7
28E5	boostertimeout high pressure injector cyl 11
2901	Boostertimeout high pressure injection valve cyl 9
2902	boostertimeout high pressure injector cyl 12
2903	Boostertimeout high pressure injection valve cyl 8
2904	boostertimeout high pressure injector cyl 10
290F	high pressure sensor test (signal rail pressure sensor)
2913	output HDEV1, cable 1
2914	output HDEV5, wire 5
2915	output HDEV3, cable 3
2916	output HDEV6, cable 6
2917	output HDEV2, cable 2
2918	output HDEV4, cable 4
2919	output HDEV7, cable 7
291A	output HDEV11 cable 11
291B	high pressure injection valve high side 1
291C	high pressure injection valve high side 5
291D	high pressure injection valve high side 3
291E	high pressure injection valve high side 6
291F	high pressure injection valve, communication
2920	high pressure injection valve low side 1
2921	high pressure injection valve low side 5
2922	high pressure injection valve low side 3
2923	high pressure injection valve low side 6
2924	Rail pressure control
292B	LSU matching cable
292D	LSU Nernst cell break
2930	LSU virtual earth break
2932	output pressure control valve
2937	Function monitor: Lambda plausibilisation
2940	high pressure injection valve high side 2
2941	high pressure injection valve high side 4
2942	high pressure injection valve low side 2
2943	high pressure injection valve low side 4
2944	DME coupling messages
296C	CAN timeout TXU
296D	Engine torque bank comparison
2971	Program and data state plausibilisation of master and slave
297C	RL limiting
298E	high pressure injection valve 1
298F	high pressure injection valve 5
2990	high pressure injection valve 3
2991	high pressure injection valve 6
2992	high pressure injection valve 2
2993	high pressure injection valve 4
2994	high pressure injection valve 7
2995	high pressure injection valve 11
2996	high pressure injection valve 9
2997	high pressure injection valve 12
2998	high pressure injection valve 8
2999	high pressure injection valve 10
29AE	fuel tank cap open
CD87	PT CAN bus off
CD8B	Local CAN bus off
CDC7	PT CAN bus off
CDCB	Local CAN bus off

Table 25

Code	Description
29CC	misfirings, several cylinders
29CD	misfirings, cylinder 1
29CE	misfirings, cylinder 2
29CF	misfirings, cylinder 3
29D0	misfirings, cylinder 4
29D1	misfirings, cylinder 5
29D2	misfirings, cylinder 6
29D3	misfire, cylinder 7
29D4	misfire, cylinder 8
29D5	misfire, cylinder 9
29D6	misfire, cylinder 10
29D7	misfire, cylinder 11
29D8	misfire, cylinder 12
29DD	Bad way detection
29E2	fuel injection rail, pressure sensor signal
29E3	Fuel pressure regulation, plausibility
29E4	Volume control valve, control
29E5	fuel mixture adaptation, upper speed range
29E7	mixture adaption at idle speed per time
29ED	mixture adaption, lower speed range
29EF	mixture adaption, total fault
29F0	mixture adaption 2, total fault
29F4	catalytic converter conversion
2A12	DMTL diagnosis module tank leakage, magnetic valve, input signal
2A13	DMTL diagnosis module tank leakage, leakage diagnosis pujmp, input signal
2A14	DMTL diagnosis module tank leakage, finest leakage
2A15	DMTL diagnosis module tank leakage, fine leakage

Code	Description
2A16	DMTL diagnosis module tank leakage, finest leakage
2A17	DMTL diagnosis module tank leakage, system failure
2A18	DMTL diagnosis module tank leakage, heating: input signal
2A19	tank ventilation valvel, input signal
2A1A	tank ventilation system, function
2A1D	tank filling level, plausibility
2A1E	fuel level, signal
2A21	Tank fill level 2, signal
2A2A	Ventilation valve return system, control
2A58	Valvetronic, power supply
2A59	Valvetronic, eccentric shaft sensor: track
2A5B	Valvetronic, eccentric shaft sensor: referenz
2A5D	Valvetronic, eccentric shaft sensor: plausibility
2A5F	Valvetronic, eccentric shaft sensor: power supply
2A61	Valvetronic, adjustment range
2A63	Valvetronic, servo motor: monitoring tightness, rotation direction
2A65	Valvetronic, internal error
2A67	Valvetronic, adjustment motor: input signal
2A69	Valvetronic, servo motor: power supply
2A6B	Valvetronic, power limiting
2A6C	Valvetronic, position at restart: plausibility
2A6D	Valvetronic, electronic overload protection
2A6F	Valvetronic, minimal stroke
2A80	inlet-Vanos variable cam control test, input signal
2A83	injector-VANOS
2A85	outlet-VANOS variable cam control test
2A88	outlet-VANOS
2A8A	intake-VANOS, Adaption limit stop
2A8C	outlet-VANOS, Adaption limit stop
2A8E	intake camshaft, cog offset of crankshaft
2A90	outlet camshaft, cog offset of crankshaft
2B5C	crankshaft sensor, signal
2B5D	crankshaft sensor, plausibility
2B62	camshaft sensor, intake
2B63	camshaft sensor, outlet
2B66	camshaft sensor, master
2B7A	Stop valve return system, control
2B7F	Adjustment throttle valve-air mass sensor
2B81	idle speed control at homogen mode
2B82	Idle running control at catalyst heating system
2B84	Additional air flap, control
2B98	ecu, internal error: RAM backup, plausibility
2B99	ecu, internal error: RAM backup
2B9A	control unit, internal failure: RAM
2B9B	ecu, internal error: ROM
2B9C	ecu, internal error: reset
2BA7	DME, internal error: toque limit control level 1
2BAC	DME, DME2: Programmstand descrepancy
2BAD	DME,DME2: Hardware, plausibility
2BC0	ambient temperature sensor, plausibility
2BC1	ambienttemperature sensor, signal
2C24	Lambda proben in front of catalytic converter, muddled
2C31	Lambda probe in front of catalytic converter, trimming control
2C37	Lambda probe in front of catalytic converter, heatingcoupling
2C39	Lambda probe in front of catalytic converter, dynamics
2C3B	Lambda probe in front of catalytic converter, not plugged
2C47	lambda probe front catalyst, sensor line
2C49	lambda probe front catalyst, plausibility
2C4B	ecu, internal error: lambda probe divice
2C4D	lambda probe front catalyst, pumping electricity line
2C4F	lambda probe front catalyst, alignment line
2C51	lambda probe front catalyst, Nernst line
2C53	lambda probe front catalyst, virtuell mass
2C61	lambda probe front catalyst, electrical error
2C6D	Lambda probe behind catalytic converter, aging
2C71	lambda probe rear catalyst
2C84	Lambda probe behind catalyst, Dynamics
2C9C	Lambda probe heating in front of catalytic converter, input signal
2C9E	Lambda probe heating behind catalytic converter, input signal
2CA0	lambda probe heater front catalyst
2CA8	Lambda probe heating behind catalytic converter, function
2CEF	throttle valve actuater, activation
2CF0	throttle valve actuator, control range
2CF1	throttle valve actuator, position monitoring
2CF8	throttle valve potentiometer
2CF9	throttle valve potentiometer 1
2CFA	throttle valve potentiometer 2
2CFF	throttle valve actuator, amplifier alignment
2D00	throttle valve actuator, spring check closing spring
2D01	throttle valve actuator, spring check opening spring
2D02	throttle valve actuator, auxiliary air point
2D03	throttle valve actuator, abort alignment because of environmental condition
2D04	throttle valve actuator, checking lower block
2D05	throttle valve actuator, abort at UMA relearn
2D0F	air mass meter, signal
2D13	air mass sensor, rationality
2D1A	gas pedal device, gas pedal sensor
2D1B	accelerator pedal module, pedal sensor signal 1
2D1C	accelerator pedal module, pedal sensor signal 2
2D28	differential pressure sensor, suction pipe: Signal
2D29	differential pressure sensor, suction pipe: plausibility
2D6D	DME, internal error: control DME/DME2
2D6E	DME digital motor electronics, internal failure: control, not plugged
2D6F	DME, interner error: control air path
2D70	DME, internal error: monitoring engine functions
2D71	DME, internal error: monitoring input variable
2D72	DME digital motor electronics, internal failure: control hardware
2D74	DME, internal error: control fuel pressure sensor
2D75	DME digital motor electronics, internal failure: control motor speed
2D76	DME digital motor electronics, internal failure: control driver pedal module
2D77	DME, DME2: torque comparison
2DBF	CAN, ACC: signal error
2DC1	message from powermodul missing
2DCF	CAN, control panel: signal error
2DD7	Message from DSC doesn't exist, timeout
2DD9	CAN, ARS: signal error
2DDA	CAN, CAS: signal error
2DDB	CAN, IHKA: signal error
2DDC	Message from SZL is absent
2DDD	Valvetronic message missing
2DDE	Local-CAN communication
2DE6	Local-CAN, DME/DME2: communication
2E24	Ignition coil cyl. 1
2E25	Ignition coil cyl. 2
2E26	Ignition coil cyl. 3
2E27	Ignition coil cyl. 4
2E28	Ignition coil cyl. 5
2E29	Ignition coil cyl. 6
2E2A	spark coil cylinder 7
2E2B	spark coil cylinder 8
2E2C	ignition coil cylinder 9
2E2D	ignition coil cylinder 10
2E2E	ignition coil cylinder 11
2E2F	ignition coil cylinder 12
2E3C	HDEV-control unit line 9, control
2E3D	HDEV-control unit line 12, control
2E3E	HDEV-control unit line 8, control
2E3F	HDEV-control unit line 10, control
2E40	HDEV-control unit line 1, control
2E41	HDEV-control unit line 5, control
2E42	HDEV-control unit line 3, control
2E43	HDEV-control unit line 6, control
2E44	HDEV-control unit line 2, control
2E45	HDEV-control unit line 4, control
2E46	HDEV-control unit line 7, control
2E47	HDEV-control unit line 11, control
2E48	Booster high pressure injector 1
2E49	Booster high pressure injector 5
2E4A	Booster high pressure injector 3
2E4B	Booster high pressure injector 6
2E4C	Booster high pressure injector 2
2E4D	Booster high pressure injector 4
2E4E	Booster high pressure injector 7
2E4F	Booster high pressure injector 11
2E50	Booster high pressure injector 9
2E51	Booster high pressure injector 12
2E52	Booster high pressure injector 8
2E53	Booster high pressure injector 10
2E60	HDEV-control unit, internal error: communication
2E68	knock sensor signal 1
2E69	knock sensor signal 2
2E6A	Knocking sensor signal 3
2E6E	Ignition, control: firing time
2E6F	Ignition 2, control: firing time
2E72	control unit, internal failure: knock sensor module
2E73	control unit, internal failure: knock sensor module
2E97	Generator
2E98	generator, communication
2E99	Generator 2
2E9A	Generator 2, communication
2E9F	oil condition sensor
2EE0	coolant temperature sensor, Signal
2EE1	coolant temperature sensor, plausibility
2EEA	Temperature sensor radiator emission, signal
2EF4	map thermostat, mechanics
2EF5	map thermostat, input signal

2EFC Electric fan 2, Control
2EFE electrical fan, input signal
2F08 inlet air temperature sensor, signal
2F09 inlet air temperature sensor, plausibility
2F0B intake air temperature sensor: cold portion, plausibility (preliminary)
2F17 engine oil temperature, temporary to high, EGS-Zwangsschaltung
2F44 EWS manipulation protection
2F45 interface EWS-DME electronic vehicle immobilization/digital motor electronics
2F46 EWS variable code storage
2F4E vehicle speed, signal
2F4F vehicle speed, plausibility
2F50 vehicle speed, plausibility
2F59 Start automatic, start signal
2F5A Start automatic control
2F62 Brake light switch
2F6C exhaust fumeflap, input signal
2F71 E-box-fan, input signal
2F77 ambient pressure sensor, plausibility
2F78 DME, internal error: environment pressure sensor
2F7B oil pressure switch, plausibility
2F80 motor shutoff time, plausibility
2F8A Battery Voltage
2FA3 coding missing
30AC injection valve cylinder 1, input signal
30AD injection valve cylinder 2, input signal
30AE injection valve cylinder 3, input signal
30AF injection valve cylinder 4, input signal
30B0 injection valve cylinder 5, input signal
30B1 injection valve cylinder 6, input signal
30B2 injection valve cylinder 7, control
30B3 injection valve cylinder 8, control
30B4 Injector cylinder 9, control
30B5 Injector cylinder 10, control
30B6 Injector cylinder 11, control
30B7 Injector cylinder 12, control
30D4 Message from HDEV missing
30E8 Filling limit
CD87 PT-CAN communication failure
CD8B local-CAN communication failure
CDB7 Message (OBD-Sensor Diagnosis statuss, 5E0)
CDC7 PT-CAN communication failure
CDCB local-CAN communication failure
CDDD message (gear data, BA)
CDE0 message (terminal state, 130)

Table 26

01 Relay electric Fuel pump
02 idle speed control valve closing coil
03 Injector valve Cylinder 2
04 Injector valve Cylinder 4
0C Throttle valve potentiometer
0F Knock sensor 1
12 difference suction pipe
18 ignition coil Cylinder 3
19 ignition coil Cylinder 1
1D Idle adjuster opening coil
1F Injector valve Cylinder 3
20 Injector valve Cylinder 1
24 Tank ventilation valve
25 Lambda probe heating
29 air mass flow sensor
2A Knock sensor 2
2C Sensor

2E electric fan
30 Relay Air conditioning compressor
33 ignition coil Cylinder 4
34 ignition coil Cylinder 2
36 Battery Voltage
40 CAN function EGS
43 Sensor
46 Lambda probe
49 signal
4C potentiometer
4D Intake air temperature
4E Engine temperature
51 theft alarm system-PIN
52 air condition
53 Switch Aircondition
C8 control unit self-test
C9 fuel trim limit
CE Knock regulation
D8 ASC-Signal
DC function
EC EGS-Signal

Table 27

64 control Ignition Cylinder 1
65 control Ignition Cylinder 2
66 control Ignition Cylinder 3
67 control Ignition Cylinder 4
68 control Injector valve Cylinder 1
69 control Injector valve Cylinder 2
6A control Injector valve Cylinder 3
6B control Injector valve Cylinder 4
6C control electric fan
6E control Air conditioning compressor
6F control Relay Fuel pump
70 control Solenoid Valve suction tube (DISA)
71 control Solenoid Valve Tank ventilation
72 control Solenoid Valve suction jet pump
73 control grid-controlled cooling
75 control Idle adjuster
76 control Lambda probe heating before KAT
77 Signal Throttle valve potentiometer
78 Signal air flow meter
79 Signal Intake air temperature
7A Signal cooling water temperature
7B Signal cooling water exit temperature
7C Battery Voltage main relay
7D Signal Lambda probe before KAT
7E Signal CAN ASC
7F request CAN ASC
80 Signal CAN EGS
81 request CAN EGS
82 Signal CAN IKE
83 Signal Speed
84 reference voltage for air flow meter
85 reference voltage for Throttle valve potentiometer
87 Signal Camshaft sensor
88 Signal Crankshaft sensor
89 Signal Knock sensor 1
8A Signal Knock sensor 2
8B Signal Lambda probe after KAT
8C interface DME - EWS
8D lambda regulation control range block
8E regulation-self-test
8F control unit self-test
90 manipulation protection EWS
91 misfire by Cylinder 1
92 misfire by Cylinder 2

93 misfire by Cylinder 3
94 misfire by Cylinder 4
95 control valve secondary air
96 control Relay Secondary air pump
97 Sekundaerluftsysstem Plausibilitaet
98 Selbsttest E2PROM-Emulation
99 control Lambda probe heating after KAT
9B Aussetzer abgasrelevant Summe
9C Aussetzer katschaedigend Zyl.1
9D Aussetzer katschaedigend Zyl.2
9E Aussetzer katschaedigend Zyl.3
9F Aussetzer katschaedigend Zyl.4
A0 Aussetzer katschaedigend Summe
A5 Katalysatorkonvertierung
A6 Periodendauer Lambdasonde vor Kat
A9 Heizleistung Sonde vor Kat
AA Heizleistung Sonde nach Kat
AB Pruefung Kraftstoff-Versorgungssystem

Table 61

64 control Ignition Cylinder 1
65 control Ignition Cylinder 2
66 control Ignition Cylinder 3
67 control Ignition Cylinder 4
68 control Injector valve Cylinder 1
69 control Injector valve Cylinder 2
6A control Injector valve Cylinder 3
6B control Injector valve Cylinder 4
6C control electric fan
6E control Air conditioning compressor
6F control Relay Fuel pump
70 control Solenoid Valve suction tube (DISA)
71 control Solenoid Valve Tank ventilation
72 control Solenoid Valve suction jet pump
73 control grid-controlled cooling
75 control Idle adjuster
76 control Lambda probe heating before KAT
77 Signal Throttle valve potentiometer
78 Signal air flow meter
79 Signal Intake air temperature
7A Signal cooling water temperature
7B Signal cooling water exit temperature
7C Battery Voltage main relay
7D Signal Lambda probe before KAT
7E Signal CAN ASC
7F request CAN ASC
80 Signal CAN EGS
81 request CAN EGS
82 Signal CAN IKE
83 Signal Speed
84 reference voltage for air flow meter
85 reference voltage for Throttle valve potentiometer
87 Signal Camshaft sensor
88 Signal Crankshaft sensor
89 Signal Knock sensor 1
8A Signal Knock sensor 2
8B Signal Lambda probe after KAT
8C interface DME - EWS
8D lambda regulation control range block
8E knock-regulation-self-test
8F control unit self-test
90 manipulation protection EWS
91 misfire by Cylinder 1
92 misfire by Cylinder 2
93 misfire by Cylinder 3
94 misfire by Cylinder 4
95 control valve secondary air

96 control Relay Secondary air pump
97 Sekundaerluftsysstem Plausibilitaet
98 SG-Selbsttest E2PROM-Emulation
99 control Lambda probe heating after KAT
9B Aussetzer abgasrelevant Summe
9C Aussetzer katschaedigend Zyl.1
9D Aussetzer katschaedigend Zyl.2
9E Aussetzer katschaedigend Zyl.3
9F Aussetzer katschaedigend Zyl.4
A0 Aussetzer katschaedigend Summe
A5 Katalysatorkonvertierung
A6 Periodendauer Lambdasonde vor Kat
A9 Heizleistung Sonde vor Kat
AA Heizleistung Sonde nach Kat
AB Pruefung Kraftstoff-Versorgungssystem

Common Problems /Troubleshooting

E10 ERROR MESSAGE ON TOOL:
"E" means the car is not responding to the tool: This often happens when the data line (also called "diagnostic bus") inside the car is "hung" or disabled. Occasionally the R5/FCX will display the message "E" followed by a number (most commonly 10 or 11) when an attempt is made to read codes or to reset the MIL light (Check Engine or Service Engine Soon)

Things To Try to Resolve the Flashing "E":

1.) Insertion Depth: Check the insertion depth of the R5/fcx. If it is not fully inserted the unit will not work. See page 40.

2.) Reversing the power-up sequence: Plug in the R5/FCX first, THEN turn on the ignition key. This is the opposite of the routine specified by the manual and the tool label. This procedure has proven very effective on some cars.

3.) Pin 19: Observe that pin 19 of your diagnostic connector is not recessed. A number of models in the early 1990s had pin 19 improperly installed.

4.) Cycle power: Plug in tool, cycle the ignition key on and off two or three times (do not start engine)

5.) Other warning lights: Observe that no other malfunction indicator lights are on. Often a malfunctioning module (i.e. DME, EGS/transmission, ABS traction control, etc...) can impair or "hang" the diagnostic bus.

6.) Power resetting of all modules (entire car)

Note: before doing this procedure, get your radio security code from the dealer.

   a.) Disconnect the main car battery.
   b.) Activate the emergency flasher lights (this will fully drain all power from all ECUs) wait 5 minutes
   c.) Reconnect the main battery and try the tool again.

7.) Module Troubleshooting: If you suspect a particular module is malfunctioning or damaged, you may wish to consult repair documentation for the car (see page 40) and attempt to isolate the problem by removing the module from the diagnostic bus. **WARNING:** This procedure is for qualified mechanics only.

ABS service bulletin 34 01 96: BMW circulated a service bulletin and low cost repair advice detailing the malfunction of the ABS unit ground wiring which caused diagnostic bus problems on a large number of BMWs. This is often the problem on BMWs built prior to 10/1994 that are getting the "E" message on the R5/fcx code tool. (Please do not Contact Peake Research for

service bulletins. Contact Central Letter Shop (see page 40), BMWs authorized publication vendor 1-800-695-0079, or 973-808-8339, 9:00am - 4:30pm EST)

8.) Trying the tool on a similar BMW
If you have access to s similar BMW, you can rule out the tool as the source of the problem by trying it on that car. If it eighter reads or resets without the E message, then you can narrow your attention to the car.

The R5/fcx will not serve it's intended purpose if the diagnostic bus is impaired by a malfunctioning control module. If one of the modules is inhibiting communications it is necessary to visit a BMW dealer or qualified repair facility to diagnose and fix/replace the bad module.

ENGINE LAMP WILL NOT RESET:
When the MIL is on, will not reset, yet no codes are found this can be caused by one of two things; most common: the car has automatic transmission related faults which can occasionally trigger an engine MIL. Another possible cause is the engine MIL circuit from the Engine ECU to the instrument cluster is open.

SERVICE LIGHT BATTERY PROBLEMS:
(note: only applies to BMWs older than 1989) The R5/FCX is not giving error messages and appears to be working normally but one of the following conditions occurs: **a.)** The reset seemed successful but the service lights come back on shortly after the reset was done. **b.)** The service lights stay on while the ignition is off and the key is out of the ignition switch. **c.)** The service lights flash off and on. **d.)** The service lights will not reset at all. **e.)** The tachometer, temperature gauge, or fuel economy gauge seem erratic (meter needle jumps rapidly) or have quit working completely. The list of problems above indicates a dying or dead backup battery on your S.I. (Service Interval) computer circuit board. When this "backup" battery dies, the S.I. computer has to re-start every time you start your car, at which point an "Inspection" light will be indicated. Winter storage without a trickle charger is the most common cause of premature S.I. battery failure. These specialized batteries have a life expectancy of approximately 4 to 7 years. Replacing the S.I. batteries takes about 90 minutes from start to finish and requires that you know how to operate a soldering iron. A battery replacement kit is available for most pre 1989 models from Peake Research Corp.
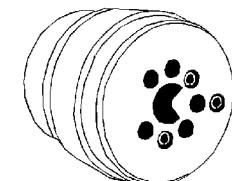
WRONG PLUG STYLE: THE TOOL DOESN'T FIT THE CAR.
If the tool does not fit the connector in the car please read the following guidelines which detail the possible causes:

1.) You may not have found the correct diagnostic plug (please closely review the illustrations on page 3 and 4)

2.) The BMW is 1988 or older and equipped with the 15 pin plug, which the R5/FCX will not fit. An adaptor is available (see image at right) to adapt the R5/FCX back to the older BMW for service light reset only, but no codes can be read on BMWs with the 15 pin connector built 1987 or earlier.

AB02, adapts FCX to pre-1988

3.) The tool is not equipped with the correct connector - there are two

native connector configurations for the R5/FCX

R5/FCX-3 Fits BMWs 1987 to year 2000 (20 pin format). (Note: Can be adapted to the 16 pin format of 2001 and later BMWs. Part number AB03, see "Adaptor advice" below)

R5/FCX-3-16: Fits BMWs 2001 to present: (16 pin format) No adaptor available to adapt back to earlier BMWs. Important: Not for use use on 1996 - 2000, even though it will fit.

INCREASING COMPATIBILITY:

If you require compatibility with BMWs built both before and after 2000, we highly recommend the AB03 adaptor to go along with the R5/FCX-3. This gives the broadest range of code scanning and resets from 1987 to 2006.

If you plan to reset the Service Lights on older BMWs (1982 - 1986) we recommend the R5/FCX-3 in conjunction with the AB02 Adaptor (see image above).
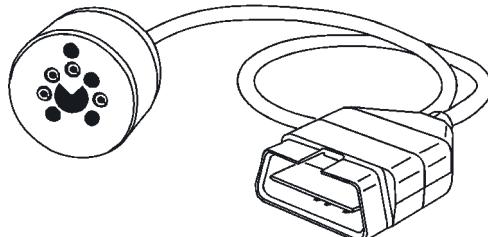
AB03 Adaptor. Adapts 20 pin tool to 16 pin car.

Mechanics Universal Kit: For mechanics, we recommend a two piece kit consisting of a R5/FCX-3 tool and the AB03 adaptor, which will cover 1987 through year 2000.

WHERE'S THE ADAPTOR I ORDERED!
If you ordered the AB02 adaptor and do not see it in the box, do the following before calling us: (a) Check to see if the tool fills the entire hard plastic storage case, (b) see if there are three silver pins in the tool connector. If you answered yes/yes, then the adaptor is there, just tug it out of the end of the tool- we ship them plugged together - it looks like one unit with no adaptor.

SERVICE LIGHT RESET FAILS:
Commonly a reset was attempted before one of the Oilservice or Inspection lights came on but the five green lights did not illuminate. • The computer was counting down to a different service interval than the one you tried to reset. There is no way to know if the next light will be Oilservice or Inspection. Some BMWs will not reset prior to the illumination of the Oilservice or the Inspection lights. In all cases we advise you to wait for the Oilservice or Inspection light to come on before attempting a reset. In other words, if there are any green "countdown" lights remaining, do not attempt a reset because it probably won't work. For an in depth explanation of how the service lights work, please visit http://www.peakeresearch.com for more detail. Another cause of the service light not resetting is the tool type. If your BMW has the round diagnostic port under the hood (see page 3), you can only reset the service lights through that round under-hood port.

TOOL WILL NOT RESET OTHER LIGHTS:
The R5/FCX would not reset the brake lining light, the SRS/airbag light, or the ABS brake light. •

The R5/FCX only resets the Check engine, Service Engine Soon, Oilservice and Inspection lights. However, Peak Research Corp offers the R5/SRS, Airbag Scan and Reset Tool, which will scan the airbag codes and reset the airbag light.

Sources of Technical Information:

Central Letter Shop is BMWs official technical documentation distribution source. All documentation relating to the service and maintenance of BMWs is available from them: Internet Address: http://www.centrallettershop.com/
Phone 1-800-695-0079, or 973-808-8339

BMW: Pay-by-use technical information can be obtained online directly from BMW at http://www.bmwtis.com/

Manual Publishers

Robert Bentley Publishing: 1-800-423-4595 Alldata: 1-800-859-3282 Chiltons: 1-800-695-1214	Mitchells: 888-724-6742 Haynes: 1-800-442-9637

Recommended Reading: • Bosch Automotive Handbook, by Robert Bosch, ISBN: 0837606144 • Bosch Fuel Injection and Engine Management, by Charles O. Probst. ISBN: 0837603005.

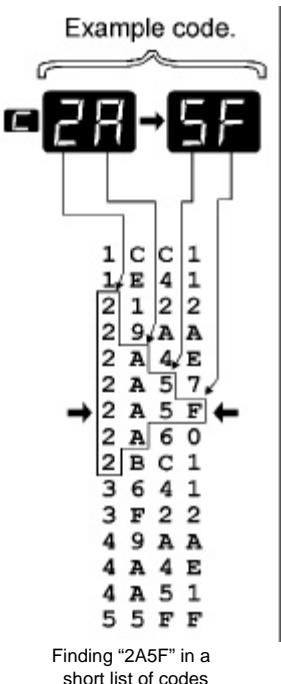## Warning about insertion of tool (applies to 20 pin tool only)

Tool must be fully inserted in order to work properly. To check for full insertion, first observe the faint line on the side of the connector on the R5/FCX. That line Should be just even with the top of the BMW's diagnostic connector. If that line is more than 1/16th of an inch above the top of the diagnostic connector, the tool is not fully inserted. (Note: for your reference, the bold black line above this paragraph is exactly 1/16th of an inch thick).

Confusion over codes with letters and numbers

Most late model BMWs store codes in a four digit format using letters and numbers. If you read these simple explanations, you will find that finding a code in this manual is almost exactly like finding a word in a dictionary.

Remember this sort order: *0 1 2 3 4 5 6 7 8 9 A B C D E F*

Let's compare looking up code "2A5F" to looking up the word "easy" in the dictionary:	
<u>**DICTIONARY**</u> **Looking up the word "EASY"**	<u>**CODE TABLE**</u> **Looking up the code "2A5F"**
Find words that start with the letter "E"	Find codes that start with the a "2"
Find the "E" words who's second letter is "A"	Find the "2" codes who's second digit is "A" *(A is always between 9 and B)*
Find the "EA" words who's third letter is "S"	Find the "2A" codes who's third digit is "5"
Find the "EAS" words who's final letter is "Y"	Find the "2A5" codes who's final digit is "F"
The only difference: instead of 26 letters, you are using 10 numbers and 6 letters: *sorted: 0 1 2 3 4 5 6 7 8 9 A B C D E F*	

Example code.


```
1 C C 1
1/ E 4 1
2 E 1 2 2
2 9 A A
2 A 4 E
2 A 5 7
2 A 5 F
2 A 6 0
2 B C 1
3 6 4 1
3 F 2 2
4 9 A A
4 A 4 E
4 A 5 1
5 5 F F
```

Finding "2A5F" in a short list of codes

Test Yourself: **What comes after 1999? If you said 199A, you've got it.**
What comes after 1FFF? If you answered 2000, you're set.

Note: this numbering system is called "hexadecimal". Wikipedia.com has an informative page on the hexadecimal numbering system is you are interested.

Glossary:

A/C = Air conditioner

ABS = Anti-lock Brake System

ASC = Skid control (see "Intervention")

ADS = Aux Throttle Position Motor

AHK = Active Rear Axle Kinematics

BLS = Brake Light Switch

Check Engine Light: on the dashboard, indicates the DME has detected a problem

CC = Check control

CO = Carbon Monoxide

DDE = ECU for Diesel Engine

Diagnostic Connector: Where the R5-FCX plugs into the car. See pages 3 and 4.

Decimal = Numeric format the dealer diagnostic machines report codes in. See page ? for explanation.

DISA =intake runner length tuning mechanism

DME = Engine ECU (Gasoline engine): monitors and controls all engine sensors and functions

DSC = Dynamic Stability Control

DWA = Alarm system

E = Communications error: See "Flashing E below

EGS = Electronic Automatic Transmission

EKAT = Electrically heated catalytic convertor

EKM = electronic Body Module

EML = Electronic Throttle Control

EVAP = relates to fuel vapor recovery often this code indicates a loose gas cap

EWS = Drive away protection (alarm system)

Fault Code: a "code" stored in the DME memory bank that indicates a past or present problem.

Fuel Trim = adjustments to maintain proper air fuel ratio (see Lambda Control)

Flashing E: (in R5-FCX display) communication problem in the vehicle, please visit the following web page: www.r5tool.com/fcxtech.shtml

GM = General Module

Hex = The R5/fcx shows codes in a format called hexadecimal. See page ?.

Intervention, MSR, ASC = intervention is when another control unit (i.e. skid control) requests a power/torque change from the DME. Code indicates DME assessed the request as being incorrect or too long.

Lambda Control = Code means DME is unable to maintain requisite air/fuel ratio due to external factor (air leak, bad injector, sensor, etc...). (also see fuel trim)

LDP = Loss Diagnosis Pump

Load Calculation Cross Check (HFM vs TPS)= when actual air flow exceeds +/- 25% of calculated air flow.

MDK = Motorized Throttle Valve

MIL = Malfunction Indicator Lamp, also called the "Check Engine" or "Service Engine Soon lamp

MLF = Multi function Steering Wheel

MSR = Drag Torque Intervention (torque reduction for anti skid) see Intervention above

NTC = coolant temperature sensor

Oilservice & Inspection: Also called Si (abbrev. for service interval) maintenance reminder lights

PWG = Pedal Sensor Potentiometer

QL = idle air mass adaption (see Fuel Trim)

R5/FCX: The scan/reset tool. Subject of this manual

RAM = DME random access memory

ROM = DME program memory

Scan Tool: Generic term for the R5/FCX

Service Engine Soon: on the dashboard, indicates the DME has detected a problem.

SI = Service Interval

SMG = BMW Motorsport Sequential Gearbox

SRS = Airbag

TD = Tachometer Signal

TEV = Evap, fuel tank vent / purge valve

Ti Additive: idle fuel adaption (see fuel trim)

Ti multiplicative: adaption a percentage +/- of injector time (see Fuel Trim)

TR signal = from DME, RPM and valve position

VANOS = Adjustable Valve Train

VDS = Vehicle Description System. VIN Digits 4- 7

VIN = Vehicle identification number.

ZAB = see ASC

ZKE = Central Body Electronics

For further definitions, please consult documentation for the vehicle.

Your Notes:

Peake Research Corp, on the web:

Limited technical information for the R5/fcx is available online at:

www.r5tool.com/fcxtech.shtml

Note: We have done our best to provide a high quality BMW scan tool at a very low cost. Unfortunately, the level of technical assistance we can provide is minimal. Please note that we are not staffed to answer questions about codes, diagnostics, or BMW problems or offer repair advice. We apologize for any inconvenience this may cause.

Warranty:

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