8.6 Engine 104 HFM-SFI in Model 129 as of Model Year 1996, Model 140, 210

Diagnosis - Diagnostic Trouble Code (DTC) Memory

Preparation for DTC Readout

Diagnostic module (OBD II, N59/1) uses two different plug connectors for DTC readout:

a) 16-pole diagnostic module (OBD II) generic scan tool connector (X11/22) using a generic scan tool (see connection diagram),

b) 38-pole data link connector (X11/4) using the HHT (see section 0).

DTC readout using the impulse counter scan tool or via the LED pushbutton switch has been eliminated.

During DTC readout, the CHECK ENGINE MIL stays on continuously.

Notes Regarding Diagnostic Trouble Codes (DTC's)

The retained diagnostic trouble code (DTC) memory feature of the diagnostic module has been replaced with DTC memory which is cleared after disconnecting the vehicle's battery.

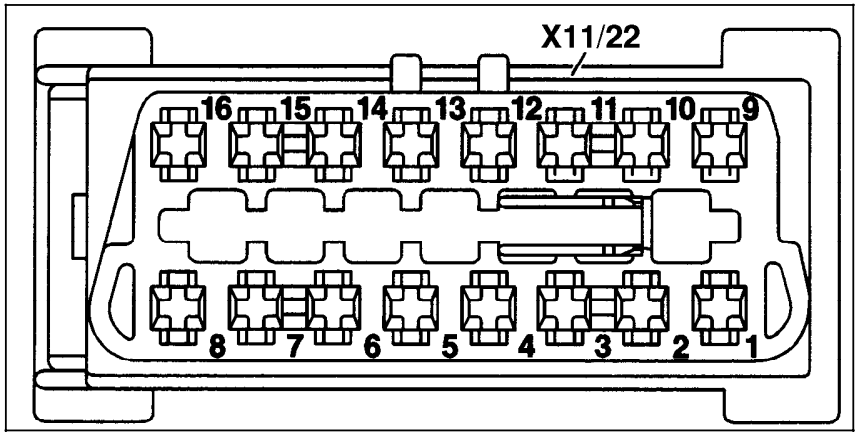
Notes Regarding DTC Readout Using Generic Scan Tool

In case of DTC P0131 and P0133, the exact cause of the fault in oxygen sensor 1 (O2S 1) can be read via "MODE 5" with the generic scan tool. To do so, the following codes must be entered in the generic scan tool:

- DTC P0131: Code JD 4A HEX
- DTC P0133: Code JD 7E HEX

Layout of Diagnostic Module Generic Scan Tool Connector (OBD II, X11/22)

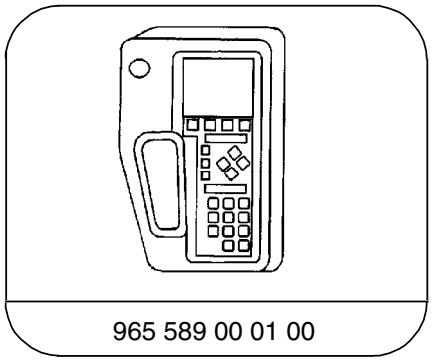
1	–
2	–
3	–
4	Ground (W1)
5	Ground (W15/1)
6	–
7	Diagnostic wire
8	–
9	–
10–15	–
16	Voltage supply, circuit 30



P07-6303-33

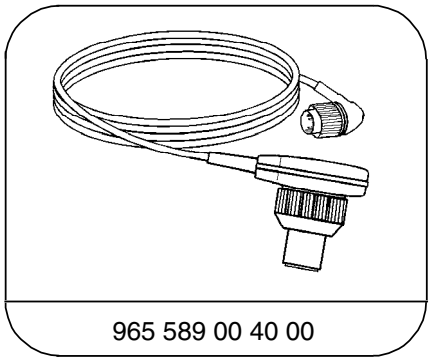
Diagnosis - Diagnostic Trouble Code (DTC) Memory

Special Tools



965 589 00 01 00

Hand-Held-Tester



965 589 00 40 00

Test cable

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC 	Possible cause	Test step/Remedy [1]
P0132	O2S 1 (before TWC) (G3/2) circuit high voltage	23⇒ 4.0
P0134	O2S 1 (before TWC) (G3/2) circuit no activity detected	23⇒ 4.0
P0131	O2S 1 (before TWC) (G3/2) circuit low voltage	23⇒ 4.0
P1131	O2S 1 (before TWC) (G3/2) circuit short circuit	23⇒ 4.0
P0133	O2S 1 (before TWC) (G3/2) circuit slow response	Damage to TWC 23⇒ 4.0
P0135	O2S 1 (before TWC) (G3/2) heater circuit malfunction	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1132	O2S 1 (before TWC) (G3/2) circuit “rich” stop	Unmetered air, Damage to TWC or O2S
P0138	O2S 2 (after TWC) (G3/1) circuit high voltage	23⇒ 5.0
P0141	O2S 2 (after TWC) (G3/1) heater circuit malfunction	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1137	O2S 2 (after TWC) (G3/1) circuit short circuit	23⇒ 5.0
P1138	O2S 2 (after TWC) (G3/1) operating condition	23⇒ 5.0
P0412	Secondary air injection (AIR) system switching valve/circuit malfunction **Model 129, 140:** AIR pump switchover valve (Y32) and electromagnetic AIR pump clutch (Y33) **Model 210:** AIR pump switchover valve (Y32) and AIR relay module (K17)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1

[1] Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC 	Possible cause	Test step/Remedy [1]
P1411	Secondary air injection system incorrect flow detected	Hose lines, AIR pump, AIR shut-off valve
P1400	Electrical activation of the EGR switchover valve (Y27)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0400	Exhaust gas recirculation flow malfunction	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1 23⇒ 38.0 – 40.0,
P0507	Idle control system RPM higher than expected	Test EA/CC, see DM, Engines, Vol. 3, section 6 and/or 7
P0505	Idle control system malfunction	Test EA/CC, see DM, Engines, Vol. 3, section 6 and/or 7
P030x	TWC protection single cylinder misfire (Single cylinder ignition misfire within 200 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0300	TWC protection random cylinder misfire (Random cylinder ignition misfire within 200 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P030x	FTP standards single cylinder misfire (Single cylinder ignition misfire within 1000 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0300	FTP standards random cylinder misfire (Random cylinder ignition misfire within 1000 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P030x	I/M test single cylinder misfire (Single cylinder ignition misfire within 1000 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1

[1] Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC	Possible cause	Test step/Remedy [1]
P0300	I/M test random cylinder misfire (Random cylinder ignition misfire within 1000 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0420	Catalyst system efficiency below threshold	Catalytic converter (physical damage)
P1342	Electrical activation of adjustable camshaft timing solenoid (Y49)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1,
P1341	Adjustable camshaft timing solenoid (Y49) without function (Logic chain)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1 23⇒ 32.0,
P0200	Injector circuit malfunction	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1170	Short term fuel trim (self-adaptation of fuel mixture)	Unmetered air, Injectors (Y62), Diaphragm pressure regulator, Hot film mass air flow sensor (B2/5), Engine wear (reset self-adaptation after repairs, see DM, Engines, Vol. 2, section 1.1)
P0170	Fuel trim malfunction (self-adaptation of fuel mixture)	Unmetered air, Injectors (Y62), Diaphragm pressure regulator, Hot film mass air flow sensor (B2/5), Engine wear (reset self-adaptation after repairs, see DM, Engines, Vol. 2, section 1.1)

[1] Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC 	Possible cause	Test step/Remedy [1]
P0443	Evaporative emission control system (EVAP) purge control valve circuit malfunction (Purge control valve [Y58/1])	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1443	Electrical activation of purge flow switchover valve (Y27/6)	23⇒ 8.0
P0441	EVAP without function (logic chain)	23⇒ 9.0
P1444	Pressure switchover without function (logic chain)	23⇒ 10.0
P1701	Electrical activation of upshift delay switchover valve (Y3/3)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1700	Transmission upshift delay switchover valve (Y3/3) without function (Logic chain)	Upshift delay switchover valve (Y3/3), A/T control pressure cable adjustment (see SMS)
P030x	TWC protection single cylinder misfire (Single cylinder combustion misfire within 200 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0300	TWC protection random cylinder misfire (Random cylinder combustion misfire within 200 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P030x	FTP standards single cylinder misfire (Single cylinder combustion misfire within 1000 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0300	FTP standards random cylinder misfire (Random cylinder combustion misfire within 1000 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P030x	I/M test single cylinder misfire (Single cylinder combustion misfire within 1000 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1

[1] Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC	Possible cause	Test step/Remedy [1]
P0300	I/M test random cylinder misfire (Random cylinder combustion misfire within 1000 engine revolutions)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1340	CMP sensor (L5/1) or camshaft Hall-effect sensor (B6/1) monitoring signal from engine control module (N3/4)	23 ⇒ 7.0
P1335	Engine speed signal TNA from diagnostic module (OBD II) not received	23 ⇒ 6.0
P1711	Electrical activation of resonance intake manifold switchover valve (Y22/6)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0116	Engine coolant temperature circuit range/performance problem (ECT sensor [B11/3])	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0125	Insufficient coolant temperature for closed loop fuel control	Engine coolant temperature sensor (B11/3)
P0111	Intake air temperature circuit range/performance problem (IAT sensor [B17])	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1, 1.2
P0101	Mass or volume air flow circuit range/performance problem (Hot film MAF sensor [B2/5])	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0335	CKP sensor circuit malfunction	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1336	CKP sensor signal: Magnet coding on segment	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1337	Engine speed signal TNA not transmitted from engine control module	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1

[1] Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC	Possible cause	Test step/Remedy [1]
P1740	Full load information: Load implausible	Test EA/CC, see DM, Engines, Vol. 3, section 6 and/or 7
P1741	Full load information: Throttle valve position implausible	Test EA/CC, see DM, Engines, Vol. 3, section 6 and/or 7
P0510	CTP information: Air mass implausible	Test EA/CC, see DM, Engines, Vol. 3, section 6 and/or 7
P0600	Serial communication link malfunction (CAN)	23 ⇒ 13.0
P0500	Vehicle speed signal implausible	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0501	Vehicle speed implausible	Engine control module (N3/4)
P0341	CMP sensor (L5/1) or camshaft Hall-effect sensor (B6/1)	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0105	Manifold absolute pressure implausible	23 ⇒ 11.0
P0327	Knock sensor 1; sensor signal	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0326	Knock sensor 1; circuit range/performance	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P0325	Knock sensor 1; control range end stop	Test HFM-SFI, see DM, Engines, Vol. 2, section 1.1
P1750	Diagnostic module (N59/1) voltage supply from circuit 30 too low	23 ⇒ 1.0

[1] Observe Preparation for Test, see 22.

Electrical Test Program – Component Locations

Model 129 as of Model Year 1996

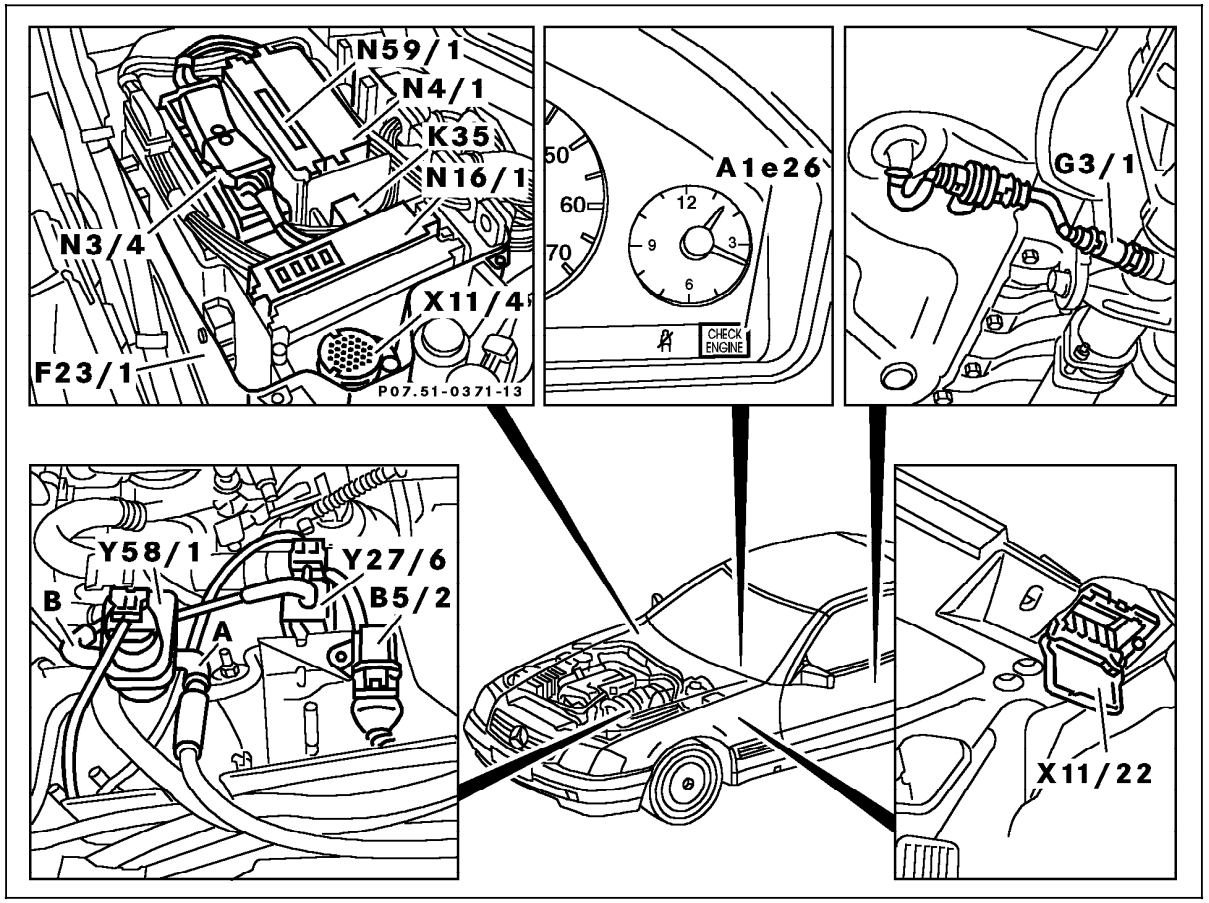
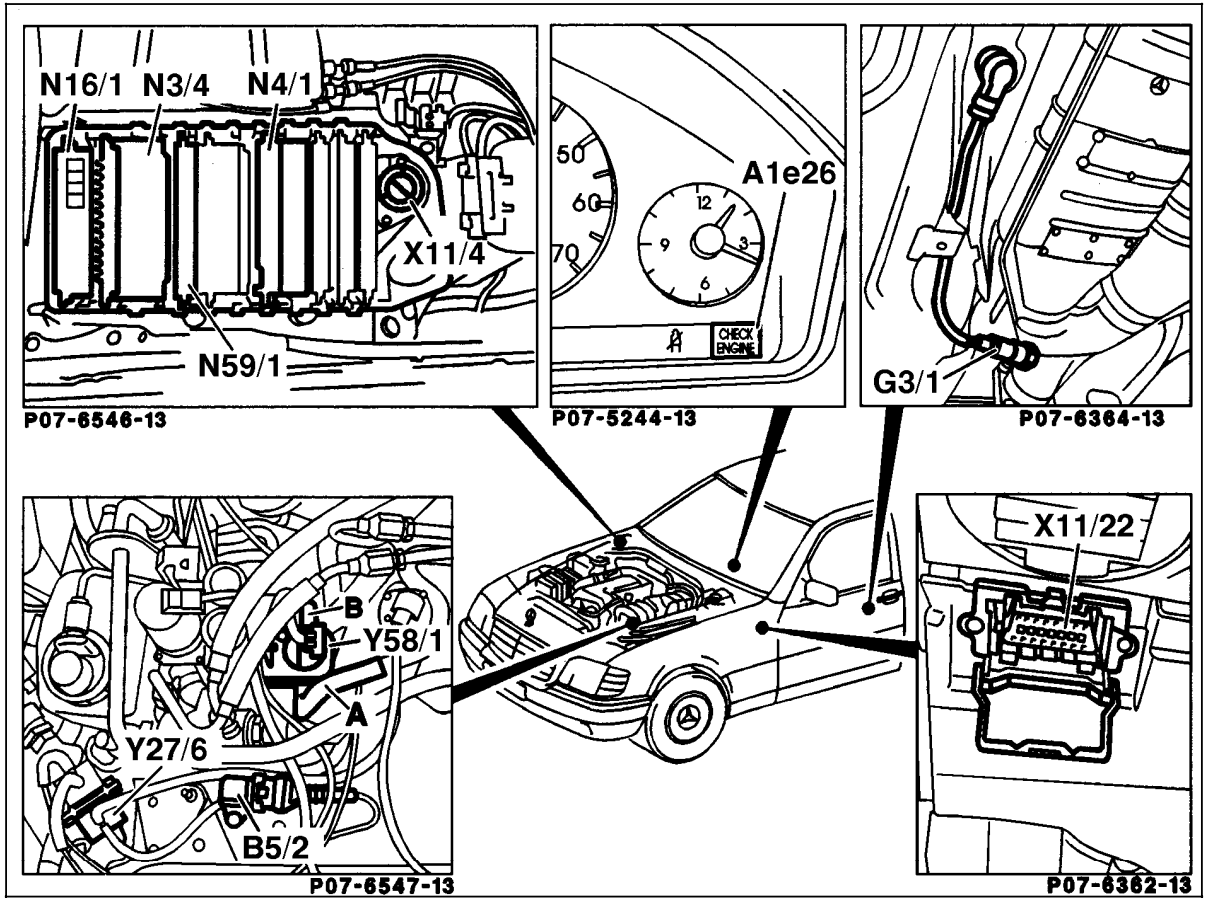


Figure 1

A1e26	CHECK ENGINE MIL
B5/2	DM pressure sensor
G3/1	O2S 2 (after TWC)
K35	O2S 2 (after TWC) heater relay module
N3/4	Engine control module (HFM-SFI)
N4/1	EA/CC/ISC control module
N16/1	Base module (BM)
N59/1	Diagnostic module (OBD II)
X11/4	Data link connector (DTC readout)
X11/22	Diagnostic module (OBD II) generic scan tool connector
Y27/6	Purge flow switchover valve
Y58/1	Purge control valve
A	Line to charcoal canister
B	Line to engine

Electrical Test Program – Component Locations

Model 140 to end of Model Year 1995



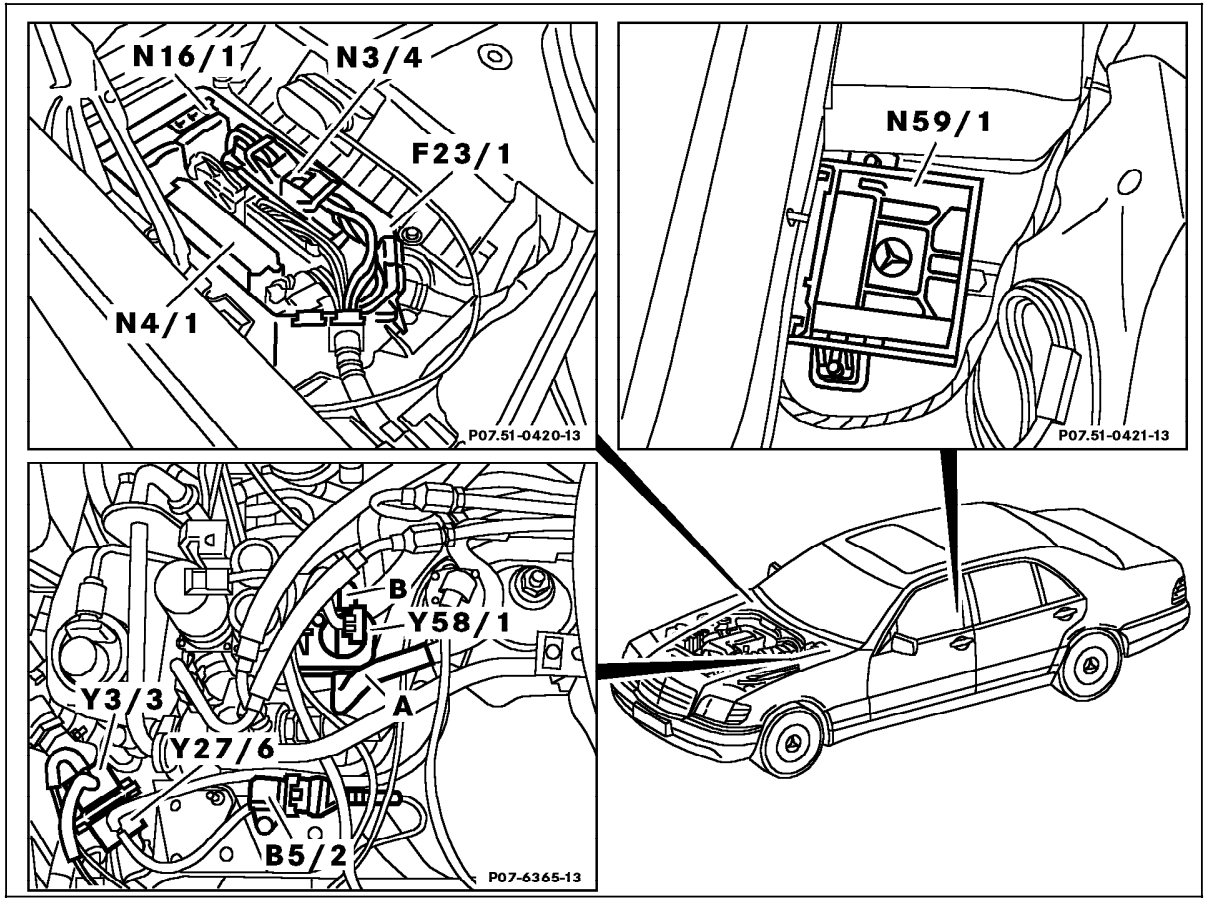
P07-6533-57

Figure 2

A1e26	CHECK ENGINE MIL
B5/2	DM pressure sensor
G3/1	O2S 2 (after TWC)
N3/4	Engine control module (HFM-SFI)
N4/1	EA/CC/ISC control module
N16/1	Base module (BM)
N59/1	Diagnostic module (OBD II)
X11/4	Data link connector (DTC readout)
X11/22	Diagnostic module (OBD II) generic scan tool connector
Y27/6	Purge flow switchover valve
Y58/1	Purge control valve
A	Line to charcoal canister
B	Line to engine

Electrical Test Program – Component Locations

Model 140 as of Model Year 1996



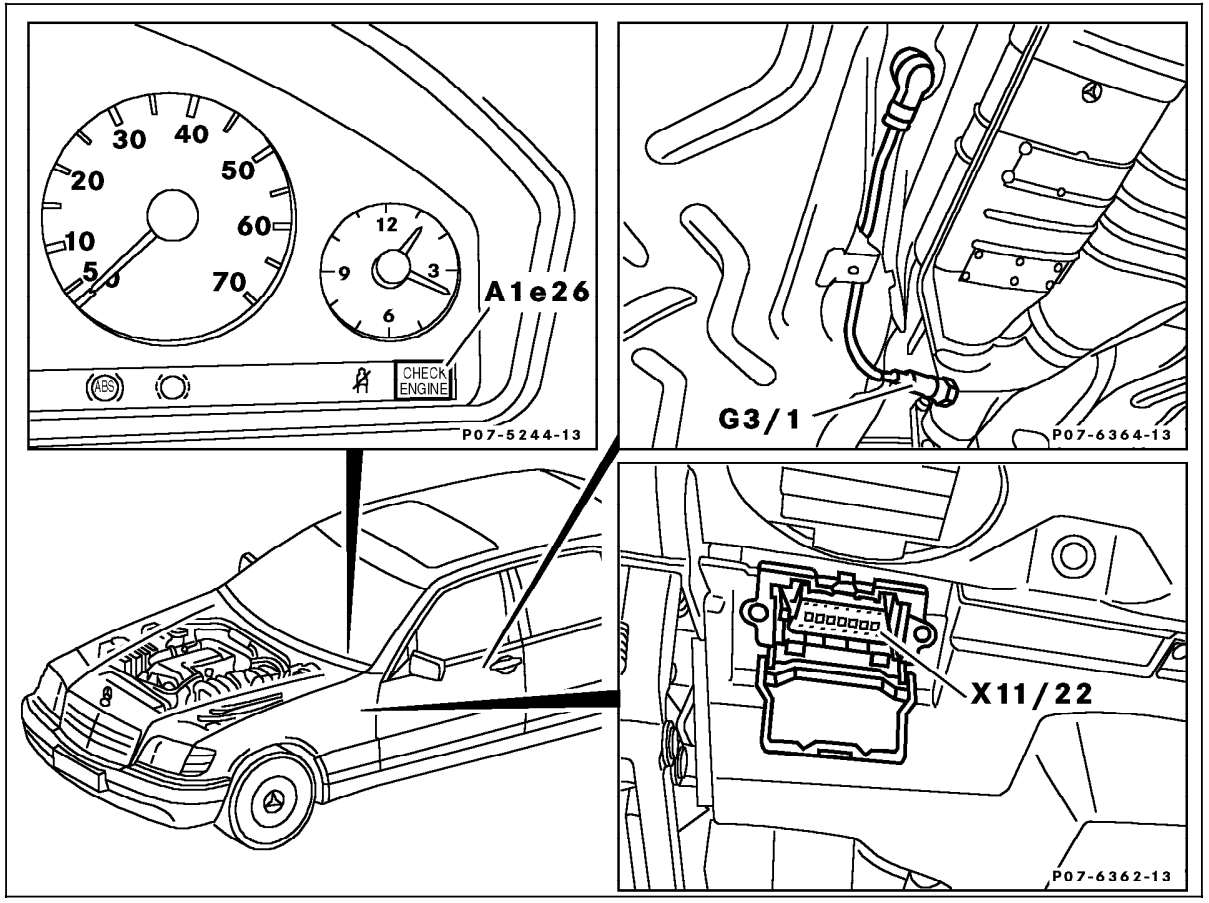
P07.51-0424-57

Figure 3

B5/2	DM pressure sensor
F23/1	Control module box
N3/4	Engine control module (HFM-SFI)
N4/1	EA/CC/ISC control module
N16/1	Base module (BM)
N59/1	Diagnostic module (OBD II)
Y27/6	Purge flow switchover valve
Y58/1	Purge control valve
A	Line to charcoal canister
B	Line to engine

Electrical Test Program – Component Locations

Model 140 as of Model Year 1996



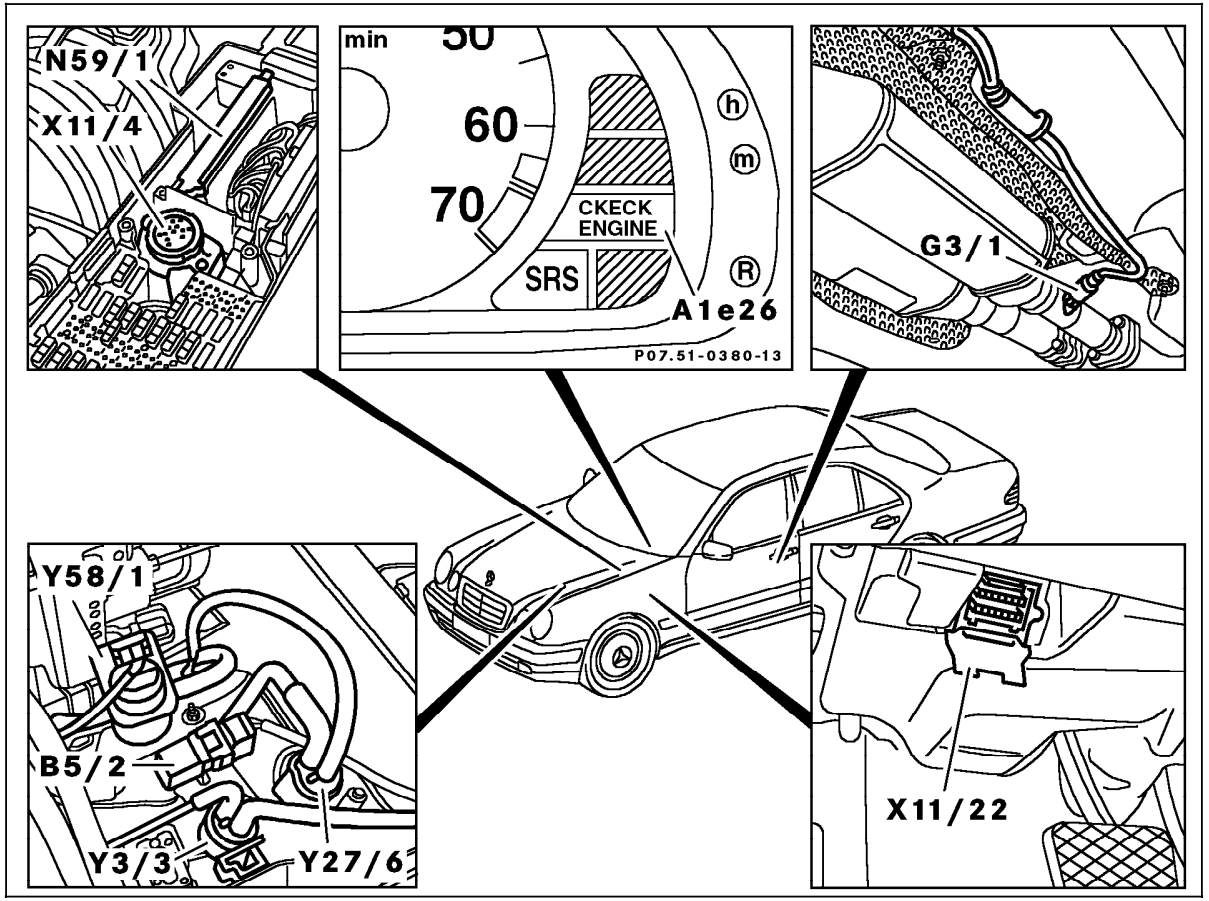
P07.51-0423-57

Figure 4

A1e26	CHECK ENGINE MIL
G3/1	O2S 2 (after TWC)
X11/22	Diagnostic module (OBD II) generic scan tool connector

Electrical Test Program – Component Locations

Model 210



P07.51-0391-57

Figure 5

A1e26	CHECK ENGINE MIL
B5/2	DM pressure sensor
G3/1	O2S 2 (after TWC)
N59/1	Diagnostic module (OBD II)
X11/4	Data link connector (DTC readout)
X11/22	Diagnostic module (OBD II) generic scan tool connector
Y27/6	Purge flow switchover valve
Y58/1	Purge control valve

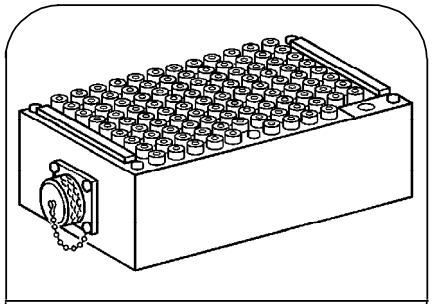
Electrical Test Program - Preparation for Test

Preliminary work: Diagnosis – Diagnostic Trouble Code (DTC) Memory 11

1. Ignition: **OFF**
2. Remove diagnostic module (OBD II, N59/1). On Model 140 as of Model Year 1996 remove rear seat cushion and loosen bracket for diagnostic module.
3. Connect socket box with test cable according to connection diagram.

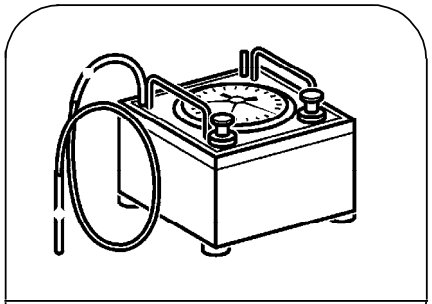
Electrical wiring diagrams :
Electrical Troubleshooting Manual, Model 129.
Electrical Troubleshooting Manual, Model 140.
Electrical Troubleshooting Manual, Model 210.

Special Tools



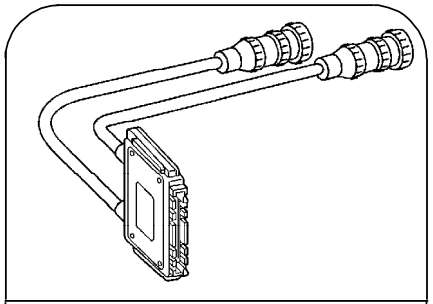
129 589 00 21 00

126-pin socket box



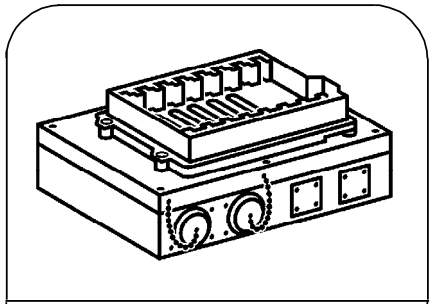
201 589 13 21 00

Tester



140 589 03 63 00

Contacting module 3

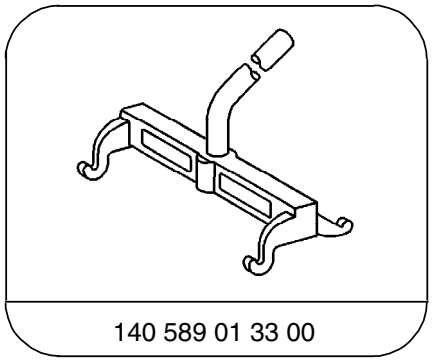


140 589 06 63 00

Contacting box

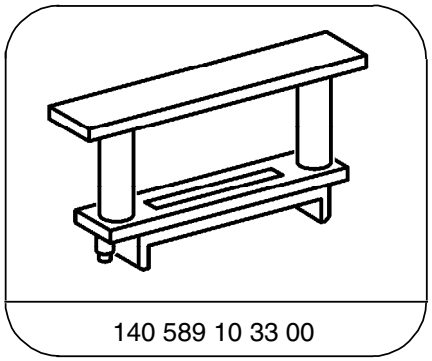
Electrical Test Program - Preparation for Test

Special Tools



140 589 01 33 00

Mounting lever



140 589 10 33 00

Spacer

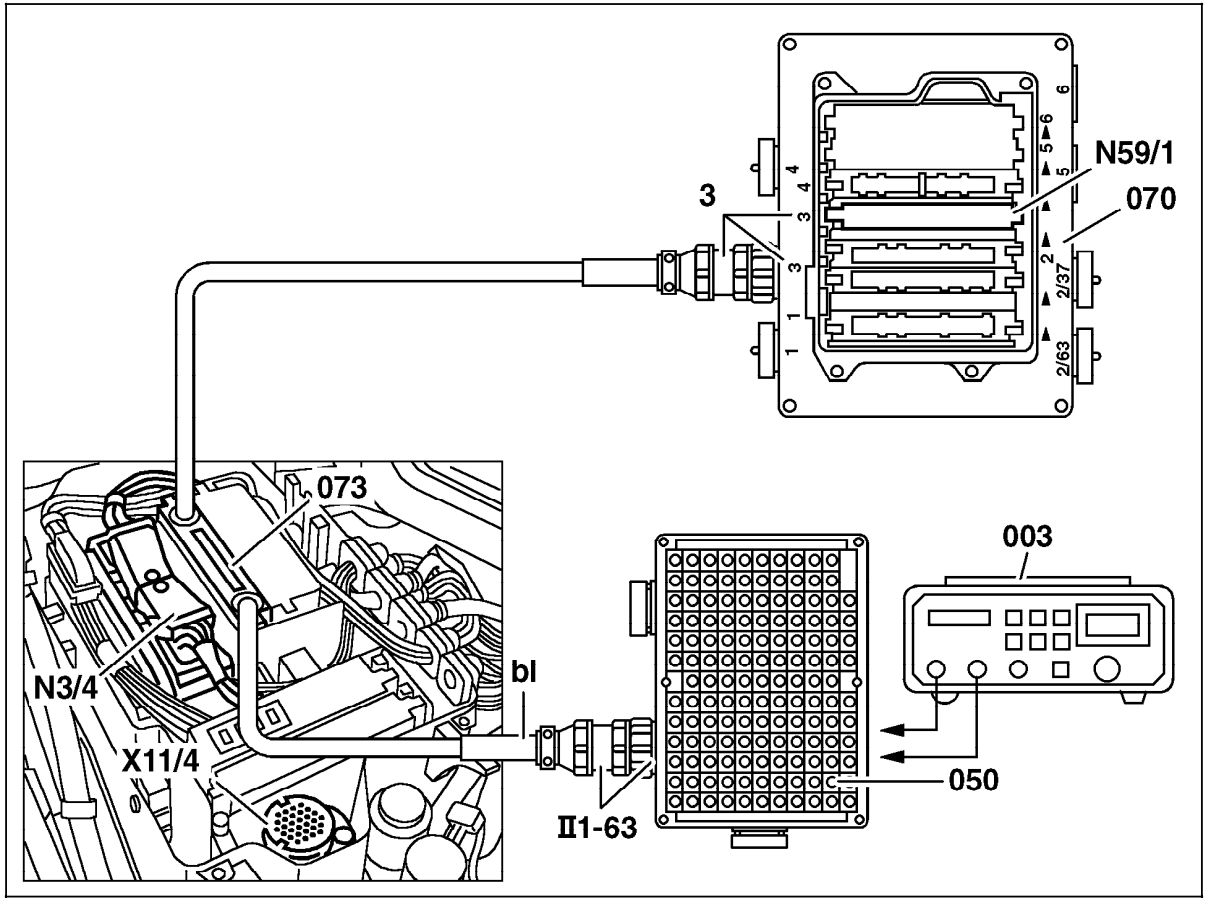
Conventional tools, test equipment

Description	Brand, model, etc.
Multimeter [1)]	Fluke models 23, 83, 85, 87
Test and adjustment diagnostic equipment (oscilloscope) [1)]	BEAR DACE

1) Available through the MBUSA Standard Equipment Program.

Electrical Test Program – Component Locations

Connection Diagram – Socket Box
Model 129 as of Model Year 1996



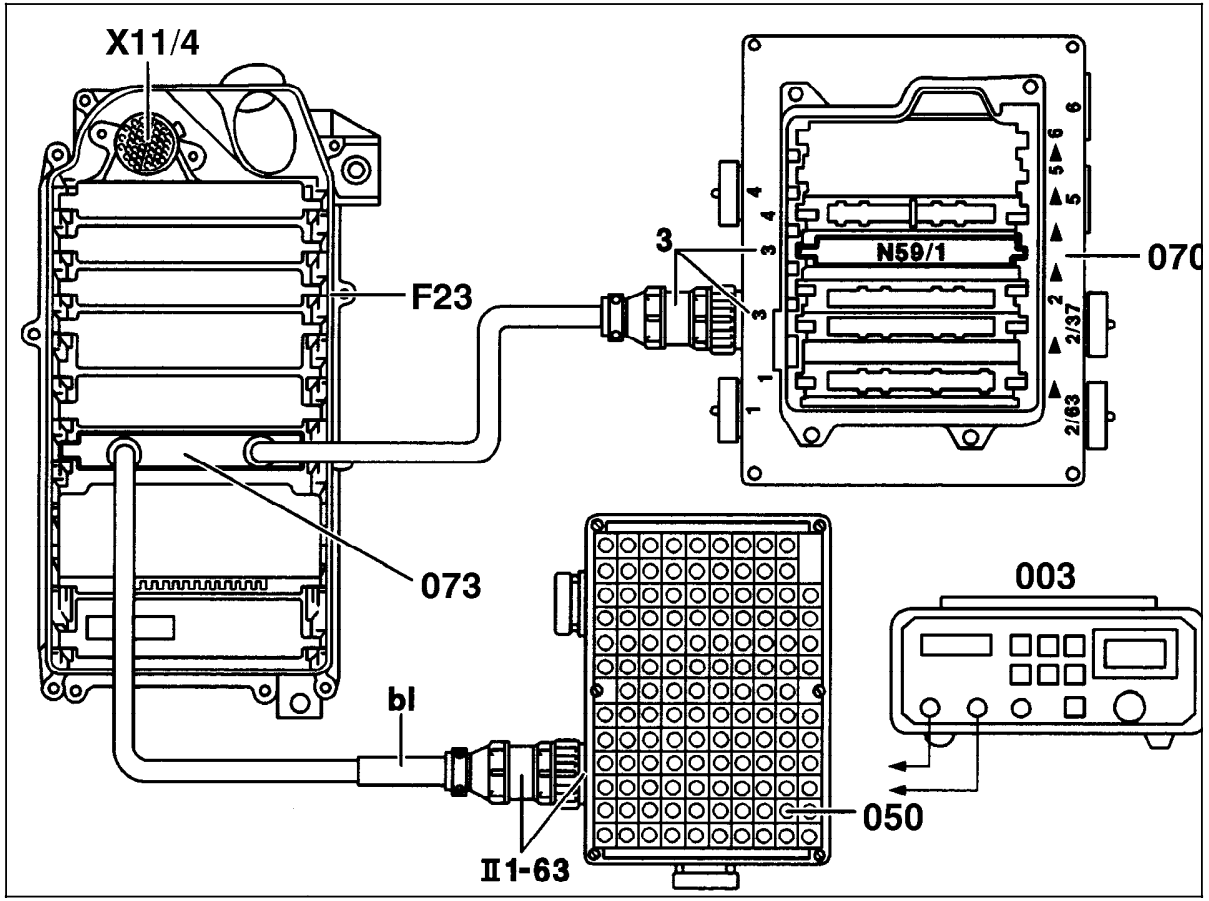
P07.51-0370-57

Figure 1

003	Digital multimeter
050	Socket box, 126-pole
070	Contact box
073	Contact module 3
N3/4	Engine control module (HFM-SFI)
N59/1	Diagnostic module (OBD II)
X11/4	Data link connector (DTC readout)
bl	blue

Electrical Test Program – Component Locations

Connection Diagram – Socket Box
Model 140 to end of Model Year 1995



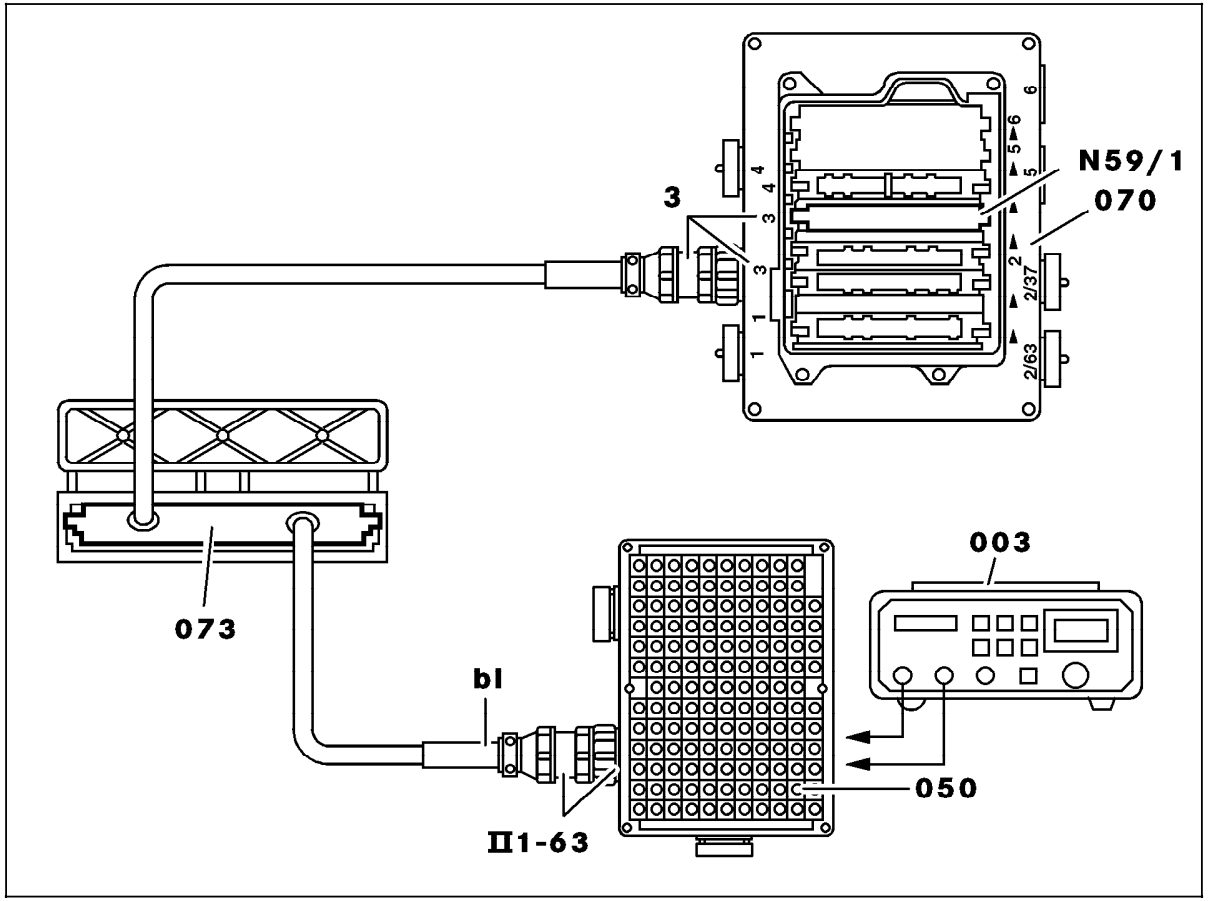
P07-6278-57

Figure 2

003	Digital multimeter
050	Socket box (126-pole)
070	Contact module
073	Contact module 3
F23	Module box
N59/1	Diagnostic module (OBD II)
X11/4	Data link connector (DTC readout)
bl	blue

Electrical Test Program – Component Locations

Connection Diagram – Socket Box
Model 140 as of Model Year 1996



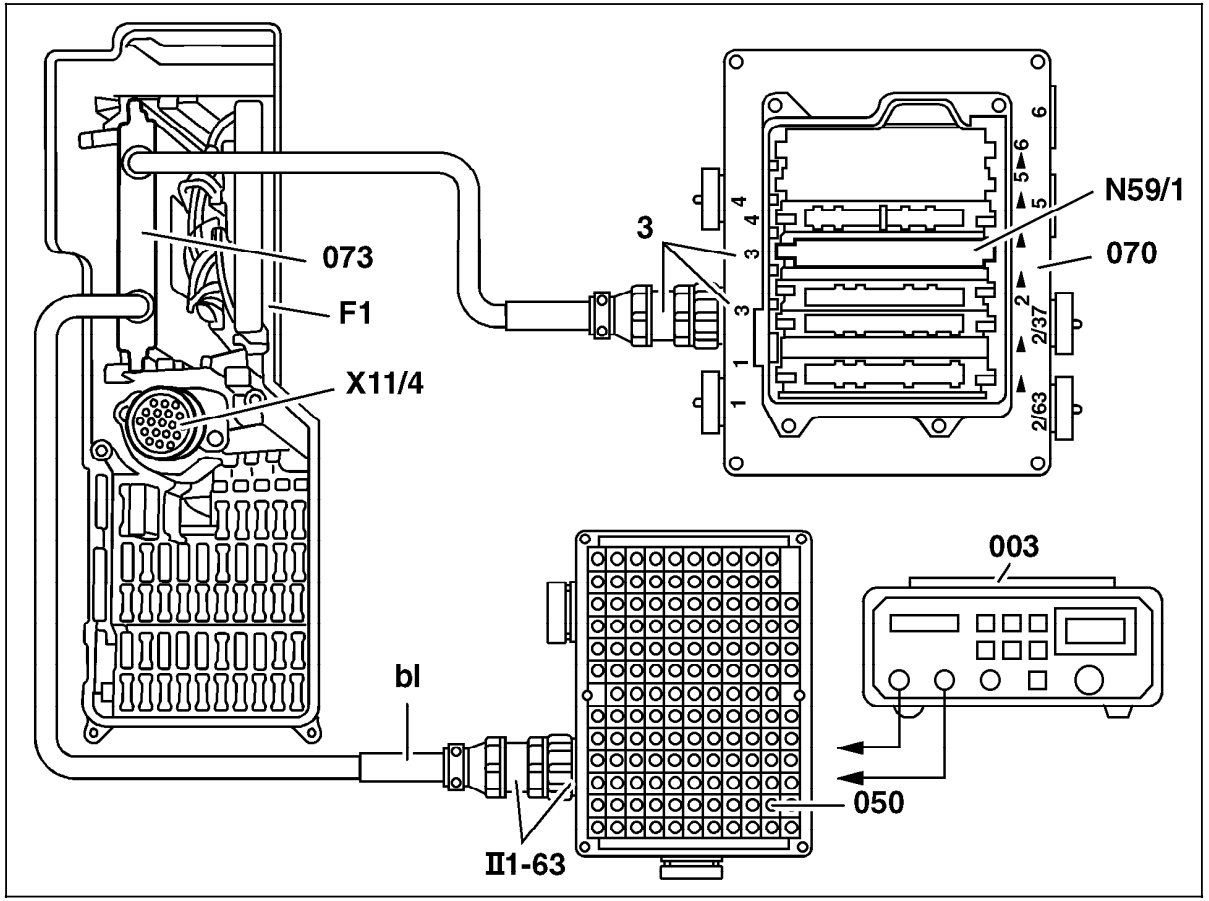
P07.51-0422-57

Figure 3

003	Digital multimeter
050	Socket box (126-pole)
070	Contact module
073	Contact module 3
N59/1	Diagnostic module (OBD II)
bl	blue

Electrical Test Program – Component Locations

Connection Diagram – Socket Box
Model 210



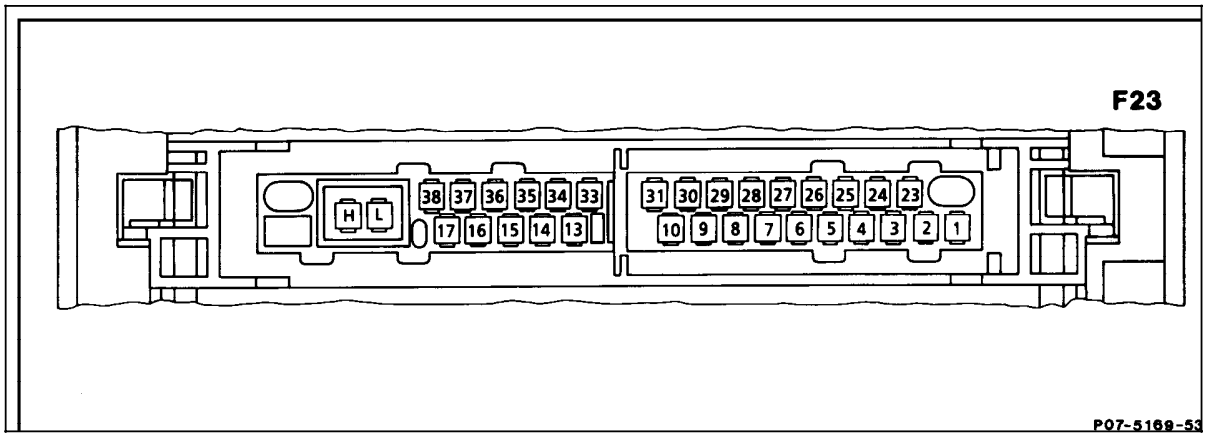
P07.51-0339-57

Figure 4

003	Digital multimeter
050	Socket box (126-pole)
070	Contact module
073	Contact module 3
F1	Fuse and relay box
N59/1	Diagnostic module (OBD II)
X11/4	Data link connector (DTC readout)
bl	blue

Electrical Test Program – Test

Terminal Layout of Diagnostic Module
Model 129 as of Model Year 1996
Model 140 and 210



P07-5169-53

Figure 5

F23	Modulbox
1	–
2	Sensor ground
3	CMP sensor
4	–
5	Voltage supply, circuit 30
6	O2S 2 (after TWC) signal (G3/1)
7	O2S 1 (before TWC) signal (G3/2)
8	Engine speed signal (TNA)
9	Ground coding at W27 (Model 129)
10	Purge flow switchover valve (Y27/6)
11–15	–
16	DM pressure sensor (B5/2)
17	DM pressure sensor (B5/2)
18–22	–
23	Diagnostic wire to generic scan tool connector (X11/22)
24	–
25	Ground, module box bracket (W27), Model 129 Electronic ground , right footwell (W15), Model 140 to end of Model Year 1995 Ground, right rear seat (W17), Model 140 as of Model Year 1996 Ground, left wheelhousing (W16/3), Model 210
26	Voltage supply, circuit 87
27	Diagnostic wire to data link connector X11/4 (38-pole)
28	“CHECK ENGINE“ MIL
29	Ground coding from pin 25 (Model 210)
30	–
31	Ground from engine control module (N3/4)
H	CAN data line (+) (control modules HFM-SFI, EA/CC/ISC, CC/ISC, ETC, RCL)
L	CAN data line (–) (control modules HFM-SFI, EA/CC/ISC, CC/ISC, ETC, RCL)

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	P1750	**Diagnostic module (OBD II, N59/1)** Voltage supply Circuit 30	N59/1 25 (1.25) — V — 5 (1.5)	Ignition: **ON**	11 – 14 V	Wiring, ⇒ 1.1, **Model 129, 140:** Base module (N16/1). **Model 210:** Relay module (K40)
1.1		Ground wire	N59/1 25 (1.25) — V — X11/4 3	Ignition: **ON**	11 – 14 V	**Model 129:**Ground, module box bracket (W27), **Model 140** to end of 1995: Electronic ground, right footwell (W15) **Model 140** as of 1996: Ground, right rear seat (W17) **Model 210**: Ground, left wheelhousing (W16/3)
2.0		**Diagnostic module (OBD II, N59/1)** Voltage supply Circuit 87E	N59/1 31 (1.31) — V — 26 (1.26)	Ignition: **ON**	11 – 14 V	Wiring, ⇒ 2.1, **Model 129, 140:** Base module (N16/1). **Model 210:** Relay module (K40)
2.1		Ground wire to engine control module (N3/4)	N59/1 31 (1.31) — V — 5 (1.5)	Ignition: **ON**	11 – 14 V	Wiring

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.0		**"CHECK ENGINE" MIL** Control	N59/1 28 (1.28) — V — 26 (1.26)	Ignition: **ON**	11 – 14 V	Diagnostic module (OBD II, N59/1)
4.0	P0132 P0134 P0131 P1131 P0133	**O2S 1 (before TWC) (G3/2)** Signal	N59/1 31 (1.31) — V — 7 (1.7)	Engine: **at Idle** and at operating temperature >80 °C. Run engine at idle for at least 2 minutes.	oscillates between -0.2V and +1.0 V, by more than 0.3 V.	Wiring, G3/2.
5.0	P0138 P1137 P1138	**O2S 2 (after TWC) (G3/1)** Signal	N59/1 31 (1.31) — V — 6 (1.6)	Start engine at engine coolant temperature >80 °C. Increase and hold engine speed to 2000 – 3000 rpm for approx. 3 minutes until O2S 2 (after TWC) heater is switched on (see HHT). Accelerate briefly.	450 mV constant Voltage changes Voltage changes by > 100 mV	Wiring, G3/1

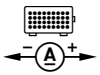
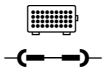
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0	P1335	**Engine speed signal** TNA	N59/1 [1] 31 (1.31) — (+) — 8 (1.8) N59/1 [2] 31 (1.31) — (V) — 8 (1.8)	Engine: **at Idle**	Signal see Figure 1 5.0 – 7.5 V	Wiring, Engine control module (N3/4).
7.0	P1340	**Model 129, 140** **CMP sensor (L5/1)** **Model 210** **Camshaft Hall-effect sensor (B6/1)** Output signal	N59/1 [1] 31 (1.31) — (+) — 3 (1.3) N59/1 [2] 31 (1.31) — (V) — 3 (1.3)	Engine: **at Idle**	Signal see Figure 2 and 3 9.5 – 11.0 V voltage jumps	Wiring, CMP sensor (L5/1), Camshaft Hall-effect sensor (B6/1), Engine control module (N3/4).

[1] Test with oscilloscope.

[2] Test with digital multimeter only if oscilloscope is not available.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0	P1443	**Purge flow switchover valve (Y27/6)** Current draw	N59/1  25 (1.25) — 10 (1.10)	Ignition: **ON**	0.4 – 0.6 A	Wiring, Y27/6.
9.0	P0441	**Purge flow system** Logic chain	N59/1  25 (1.25) — 10 (1.10)	Connect vacuum tester to switchover valve (Y27/6) (see Figure 4) Engine: **Start** and bring to operating temperature (80 °C) Engine speed approximately 2500 rpm	Purge switchover valve (Y58/1) noticeably cycles. Vacuum tester needle oscillates by approx. 5 mbar vacuum with cycle frequency of the purge control valve (Y58/1)	Regeneration line, Purge switchover valve (Y58/1), Y27/6.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
10.0	P1444	**Purge flow switchover valve (Y27/6)** Logic chain vacuum switchover	N59/1 25 (1.25) — 10 (1.10)	Connect vacuum tester to switchover valve (Y27/6). Disconnect 2-pole connector from purge control valve (Y58/1). Engine: **at Idle** Remove bridge from socket box tester	approx. 0 mbar vacuum > 500 mbar vacuum	Vacuum line, Y27/6.
11.0	P0105	**DM pressure sensor (B5/2)** Voltage	N59/1 2 (1.2) — V — 17 (1.17)	Coonect vacuum tester to pressure sensor (B5/2) using Y-fitting (Figure 4). Igmition: **ON** Engine: **at Idle**	> 3.5 V < 2 V and pressure increase to > 500 mbar	Vacuum line, Wiring, ⇒ 11.1, B5/2.
11.1		DM pressure sensor (B5/2) Voltage supply	N59/1 2 (1.2) — V — 16 (1.16)	Ignition: **ON**	4.7 – 5.3 V	Diagnostic module (OBD II, N59/1)

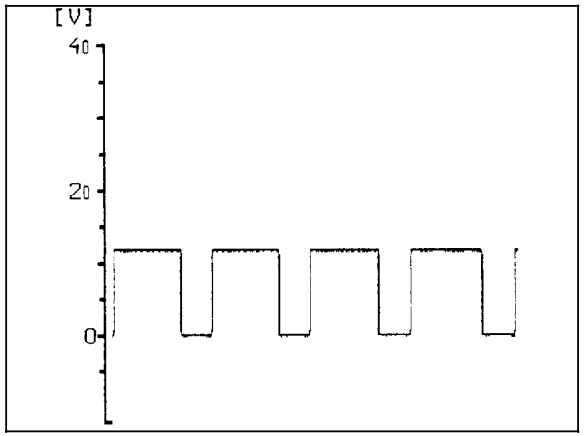
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
12.0	P0600	**CAN databus**	N59/1 L — ◄ Ω ► — H	Ignition: **OFF** Disconnect test cable or diagnostic module. Test with ohmmeter directly on both connections of diagnostic module connector (Figure 5).	**Model 140** to end of 1995 55 – 65 Ω **Model 129, 140, 210** as of 1996 115 – 125 Ω	Data bus, ⇒ 12.1, Diagnostic module (OBD II, N59/1).
12.1		CAN segment in engine control module (N3/4) Resistance	N3/4 L — Ω — H	Remove control module (N3/4) or disconnect connector 1 from control module (N3/4) and test with ohmmeter directly on control module (Figure 6).	115 – 125 Ω	Engine control module (N3/4), ⇒ 12.2.
12.2		CAN segement **Model 140** to end of 1995 in EA/CC/ISC control module (N4/1) or CC/ISC control module (N4/3) **Model 129, 140** as of 1996 and **Model 210** in RCL control module (N54)	N4/1 N54 L — Ω — H 44 — N4/3 — 45 (1.44) (1.45)	Remove control module (N4/1, N4/3 or N54) and test with ohmmeter directly on control module (Figure 7 – 9)	115 – 125 Ω	EA/CC/ISC control module (N4/1), CC/ISC control module (N4/3), RCL control module (N54).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.0		**Coding diagnostic module (N59/1)** **Model 129** **Model 210**	N59/1 9 (1.9) — V — 26 (1.26) N59/1 29 (1.29) — V — 26 (1.26)	Ignition: ON	11 – 14 V	Wiring.

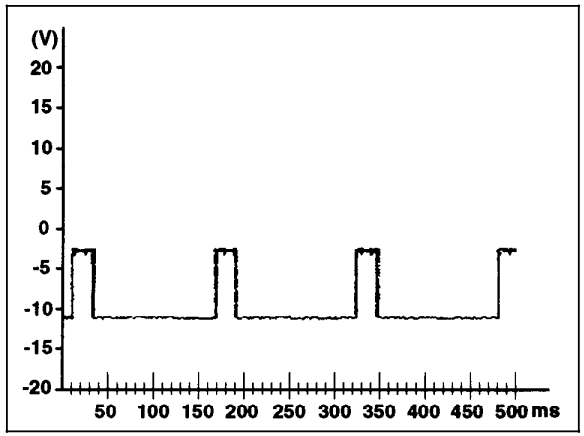
Electrical Test Program – Test



P15-0370-13

Figure 1

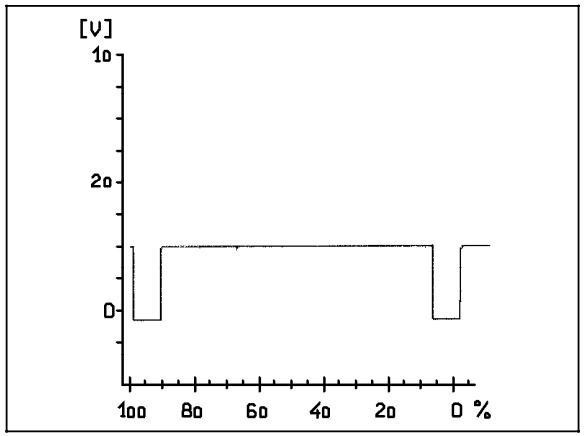
Engine speed signal (TNA)



P07-6413-13

Figure 2
Model 129, 140

Camshaft position sensor signal
t 50 ms

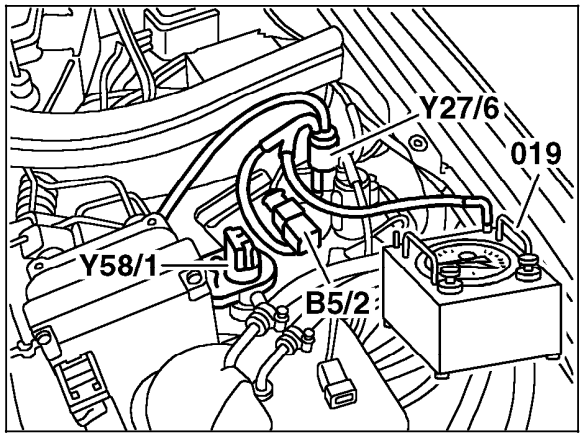


P07-6818-13

Figure 3
Model 210

Camshaft Hall-effect sensor output signal

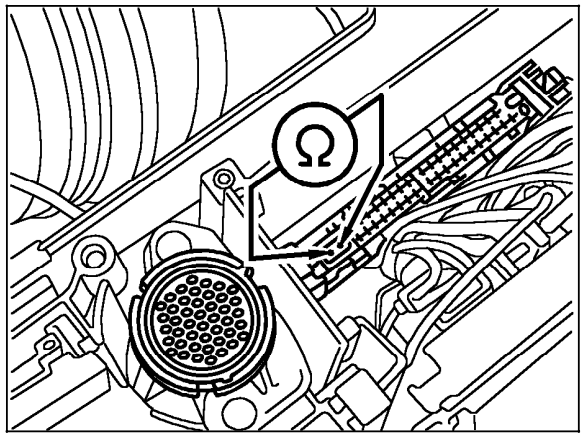
Electrical Test Program – Test



P07.51-0377-13

Figure 4
Shown on Model 210

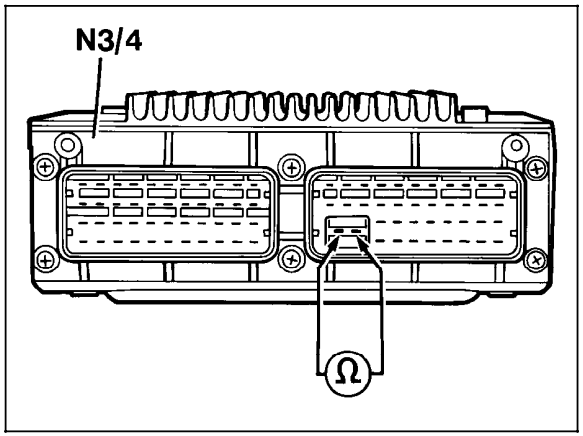
B5/2 DM pressure sensor
Y27/6 Purge flow switchover valve
Y58/1 Purge control valve
019 Vacuum tester



P07.51-0373-13

Figure 5

X11/4 Diagnostic module connector (shown on model 210)

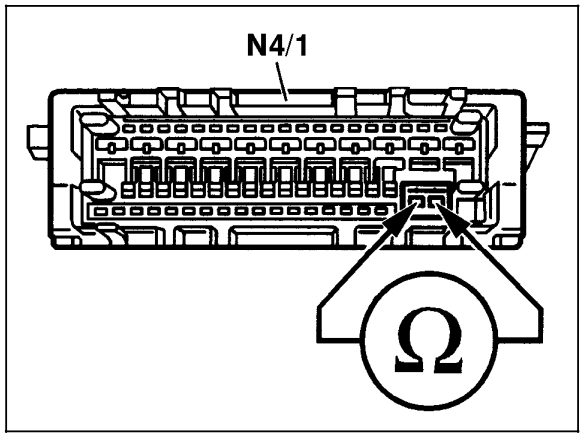


P07-6010-13

Figure 6

N3/4 Engine control module (HFM-SFI)

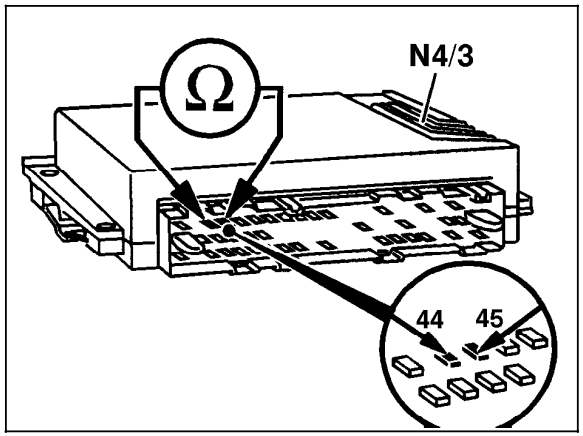
Electrical Test Program – Test



P07-6277-13

Figure 7

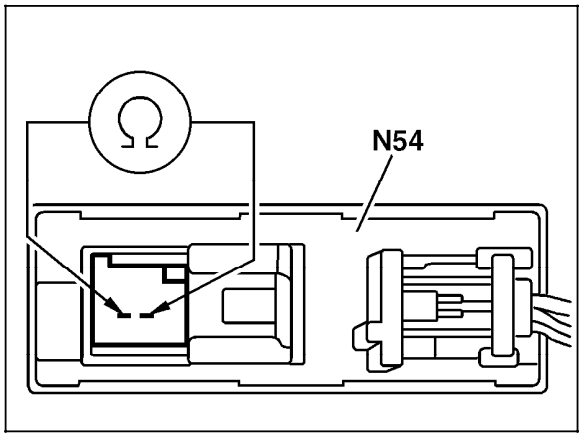
N4/1 EA/CC/ISC control module



P07-6327-13

Figure 8

N4/3 CC/ISC control module



P07.51-0338-13

Figure 9

N54 RCL control module