

6.4 Electronic Accelerator (EA)

Contents

6.4 Engine 104 HFM-SFI Models 124, 129, 140, 202, 210

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Diagnosis - Diagnostic Trouble Code (DTC) Memory

Preparation for DTC Readout

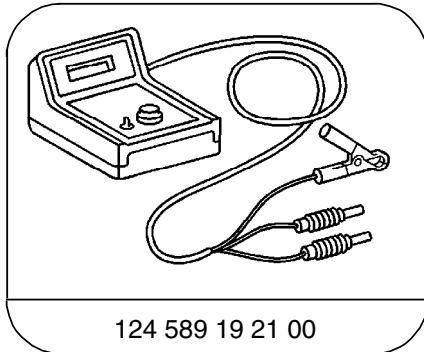
- Connect impulse counter scan tool and/or HHT to data link connector (X11/4) according to connection diagram (see section 0).

Model 124: yellow wire to socket 14

Models 129, 140, 202: yellow wire to socket 7

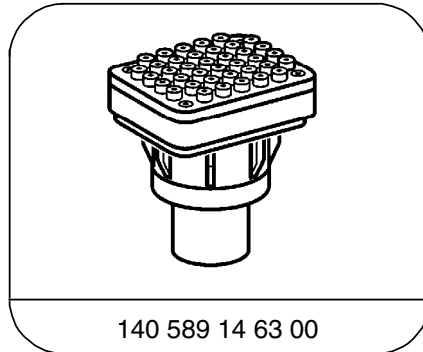
Model 210: Only possible with HHT.

Special Tools



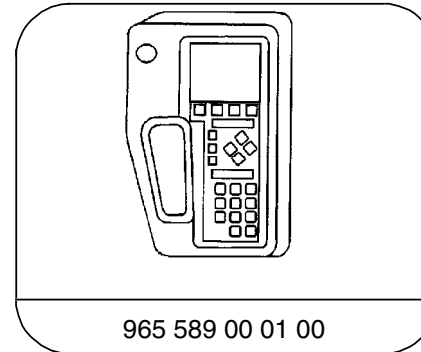
124 589 19 21 00

Pulse counter



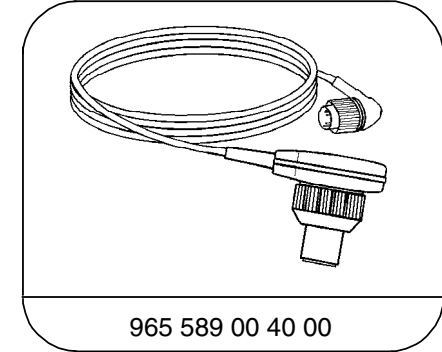
140 589 14 63 00

Adapter



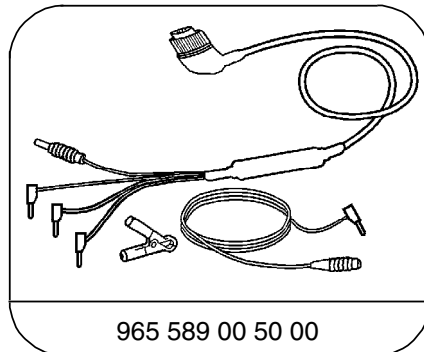
965 589 00 01 00

Hand-Held-Tester



965 589 00 40 00

Test cable



965 589 00 50 00

Adapter cable



Note:

The Test Program is divided into two sections:

- Electronic accelerator with ISC
- Cruise control


According to the diagnosis made, troubleshoot by performing only the related test steps in the particular group.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

 	Possible cause	Test step/Remedy ¹⁾
1	No fault in system	–
2 002 006 007 008 009 025	EA/CC/ISC control module (N4/1) Safety contact switch (M16/1s1) Stop lamp switch (S9/1) Safety contact switch (M16/1s1) Cruise control switch (S40) OFF EA/CC/ISC control module (N4/1) Actual value potentiometer (M16/1r2) Starter lock-out/back-up lamp switch (S16/3) (transmission range recognition) Closed throttle position switch (S29/3) Engine speed (TNA) signal Vehicle speed signal (VSS) Safety relay within EA/CC/ISC control module (N4/1) EA/CC/ISC control module (N4/1) Engine harness	N4/1 23⇒ 5.0, 6.0 23⇒ 4.0 23⇒ 7.0 24⇒ 1.0 N4/1 23⇒ 4.0 23⇒ 12.0, 24⇒ 3.0 23⇒ 11.0 23⇒ 14.0 23⇒ 15.0, 16.0 N4/1 N4/1 Check harness wire insulation.
037	Conditions for activation of EA/CC/ISC actuator (M16/1) not fulfilled.	Conditions: Engine: OFF Transmission range: P/N



¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC		Possible cause	Test step/Remedy ¹⁾
3	054, 056 057 048 049 050 051 052 053 055	EA/CC/ISC actuator (M16/1) Reference potentiometer (M16/1r1) (voltage supply) Reference potentiometer (M16/3r1) Actual value potentiometer (M16/3r2) Safety contact switch (M16/3s1) Closed throttle position switch (M16/1s2) Actuator motor (M16/1m1) Magnetic clutch (M16/1k1) Reset not accomplished (actuator adaptation)	23⇒ 2.0– 10.0 23⇒ 2.0 23⇒ 3.0 23⇒ 4.0 23⇒ 7.0, 8.0 23⇒ 6.0, 8.0 23⇒ 9.0 23⇒ 10.0 Erase DTC: Ignition: OFF Ignition: ON (for at least 90 seconds). If DTC reappears: EA/CC/ISC actuator (M16/1)
4	064	CC switch (S40)	24⇒ 1.0
5	080	Stop lamp switch (S9/1)	24⇒ 2.0
6	096 097	Starter lock-out/backup lamp switch (S16/1) <i>Not applicable to U.S. version vehicles</i>	23⇒ 12.0, 24⇒ 3.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

 	Possible cause	Test step/Remedy ¹⁾
7 112 115, 117	CAN databus: Message from EA/CC/ISC control module (N4/1) faulty Reception from engine control module (N3/4) faulty	23⇒ 20.0 N4/1
8 128–130	Left front axle VSS (L6/1) from ASR control module (N30/1)	23⇒ 15.0
9 144	Models 129, 140, 202, 210: Left rear axle VSS (L6/3) from ASR control module (N30/1) Model 124: Hall-effect speed sensor (B6)	23⇒ 16.0 23⇒ 17.0
10 160	Engine speed signal (TN) from engine control module (N3/4)	23⇒ 14.0
11 176–178, 182 180	Fuel safety shut-off signal to engine control module (N3/4) Closed throttle recognition signal to engine control module (N3/4)	23⇒ 18.0 23⇒ 19.0
14 007 224	CTP switch (S29/3)	23⇒ 11.0
15 240	CAN databus: data exchange with ASR control module (N30/1) implausible	ASR control module (N30/1)

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Electronic accelerator in “limp-home” mode	CTP switch (S29/3)	23 ⇒ 11.0
Engine speed limiter operates at 1200 rpm	Fuel safety shut-off to engine control module (N3/4)	23 ⇒ 18.0

¹⁾ Observe Preparation for Test, see 22.

Electrical Test Program – Component Locations

Model 124

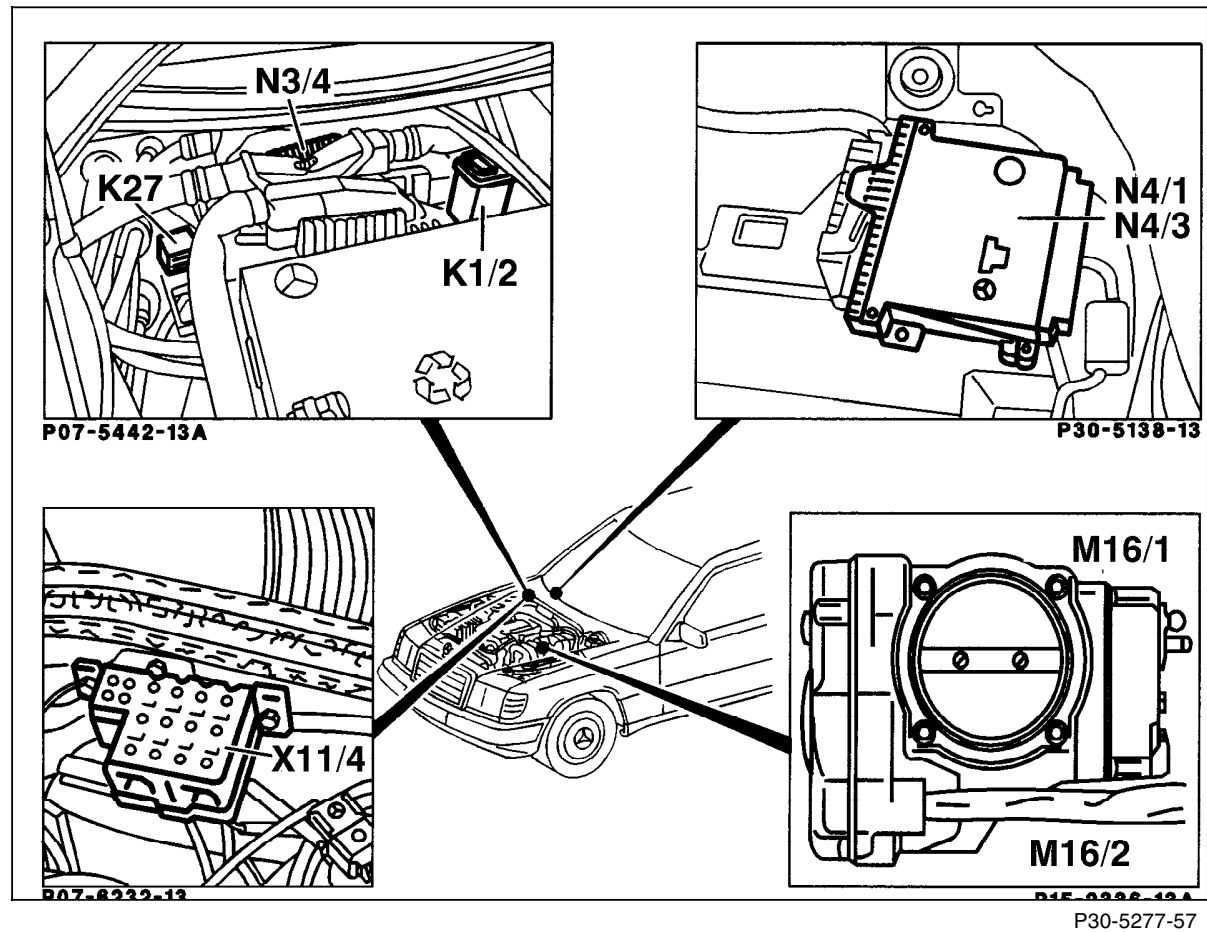
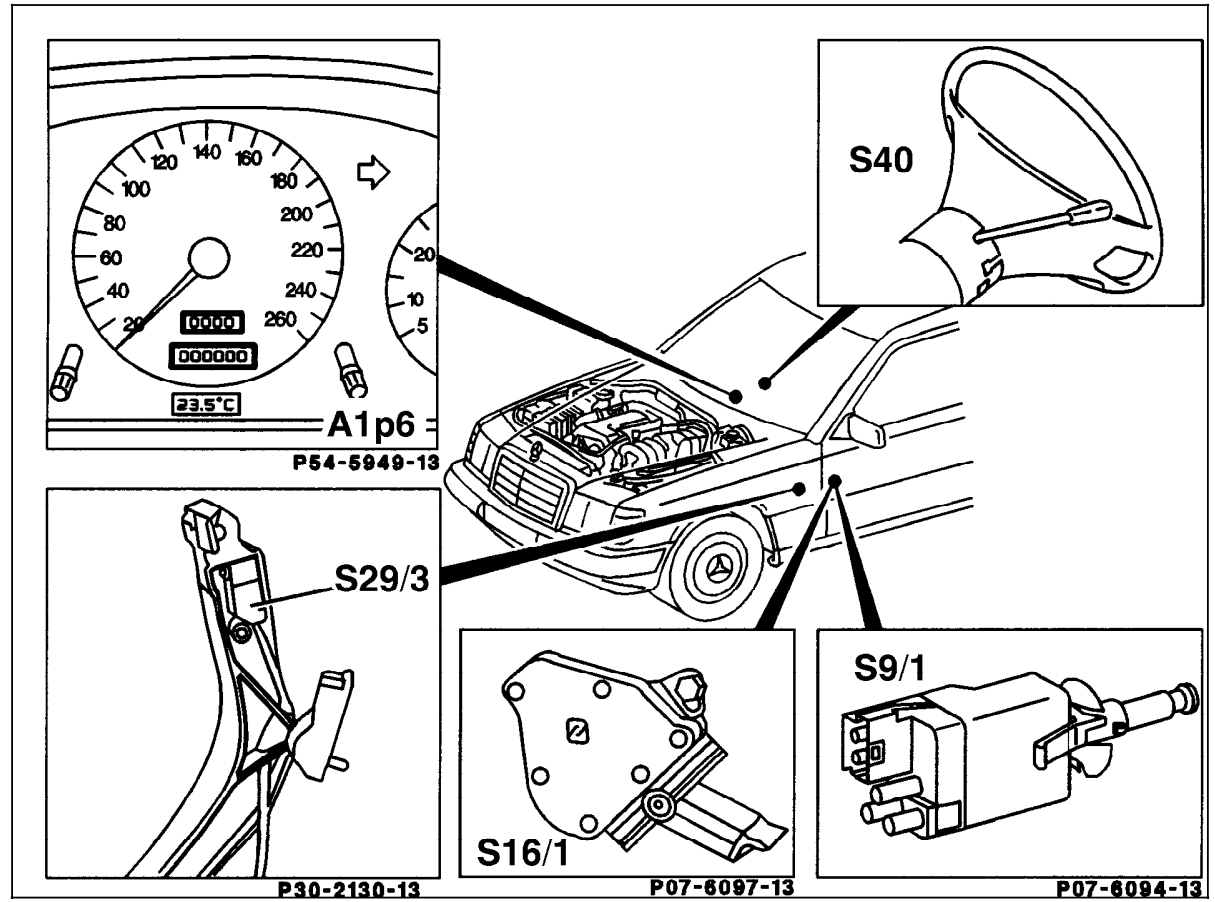


Figure 1

- K1/2 Overvoltage protection relay module (9-pole)
- M16/1 EA/CC/ISC actuator
- N3/4 Engine control module (HFM-SFI)
- N4/1 EA/CC/ISC control module
- X11/4 Data link connector (DTC readout)

Electrical Test Program – Component Locations

Model 124



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Figure 2

- A1p8 Electronic speedometer
- S9/1 Stop lamp switch (ASR) (4-pole)
- S16/1 Starter lock-out/backup lamp switch
- S29/3 CTP switch
- S40 CC switch
- V Decelerate/set
- B Accelerate/set
- SP Resume
- A Off

Electrical Test Program – Component Locations

Models 129, 140

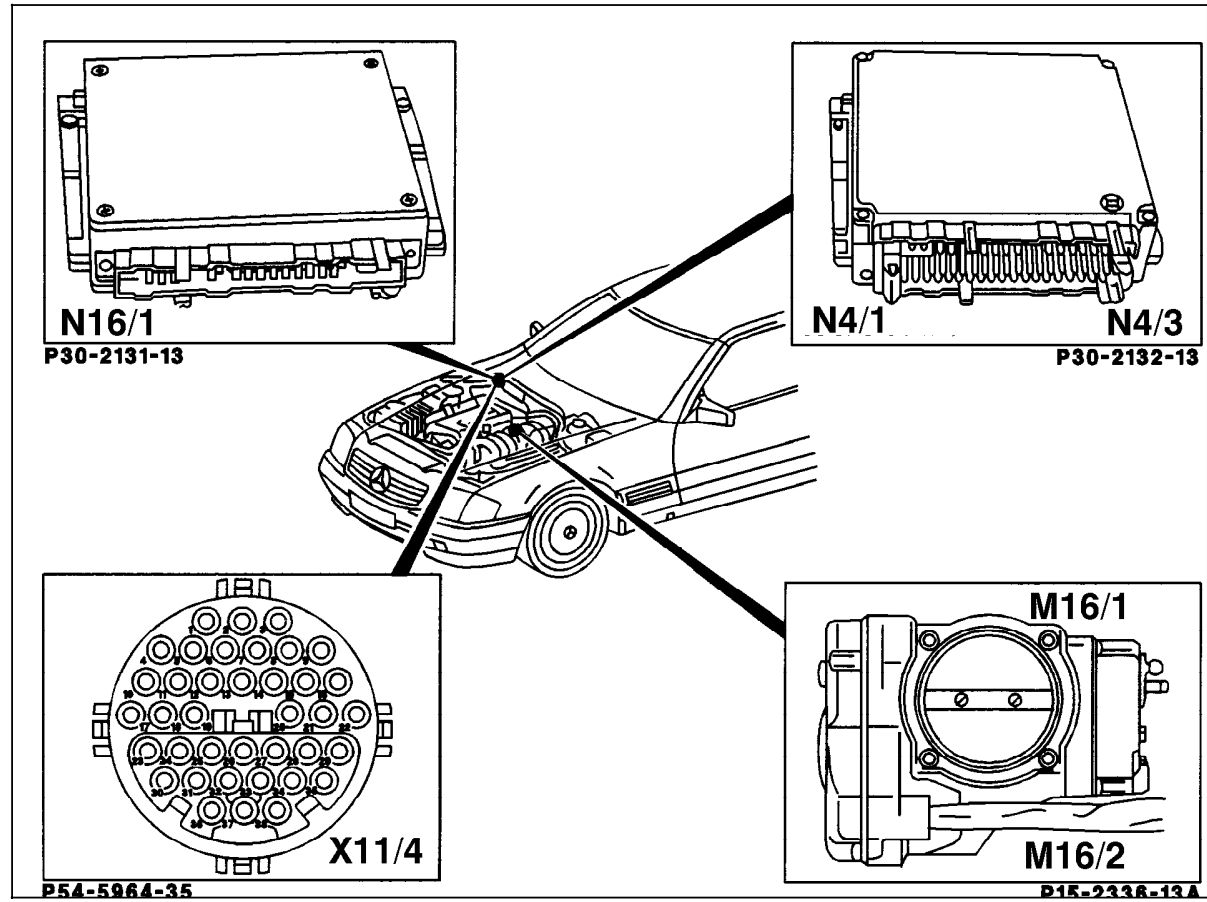


Figure 3

- M16/1 EA/CC/ISC actuator
- N4/1 EA/CC/ISC control module
- N16/1 Base module (BM)
- X11/4 Data link connector (DTC readout)

Electrical Test Program – Component Locations

Models 140, 202

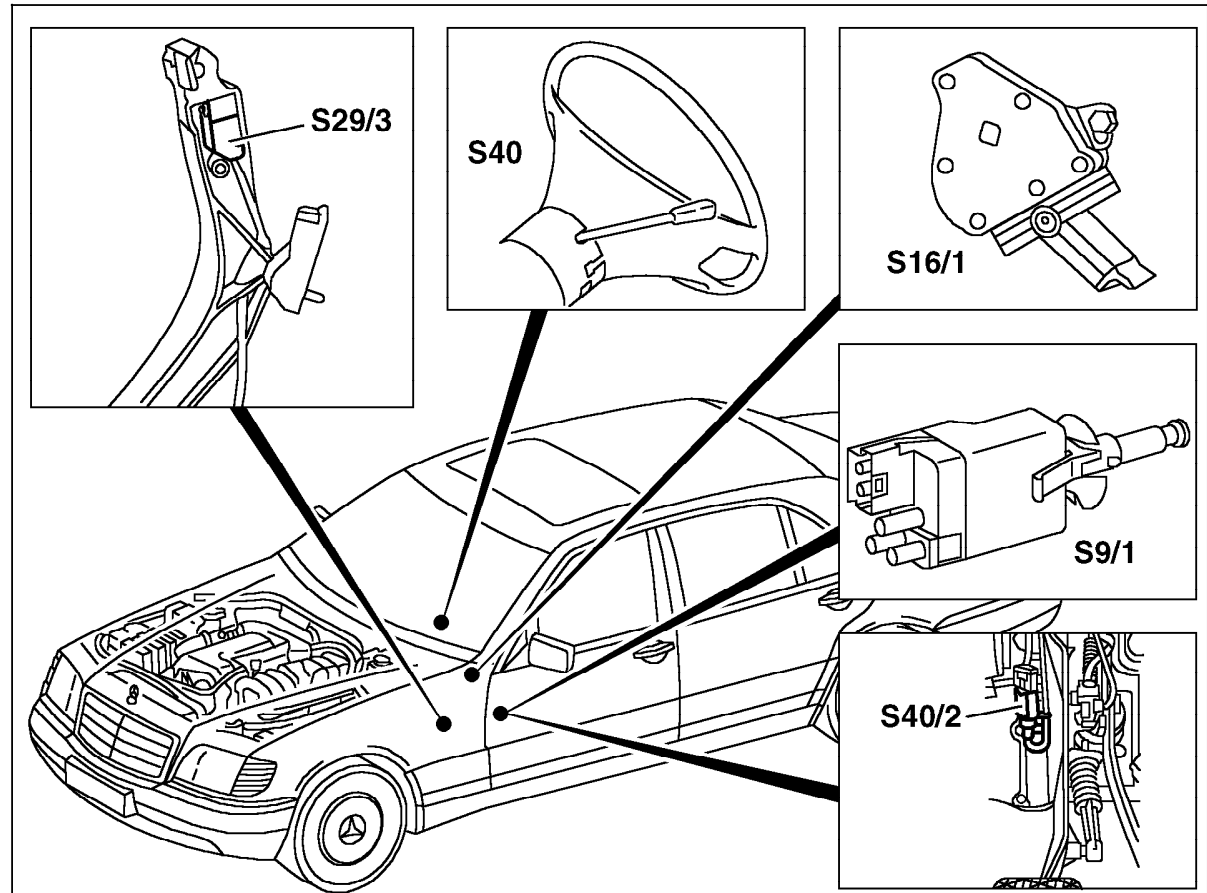


Figure 4

- S9/1 Stop lamp switch (4-pole)
- S16/1 Starter lock-out/backup lamp switch
- S29/3 CTP switch
- S40 CC switch
 - V Decelerate/set
 - B Accelerate/set
 - SP Resume
 - A Off

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Electrical Test Program – Component Locations

Model 202

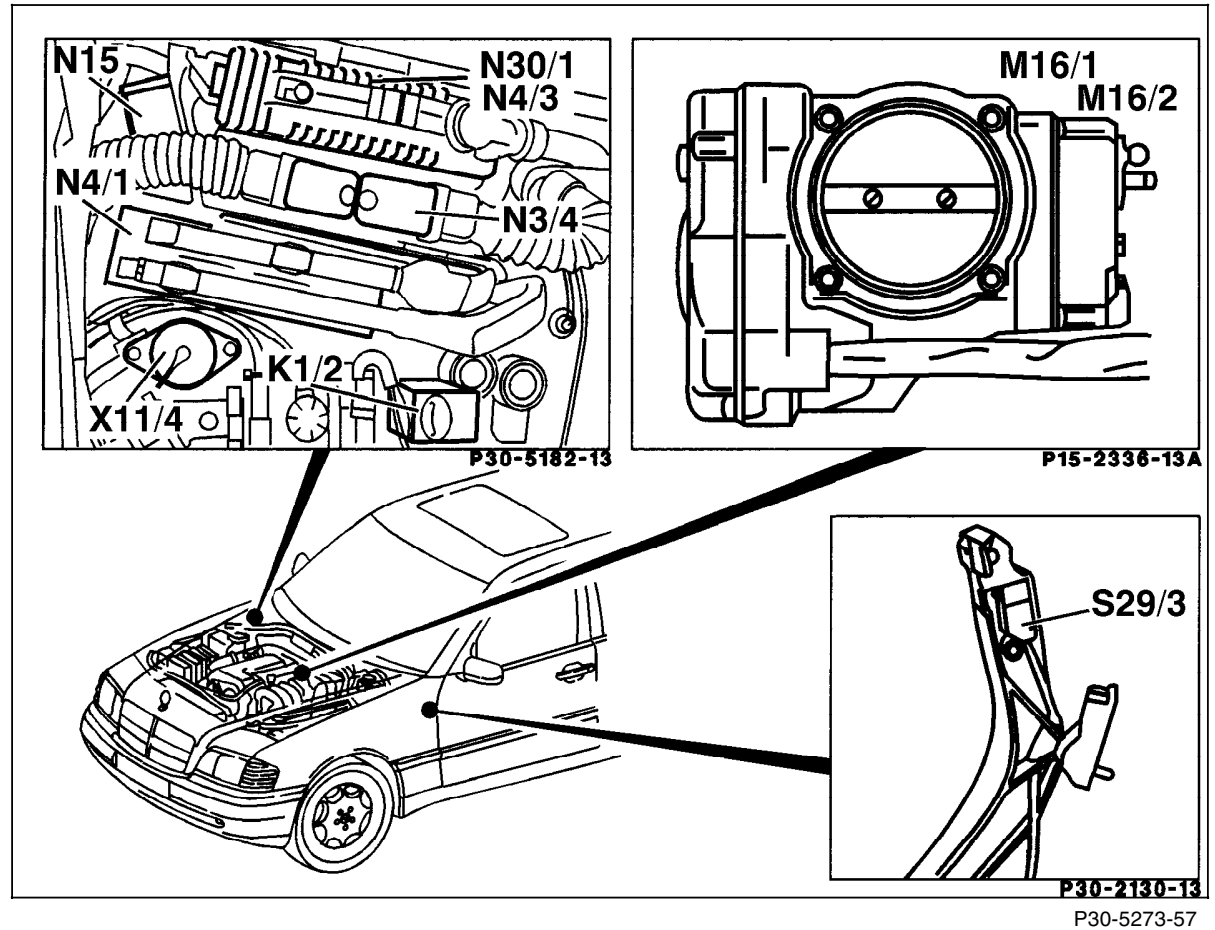


Figure 5

- K1/2 Overvoltage protection relay module (9-pole)
- M16/1 EA/CC/ISC actuator
- N3/4 Engine control module (HFM-SFI)
- N4/1 EA/CC/ISC control module
- N15 Kickdown cut-out relay module
- N30/1 ASR control module
- S29/3 CTP switch
- X11/4 Data link connector (DTC readout)

Electrical Test Program – Component Locations

Model 202

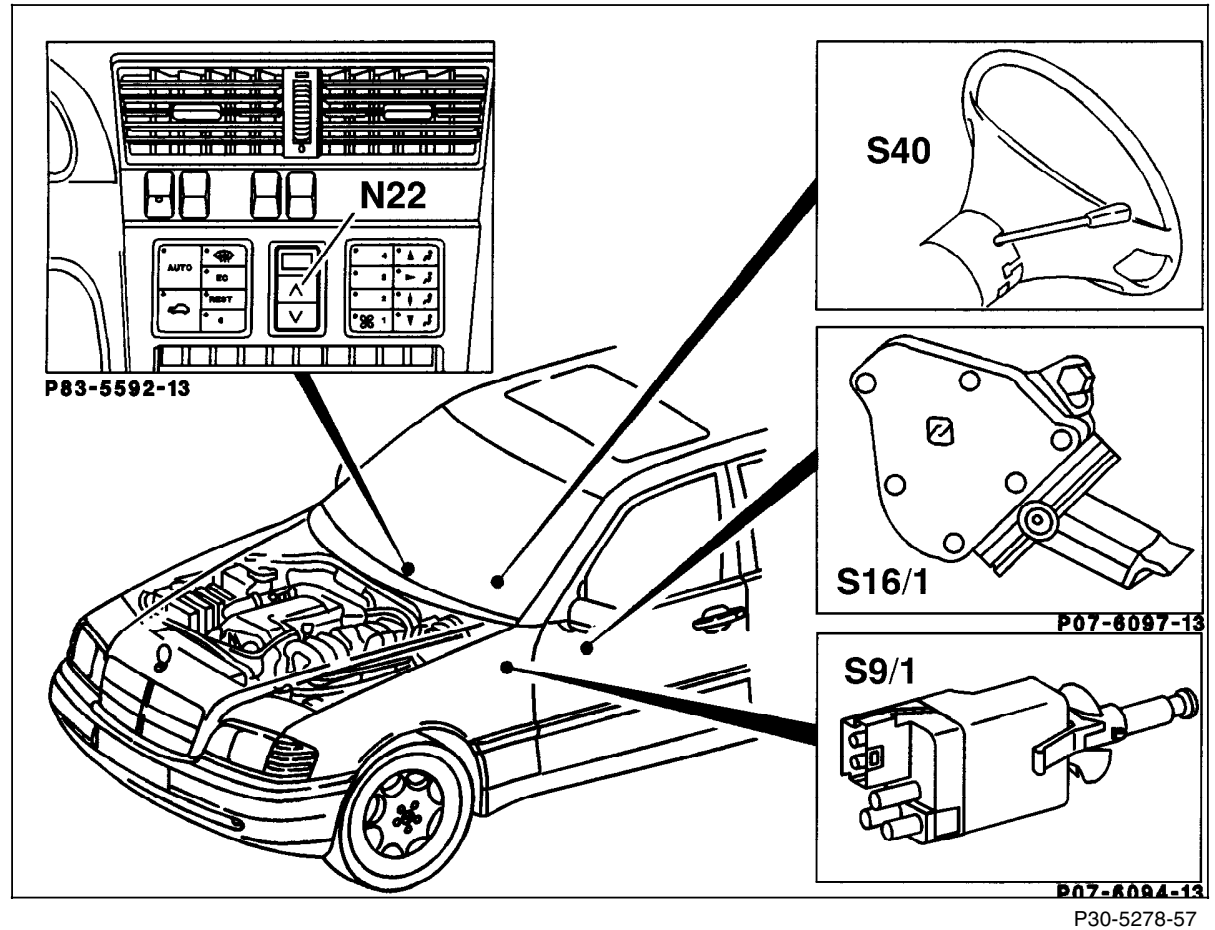
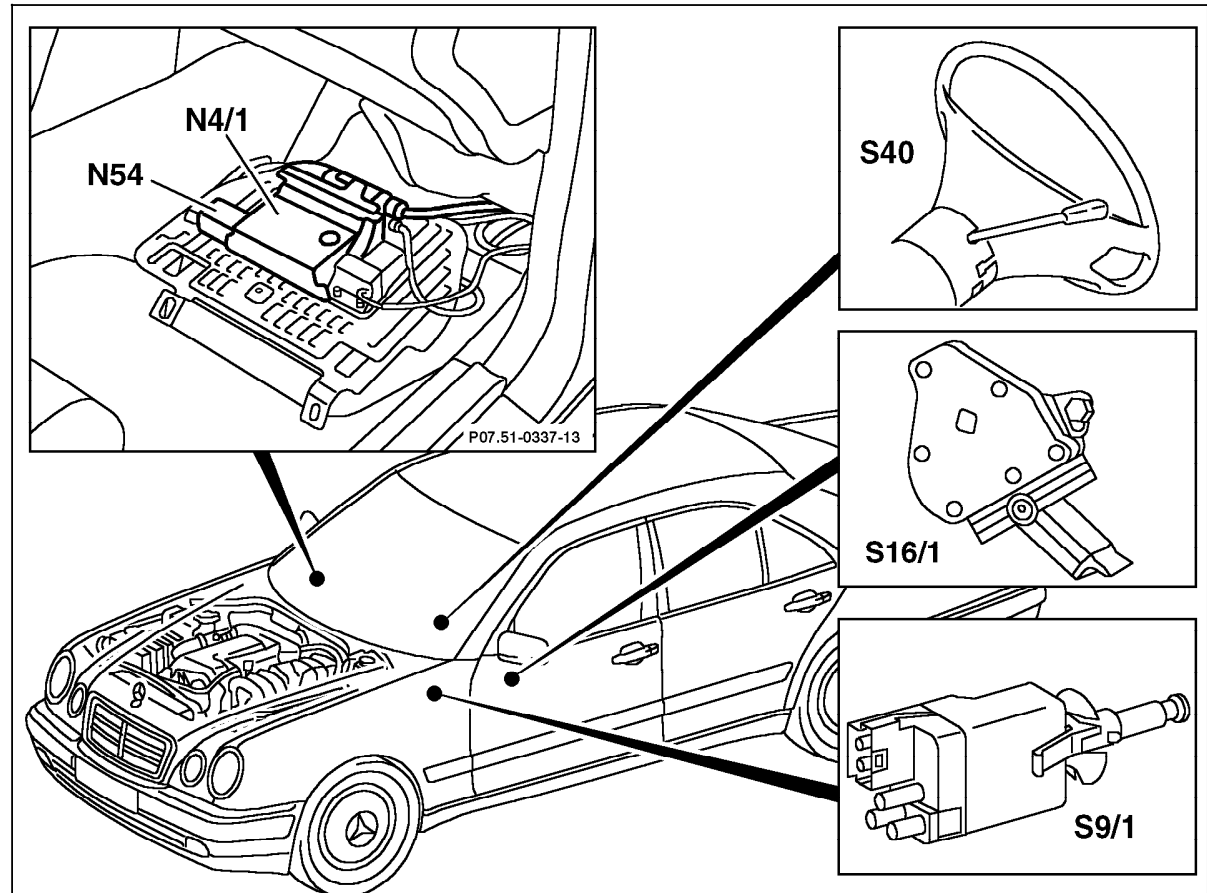


Figure 6

- N22 A/C pushbutton control module (Automatic A/C)
- S9/1 Stop lamp switch (4-pole)
- S16/1 Starter lock-out/backup lamp switch
- S40 CC switch
- V Decelerate/set
- B Accelerate/set
- SP Resume
- A Off

Electrical Test Program – Component Locations

Model 210



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Figure 7

- N4/1 EA/CC/ISC control module
- S9/1 Stop lamp switch (4-pole)
- S16/1 Starter lock-out/backup lamp switch
- S40 CC switch
- V Decelerate/set
- B Accelerate/set
- SP Resume
- A Off

Electrical Test Program - Preparation for Test

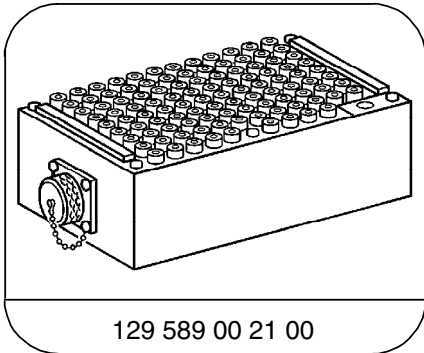
Preliminary work: Diagnosis – Diagnostic Trouble Code Memory 11

1. Ignition: **OFF**.
2. Connect socket box according to connection diagram (Figure 1 to 3).

Electrical wiring diagrams :

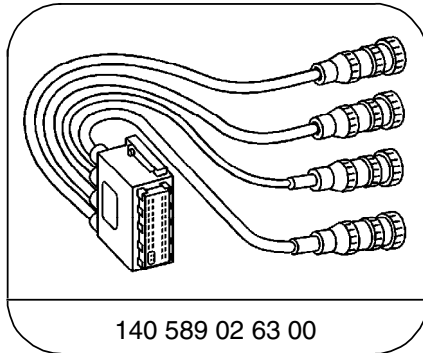
- Electrical Troubleshooting Manual, Model 124
- Electrical Troubleshooting Manual, Model 129
- Electrical Troubleshooting Manual, Model 140
- Electrical Troubleshooting Manual, Model 202
- Electrical Troubleshooting Manual, Model 210.

Special Tools



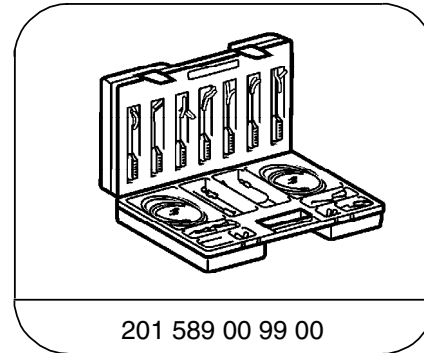
129 589 00 21 00

126-pin socket box



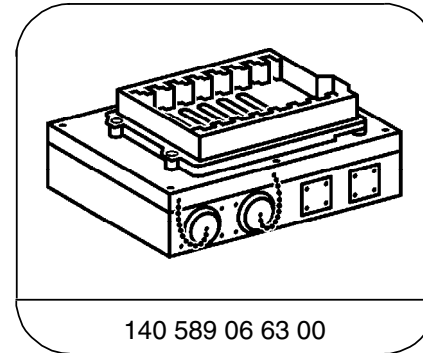
140 589 02 63 00

Contacting module 2



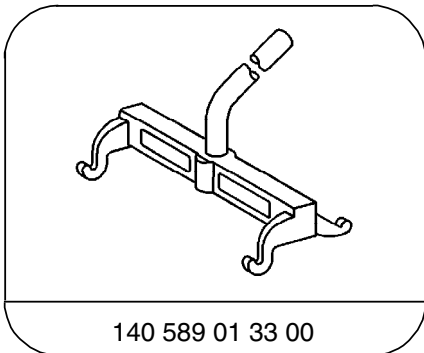
201 589 00 99 00

Electrical connecting set



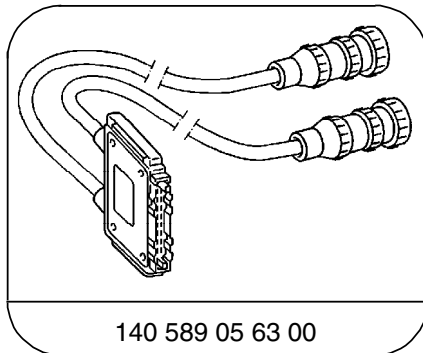
140 589 06 63 00

Contacting box



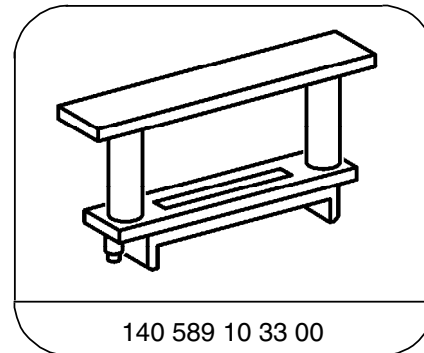
140 589 01 33 00

Mounting lever



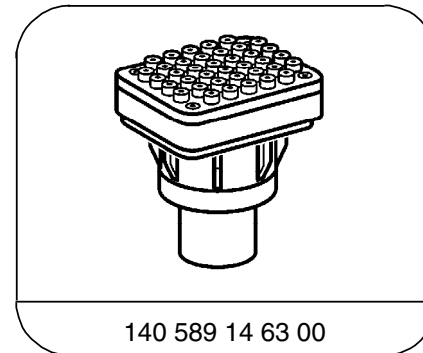
140 589 05 63 00

Contacting module 5



140 589 10 33 00

Spacer



140 589 14 63 00

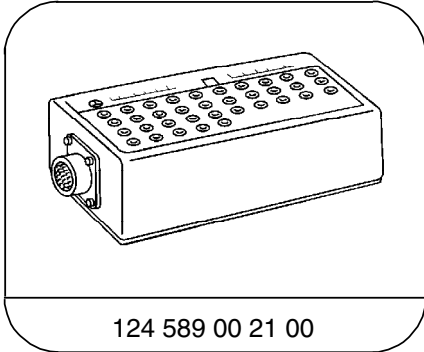
Adapter

6.4 Electronic Accelerator (EA)

Engine 104 HFM-SFI

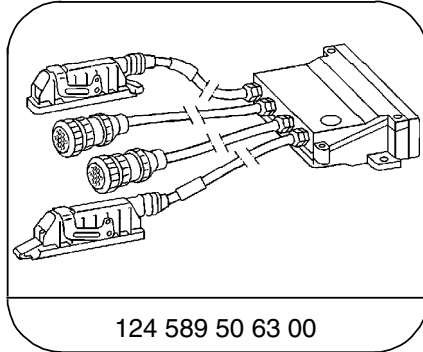
Electrical Test Program - Preparation for Test

Special Tools



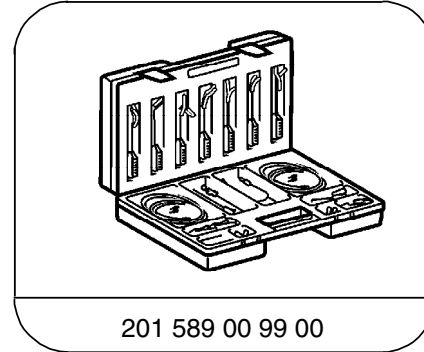
124 589 00 21 00

35-pin socket box



124 589 50 63 00

43-pin test cable



201 589 00 99 00

Electrical connecting set

Conventional tools, test equipment

Description	Brand, model, etc.
Multimeter ¹⁾	Fluke models 23, 83, 85, 87

¹⁾ Available through the MBUSA Standard Equipment Program.

Electrical Test Program - Preparation for Test

Connection Diagram – Socket Box
Models 124, 202, 210

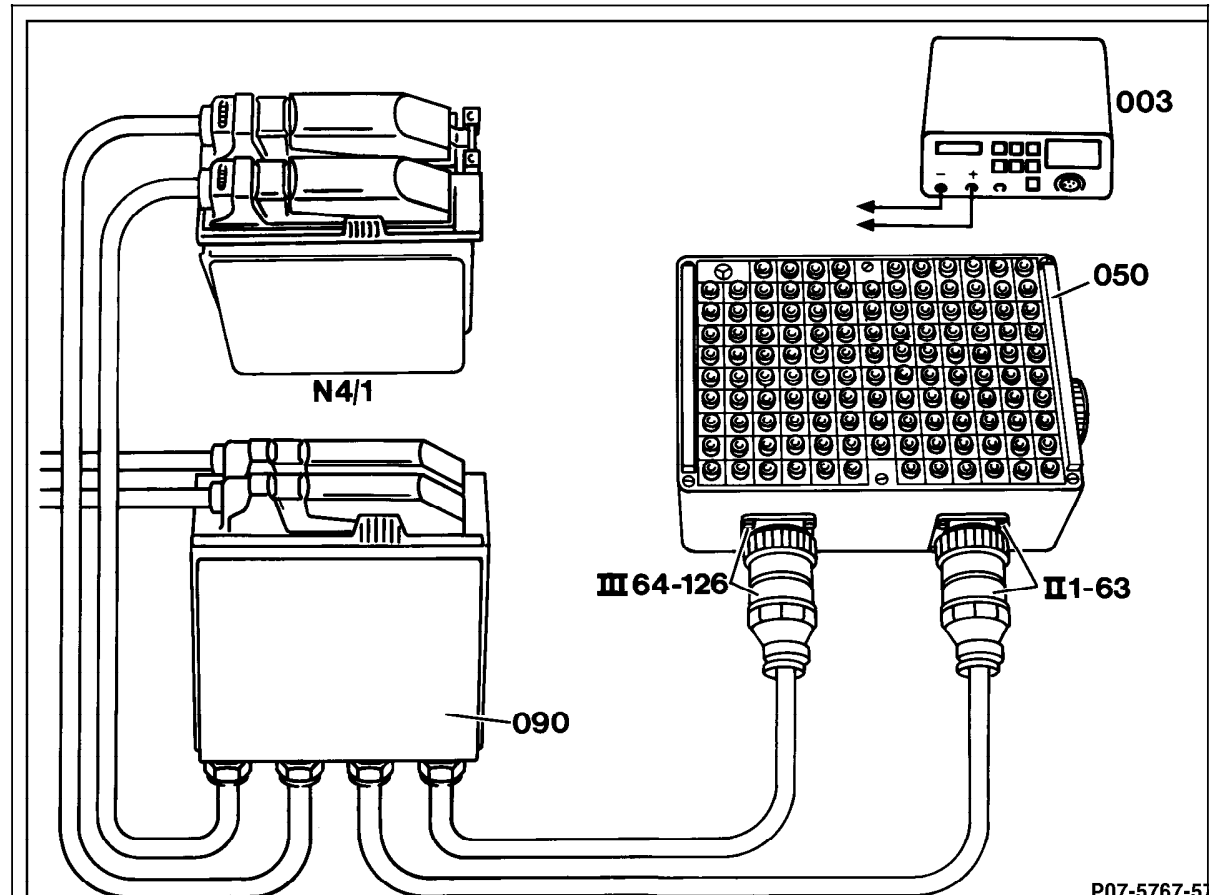


Figure 1

- N4/1 EA/CC/ISC control module
- 003 Digital multimeter
- 050 Socket box, 126-pole
- 090 Diagnostic test cable

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P07-5767-57

6.4 Electronic Accelerator (EA)

Engine 104 HFM-SFI

Electrical Test Program - Preparation for Test

Connection Diagram – Socket Box
Model 129

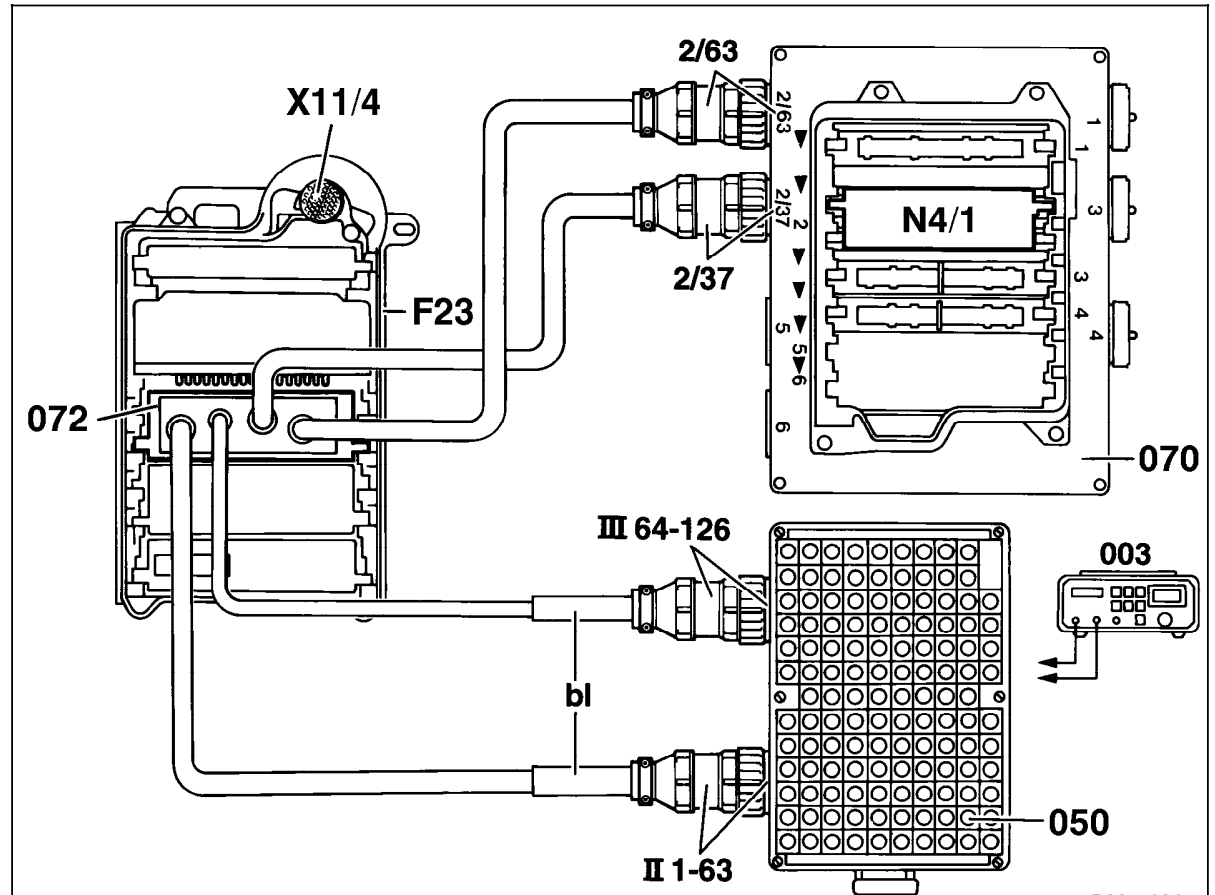


Figure 2

- F23 Module box
- N4/1 EA/CC/ISC control module
- X11/4 Data link connector (DTC readout)
- 003 Digital multimeter
- 050 Socket box, 126-pole
- 070 Contact box
- 072 Contact module 2
- bl blue

P30-5191-57

Electrical Test Program - Preparation for Test

Connection Diagram – Socket Box
Model 140

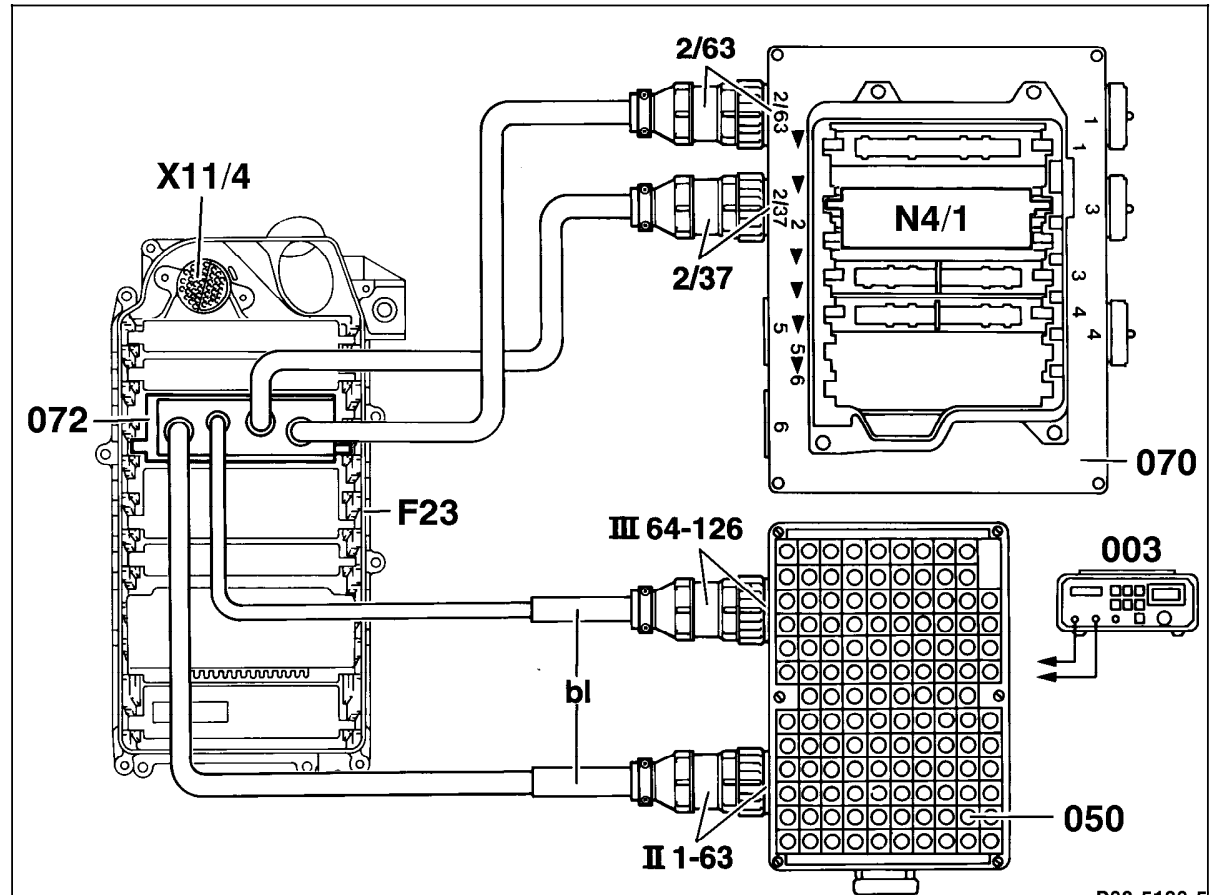


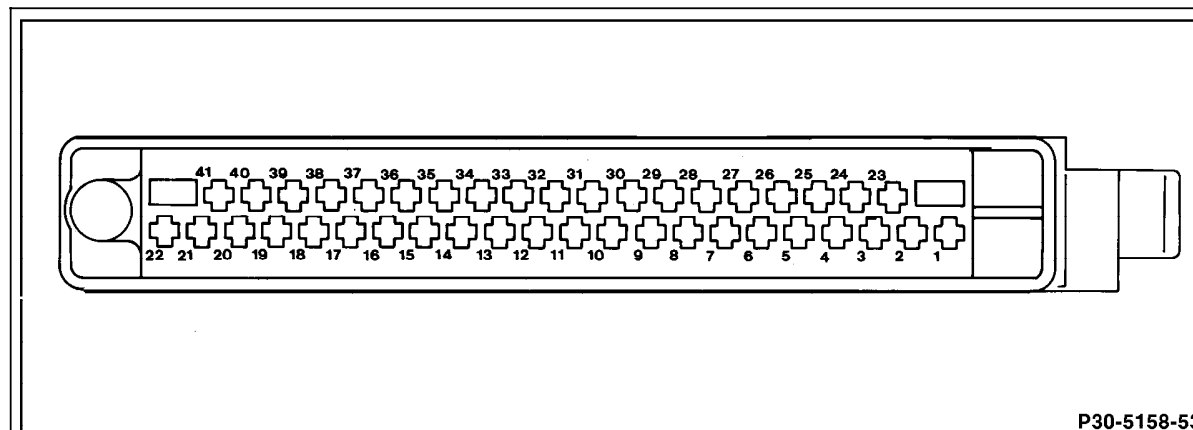
Figure 3

- F23 Module box
- N4/1 EA/CC/ISC control module
- X11/4 Data link connector (DTC readout)
- 003 Digital multimeter
- 050 Socket box, 126-pole
- 070 Contact box
- 072 Contact module 2
- bl blue

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Electrical Test Program - Preparation for Test

Layout of EA/CC/ISC Control Module Connector "1" Models 124, 202, 210



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P30-5158-53

Figure 4

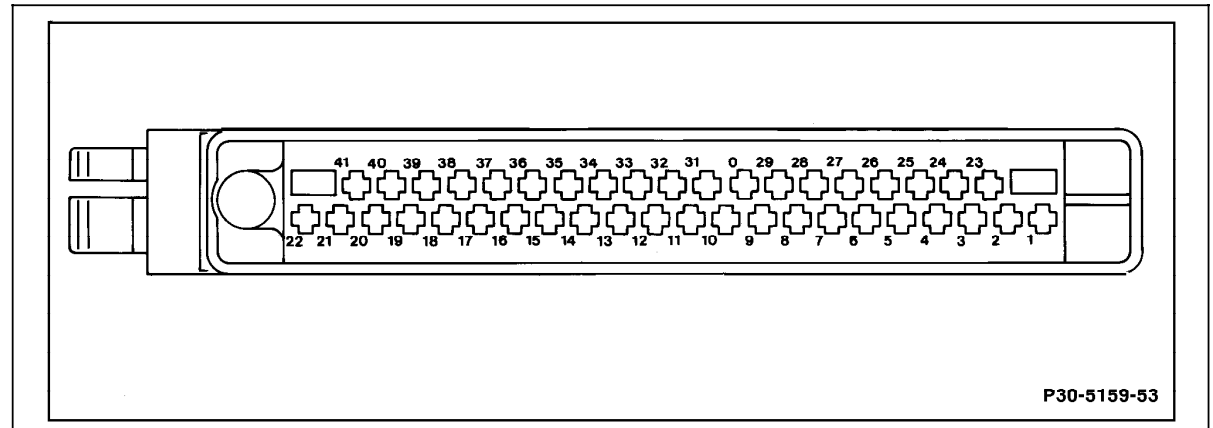
1	–	13	Stop lamp switch (brake application)	27–28	–
2	Control contact (CC switch)	14	Model 124 only: ASR control module (throttle position reference value, without CAN)	29	Starter lock-out/backup lamp switch (transmission range "R")
3	–	15	Left front axle VSS (via ASR control module)	30	Stop lamp switch (brake application)
4	Ignition/starter switch (circuit 50) ground (selector lever position P/N recognition)	16	Model 124: A/C compressor control module (compressor ON/OFF)	31	CC switch (resumption of set speed)
5	Data link connector signal Model 124: socket 14 Model 202, 210: socket 7	17–19	–	32	–
6	–	20	L data line (CAN)	33	CC switch (Off)
7	Fuel safety shut-off (to engine control module)	21	H data line (CAN)	34	Engine control module (engine speed)
8	–	22–23	–	35/36	Voltage supply for EA/CC/ISC control module, unfused (from K1/2)
9	CTP switch (ground)	24	Closed throttle recognition (to engine control module)	37/38	Ground: Model 124: W1 Model 202: W16/4 Model 210: W16/4
10	CC switch (decelerate/set)	25	CTP switch (positive)	39–41	–
11	CC switch (accelerate/set)	26	Model 124: Throttle valve nominal value (to ASR control module)		
12	Model 124: VSS, rear axle (from electronic speedometer) Model 202, 210: VSS via ASR control module		Model 202, 210: –		

6.4 Electronic Accelerator (EA)

Engine 104 HFM-SFI

Electrical Test Program - Preparation for Test

Layout of EA/CC/ISC Control Module
Connector "2"
Models 124, 202, 210



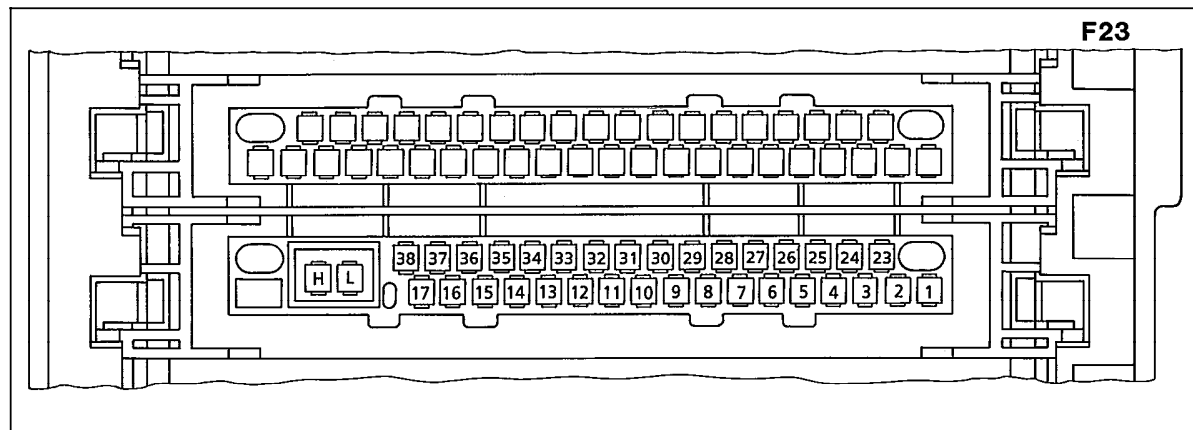
P30-5159-53

Figure 6

1-7	-	20	EA/CC/ISC actuator (actuator motor positive)
8	EA/CC/ISC actuator (reference potentiometer)	21/22	EA/CC/ISC actuator (actuator motor ground)
9	EA/CC/ISC actuator (actual value potentiometer)	23-34	-
10	EA/CC/ISC actuator (ground)	35	EA/CC/ISC actuator (safety contact switch ground)
11	-	36-37	-
12	EA/CC/ISC actuator (positive)	38	EA/CC/ISC actuator (CTP switch ground)
13-15	-	39	-
16	EA/CC/ISC actuator (CTP switch)	40	EA/CC/ISC actuator (magnetic clutch positive)
17-18	-	41	EA/CC/ISC actuator (actuator motor positive)
19	EA/CC/ISC actuator (magnetic clutch ground)		

Electrical Test Program - Preparation for Test

Layout of EA/CC/ISC Control Module
Connector "1"
Models 129, 140



P07-5171-53

Figure 7

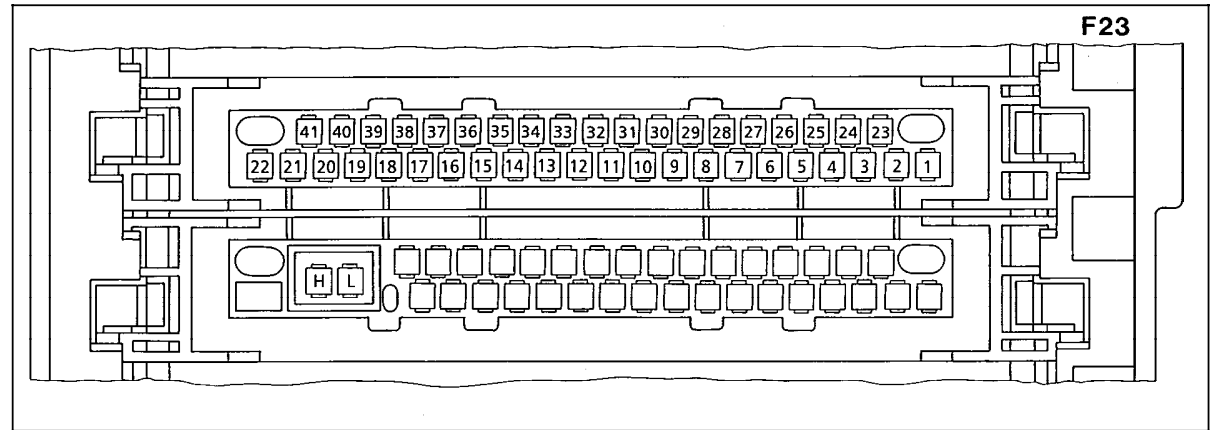
1	–	13	Stop lamp switch (brake application)	33	CC switch (Off)
2	CC switch	14	–	34	Engine rpm (from engine control module)
3	–	15	Left front axle VSS signal from ASR control module	35/36	EA control module voltage supply, unfused (from base module)
4	Ignition/starter switch (circuit 50) ground (selector lever position P/N recognition)	16	Base module (compressor ON/OFF)		
5	Data link connector (socket 7)	17–23	–	37/38	Ground:
6	–	24	Engine control module (closed throttle recognition)		Model 129: W27
7	Engine control module, fuel safety shut-off	25	CTP switch (positive)		Model 140: W15
8	–	26–28	–	L	Data line (CAN)
9	CTP switch (ground)	29	Starter lock-out/backup lamp switch (transmission range "R")	H	Data line (CAN)
10	CC switch (decelerate/set)	30	Brake application (from stop lamp switch)	F23	Modulbox
11	CC switch (accelerate/set)	31	Resumption of stored speed (from CC switch)		
12	Left rear axle VSS signal from ASR control module	32	–		

6.4 Electronic Accelerator (EA)

Engine 104 HFM-SFI

Electrical Test Program - Preparation for Test

Layout of EA/CC/ISC Control Module
Connector "2"
Models 129, 140










P07-5170-53











Figure 7

1-7	-	21/22	EA/CC/ISC actuator (actuator motor ground)
8	EA/CC/ISC actuator (reference potentiometer)	23-34	-
9	EA/CC/ISC actuator (actual value potentiometer)	35	EA/CC/ISC actuator (safety contact switch ground)
10	EA/CC/ISC actuator (ground)	36-37	-
11	-	38	EA/CC/ISC actuator (CTP switch ground)
12	EA/CC/ISC actuator (positive)	39	-
13-15	-	40	EA/CC/ISC actuator (magnetic clutch positive)
16	EA/CC/ISC actuator (CTP switch, positive)	41	EA/CC/ISC actuator (actuator motor positive)
17-18	-	L	Data line (CAN)
19	EA/CC/ISC actuator (magnetic clutch ground)	H	Data line (CAN)
20	EA/CC/ISC actuator (actuator motor positive)	F23	Modulbox




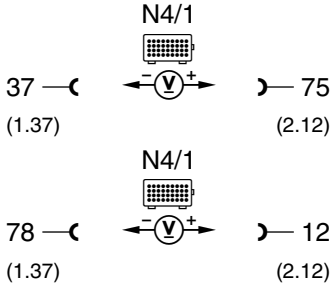

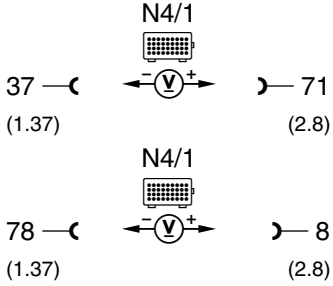
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		<p>EA/CC/ISC control module (N4/1) Voltage supply Circuit 87 unfused Model 124, 202, 210</p> <p>Model 129, 140</p>	<p>N4/1 </p> <p>37 —  — 35 (1.37) (1.35)</p> <p>38  36 (1.38) (1.36)</p> <p>N4/1 </p> <p>78  76 (1.37) (1.35)</p> <p>79  77 (1.38) (1.36)</p>	Ignition: ON	11 – 14 V	<p>⇒ 1.1,</p> <p>Model 124, 202 Fuse on overvoltage protection relay module (K1/2)</p> <p>Model 129, 140 Base module (N16/1) see Diagnostic Manual, Chassis and Drivetrain, Vol. 1 – 1.1</p> <p>Model 210 Relay module (K40) see Diagnostic Manual, Chassis and Drivetrain, Vol. 1 – 1.1</p>






Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.1		<p>Ground Model 124 Main ground (W1) (behind instrument cluster)</p> <p>Model 129 Ground on module box bracket (W27)</p> <p>Model 140 Ground in right footwell (W15)</p> <p>Model 202 Ground in right component compartment (W16/4)</p> <p>Model 210 Output ground on right wheel well (W16/4)</p>	<p>N4/1  X11/4</p> <p>37 —  16 (1.37)</p> <p>38 —  16 (1.38)</p> <p>N4/1  X11/4</p> <p>78 —  3 (1.37)</p> <p>79 —  3 (1.38)</p> <p>N4/1  X11/4</p> <p>37 —  3 (1.37)</p> <p>38 —  3 (1.38)</p>	<p>Ignition: ON</p> <p>Ignition: OFF</p> <p>Ignition: OFF</p>	<p>11 – 14 V</p>	<p>Wiring, Model 124: W1 Model 129: W27 Model 140: W15 Model 202: W16/4 Model 210: W16/4</p>



















Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
2.0	 	EA/CC/ISC actuator (M16/1) Voltage supply Reference potentiometer (M16/1r1) and Actual value potentiometer (M16/1r2) Model 124, 202, 210 Model 129, 140		Ignition: ON	4.7 – 5.3 V Reference value for tables I or II	Wiring, EA/CC/ISC actuator (M16/1).
3.0		EA/CC/ISC actuator (M16/1) Reference potentiometer (M16/1r1) signal Model 124, 202, 210 Model 129, 140		Ignition: ON Accelerator pedal position: Closed throttle position Wide open throttle or Kickdown	Table I Column “a” Column “b”	Wiring, EA/CC/ISC actuator (M16/1).




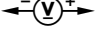

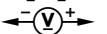

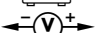

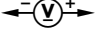
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	049	<p>EA/CC/ISC actuator (M16/1) Actual value potentiometer (M16/1r2) signal Model 124, 202, 210</p> <p>Model 129, 140</p>	<p>N4/1  37 — ⌋ — ⌋ — 72 (1.37) ⌋ — V — ⌋ — ⌋ — (2.9)</p> <p>N4/1  78 — ⌋ — ⌋ — 9 (1.37) ⌋ — V — ⌋ — ⌋ — (2.9)</p>	<p>Ignition: ON Accelerator pedal position: Closed throttle position</p> <p>Wide open throttle or Kickdown</p>	<p>Table II Column “e” Column “f”</p>	<p>Wiring, EA/CC/ISC actuator (M16/1).</p>
5.0	050 051	<p>EA/CC/ISC actuator (M16/1) Voltage supply Safety contact switch (M16/1s1) and CTP switch (M16/1/s2) Model 124, 202, 210</p> <p>Model 129, 140</p>	<p>N4/1  37 — ⌋ — ⌋ — 79 (1.37) ⌋ — V — ⌋ — ⌋ — (2.16)</p> <p>N4/1  78 — ⌋ — ⌋ — 16 (1.37) ⌋ — V — ⌋ — ⌋ — (2.16)</p>	<p>Ignition: ON Accelerator pedal position: Closed throttle position</p>	<p>6 – 10 V (value jumps)</p>	<p>Wiring, EA/CC/ISC actuator (M16/1).</p>




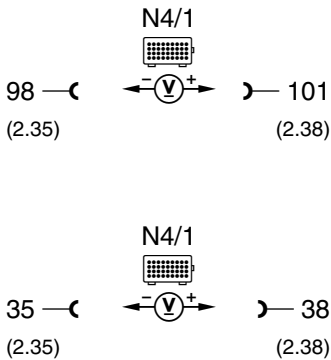
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0		<p>EA/CC/ISC actuator (M16/1) CTP switch (M16/1s2) switching point Model 124, 202, 210</p> <p>Model 129, 140</p>	<p style="text-align: center;">N4/1 </p> <p>73 —    75 (2,10) (2.12)</p> <p style="text-align: center;">N4/1 </p> <p>37 —    101 (1.37) (2.38)</p> <p style="text-align: center;">N4/1 </p> <p>10 —    12 (2,10) (2.12)</p> <p style="text-align: center;">N4/1 </p> <p>78 —    38 (1.37) (2.38)</p>	<p>Ignition: ON Accelerator pedal position: Closed throttle position</p> <p>Connect second multimeter</p> <p>Accelerator pedal position: Closed throttle position</p> <p>Slowly depress accelerator pedal until switching point occurs</p>	<p>4.7 – 5.3 V Reference value for Table III.</p> <p>Table III Column “h” (value jumps)</p> <p>Table III Column “i”</p>	<p>Wiring, EA/CC/ISC actuator (M16/1).</p>









Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0		<p>EA/CC/ISC actuator (M16/1) Safety contact switch (M16/1s1) switching point Model 124, 202, 210</p> <p>Model 129, 140</p>	<p>N4/1  73 —  — 75 (2,10) (2,12)</p> <p>N4/1  37 —  — 98 (1,37) (2,35)</p> <p>N4/1  10 —  — 12 (2,10) (2,12)</p> <p>N4/1  78 —  — 35 (1,37) (2,35)</p>	<p>Ignition: ON Accelerator pedal position: Closed throttle position</p> <p>Connect second multimeter</p> <p>Accelerator pedal position: Closed throttle position</p> <p>Slowly depress accelerator pedal until switching point occurs</p>	<p>4.7 – 5.3 V Reference value for Table III.</p> <p>Table III Column “k”</p> <p>Table III Column “i” (value jumps)</p>	<p>Wiring, EA/CC/ISC actuator (M16/1).</p>



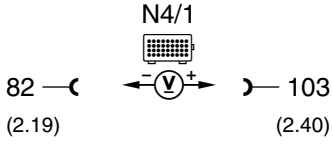
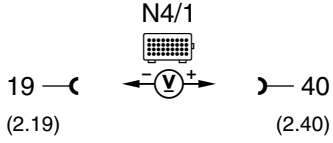
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0	 	<p>EA/CC/ISC actuator (M16/1) CTP switch (M16/1s2) and safety contact switch (M16/1s1) Model 124, 202, 210</p> <p>Model 129, 140</p>		<p>Ignition: ON Accelerator pedal position: Closed throttle position</p> <p>Slowly depress accelerator by hand, until both contact switches are closed (overlap point is immediately after closed throttle position)</p> <p>Accelerator pedal position: Partial load or wide open throttle</p>	<p>Positive voltage value (value jumps)</p> <p><1 V</p> <p>Negative voltage value (value jumps)</p>	<p>Wiring, EA/CC/ISC actuator (M16/1).</p>






Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		<p>EA/CC/ISC actuator (M16/1) Actuator motor (M16/1m1) resistance Model 124, 202, 210</p> <p>Model 129, 140</p>	<p>N4/1 </p> <p>84 —  — 83 (2.21) (2.20)</p> <p>85 —  — 104 (2.22) (2.41)</p> <p>N4/1 </p> <p>21 —  — 20 (2.21) (2.20)</p> <p>22 —  — 41 (2.22) (2.41)</p>	<p>Ignition: OFF</p> <p>Models 124, 202, 210 Disconnect connector 2 from EA/CC/ISC control module (N4/1) Accelerator pedal position: Closed throttle position</p> <p>Models 129, 140 Disconnect EA/CC/ISC control module (N4/1) Accelerator pedal position: Closed throttle position</p>	<p><10 Ω</p> <p><10 Ω</p>	<p>Wirng, EA/CC/ISC actuator (M16/1).</p>


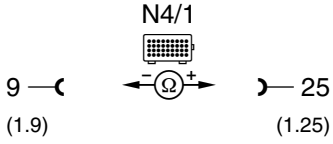
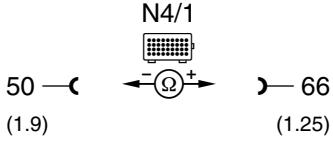
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
10.0		EA/CC/ISC actuator (M16/1) Magnetic clutch (M16/1k1) Model 124, 202, 210 Model 129, 140	 	Ignition: ON	7.5 – 10 V	Wiring, EA/CC/ISC actuator (M16/1), EA/CC/ISC control module (N4/1).


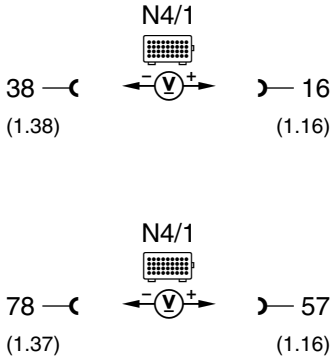

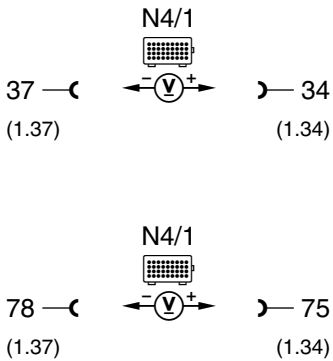
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
11.0	224	<p>CTP switch (S29/3) Voltage supply Model 124, 202, 210</p> <p>Signal</p> <p>Model 129, 140</p>	<p style="text-align: center;">N4/1 </p> <p>37 — 25 (1.37) (1.25)</p> <p style="text-align: center;">N4/1 </p> <p>37 — 9 (1.37) (1.9)</p> <p style="text-align: center;">N4/1 </p> <p>78 — 66 (1.37) (1.25)</p> <p style="text-align: center;">N4/1 </p> <p>78 — 50 (1.37) (1.9)</p>	<p>Ignition: ON</p> <p>Accelerator pedal position: Closed throttle position</p> <p>Slowly depress accelerator pedal until switching point occurs.</p>	<p>4.0 – 5.5 V</p> <p>< 1 V</p> <p>1.0 – 2.25 V</p>	<p>Wiring, CTP switch (S29/3), ⇒ 11.1.</p>


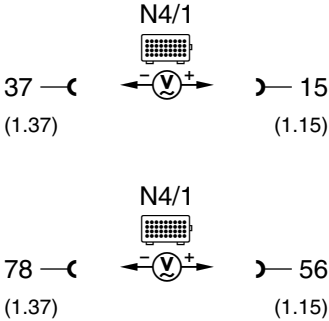
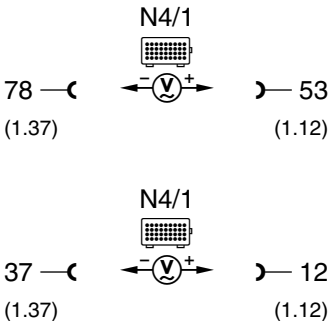
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
11.1		CTP switch resistance Model 124, 202, 210 Model 129, 140	 	Ignition: OFF Models 124, 202, 210 Disconnect connector 1 from EA/CC/ISC control module (N4/1) Models 129, 140 Disconnect EA/CC/ISC control module (N4/1) Accelerator pedal position: Closed throttle Depress accelerator	 > 20 kΩ 900 – 1100 Ω	Wiring, CTP switch (S29/3).



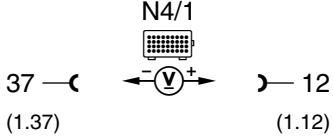


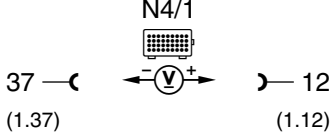

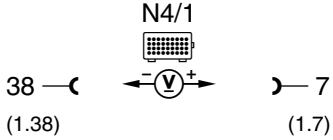
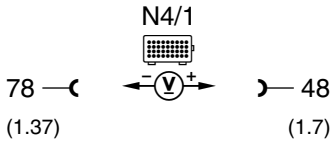
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.0		EA/CC/ISC control module (N4/1) A/C compressor signal Model 124, 202, 210 Model 129, 140		Engine: Start Closed throttle position Set temperature selector to MIN, blower speed to highest setting	<1 V 11 – 14 V	Wiring, Models 124 A/C compressor control module (N6), Model 202, 210 Pushbutton control module (N22) Models 129, 140 Base module (N16/1), DM Chassis & Drivetrain, Vol. 1 section 1.1
14.0		EA/CC/ISC control module (N4/1) Engine RPM (TN) signal from engine control module (N3/4) Model 124, 202, 210 Model 129, 140		Engine: Start Closed throttle position	5 – 12 V	Wiring, Models 124, 202, 210 Engine control module (N3/4), Models 129, 140 Base module (N16/1).


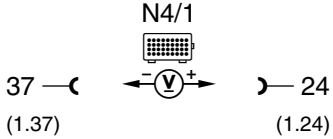
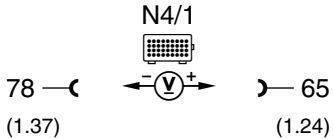
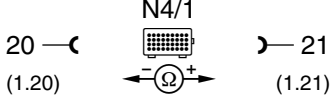

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
15.0	128 129 130	Left front axle VSS sensor (L6/1) Speed signal Model 124, 202, 210 Model 129, 140	 <p>Diagram 1 (Model 124, 202, 210): N4/1 connector, pin 37 (1.37) to pin 15 (1.15).</p> <p>Diagram 2 (Model 129, 140): N4/1 connector, pin 78 (1.37) to pin 56 (1.15).</p>	Lift front of vehicle. Ignition: ON Turn left front wheel by hand.	> 3 V	Wiring, Left front axle VSS sensor (L6/1), DM, Chassis & Drivetrain, Vol. 1, section 5. Note: Upon completion of test, erase DTC's stored in ASR control module (N30/1).
16.0	144	Left rear axle VSS sensor (L6/3) Speed signal Model 129, 140 Model 202	 <p>Diagram 1 (Model 129, 140): N4/1 connector, pin 78 (1.37) to pin 53 (1.12).</p> <p>Diagram 2 (Model 202): N4/1 connector, pin 37 (1.37) to pin 12 (1.12).</p>	Lift rear of vehicle. Ignition: ON Turn left rear wheel by hand.	> 3 V	Wiring, Left rear axle VSS sensor (L6/3), DM, Chassis & Drivetrain, Vol. 1, section 5. Note: Upon completion of test, erase DTC's stored in ASR control module (N30/1).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
[16.0]		Model 210		 Caution! On model 210 set multimeter to DC voltage.	> 3 V	
17.0		Model 124 only Hall-effect speed sensor (B6) Speed signal		Ignition: ON Roll vehicle 3 ft. (1 meter) or drive vehicle on dynamometer above 13 mph (20 km/h).	Value jumps 0 – 12 V without consumers turned on. 0 – 9 V with consumers turned on.	Wiring, B6
18.0		EA/CC/ISC control module (N4/1) Fuel safety shut-off signal to Engine control module (N3/4) Model 124, 202, 210 Model 129, 140	 	Ignition: ON	2.0 – 11 V (value jumps).	Wiring, Throttle valve actuator (M16/6), N4/1

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
19.0		<p>EA/CC/ISC control module (N4/1) Closed throttle position recognition signal to engine control module (N3/4) Model 124, 202, 210</p> <p>Model 129, 140</p>	<p>N4/1 </p> <p>N4/1 </p>	<p>Ignition: ON Accelerator pedal position: Closed throttle position</p> <p>Depress accelerator pedal</p>	<p>4.8 V</p> <p>5.5 V</p>	<p>Wiring, N4/1</p>
20.0	7	<p>CAN data bus Model 124, 202, 210</p> <p>Model 129, 140</p>	<p>N4/1 </p> <p>N4/1x1 </p>	<p>Ignition: OFF</p> <p>Ignition: OFF Disconnect EA/CC/ISC control module (N4/1). Measure resistance on connector.</p>	<p>40–65 Ω</p> <p>115–125 Ω</p>	<p>Wiring, Models 124, 202, 210 Engine control module (N3/4), N4/1,</p> <p>Models 129, 140 Engine control module (N3/4), DM, Engines Vol. 2, section 1.1.</p>

Electrical Test Program - Electronic Accelerator Test

Table I Voltage values - Reference potentiometer (M16/1r1)

Reference voltage supply value	“a” Accelerator pedal position: Closed throttle	“b” Accelerator pedal position: Wide open throttle or Kickdown
4.7 V	0.23 V	4.46 V
4.8 V	0.24 V	4.56 V
4.9 V	0.24 V	4.65 V
5.0 V	0.25 V	4.75 V
5.1 V	0.25 V	4.84 V
5.2 V	0.26 V	4.94 V
5.3 V	0.26 V	5.03 V

Electrical Test Program - Electronic Accelerator Test

Table II Voltage values - Actual value potentiometer (M16/1r2)

Reference voltage supply value	“e” Accelerator pedal position: Closed throttle	“f” Accelerator pedal position: Wide open throttle or Kickdown
4.7 V	4.55 V	0.23 V
4.8 V	4.65 V	0.24 V
4.9 V	4.75 V	0.24 V
5.0 V	4.85 V	0.25 V
5.1 V	4.94 V	0.25 V
5.2 V	5.04 V	0.26 V
5.3 V	5.14 V	0.26 V

Electrical Test Program - Electronic Accelerator Test

Table III Voltage values - Closed throttle position switch (M16/1s2) and safety contact switch (M16/1s1)

Reference voltage supply value	“h” Closed throttle position switch (closed) Accelerator pedal position: Closed throttle	“i” Closed throttle position switch (just opened) Accelerator pedal position: Accelerator pedal depressed to switch point	“k” Safety contact switch (open) Accelerator pedal position: Closed throttle	“l” Safety contact switch (just closed) Accelerator pedal position: Accelerator pedal depressed to switch point
4.7 V	4.12 V	3.49 V	3.49 V	4.12 V
4.8 V	4.21 V	3.57 V	3.57 V	4.21 V
4.9 V	4.30 V	3.64 V	3.64 V	4.30 V
5.0 V	4.39 V	3.72 V	3.72 V	4.39 V
5.1 V	4.48 V	3.79 V	3.79 V	4.48 V
5.2 V	4.56 V	3.86 V	3.86 V	4.56 V
5.3 V	4.65 V	3.94 V	3.94 V	4.65 V

Electrical Test Program – Test (CC)

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		CC switch (S40) Model 124, 202, 210				Wiring, Cruise control switch (S40).
		V Decelerate/set	<p>38 — 38 (1.38) ← V → 10 (1.10)</p>	Ignition: ON CC switch not activated Position DECEL	< 1 V 11 – 14 V	
		SP Resume	<p>38 — 38 (1.38) ← V → 31 (1.31)</p>	Position RESUME	11 – 14 V	
		B Accelerate/set	<p>38 — 38 (1.38) ← V → 11 (1.11)</p>	Position ACCEL	11 – 14 V	
		A Off	<p>38 — 38 (1.38) ← V → 33 (1.33)</p>	Switch not activated Position OFF	11 – 14 V < 1 V	
		Control switch contact	<p>38 — 38 (1.38) ← V → 2 (1.2)</p>	Switch not activated Control switch contact in position: DECEL., ACCEL., RESUME OFF	< 1 V 11 – 14 V	


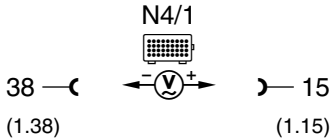
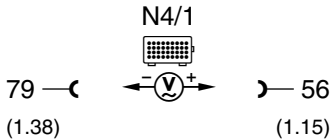
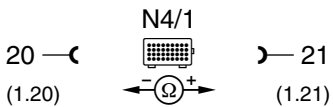
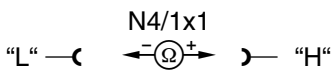
Electrical Test Program – Test (CC)

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
[1.0]	054	<p>Models 129, 140</p> <p>V Decelerate/set</p> <p>SP Resume</p> <p>B Accelerate/set</p> <p>A Off</p> <p>Control switch contact</p>	<p style="text-align: center;">N4/1 </p> <p>79 —()— ◀ —(V)▶ —()— 51 (1.38) (1.10)</p> <p>79 —()— ◀ —(V)▶ —()— 72 (1.38) (1.31)</p> <p>79 —()— ◀ —(V)▶ —()— 52 (1.38) (1.11)</p> <p>79 —()— ◀ —(V)▶ —()— 74 (1.38) (1.33)</p> <p>79 —()— ◀ —(V)▶ —()— 43 (1.38) (1.2)</p>	<p>Ignition: ON CC switch not activated</p> <p>Position DECEL</p> <p>Position RESUME</p> <p>Position ACCEL</p> <p>Switch not activated</p> <p>Position OFF</p> <p>Switch not activated</p> <p>Control switch contact in position: DECEL., ACCEL., RESUME, OFF</p>	<p>< 1 V</p> <p>11 – 14 V</p> <p>11 – 14 V</p> <p>11 – 14 V</p> <p>11 – 14 V</p> <p>< 1 V</p> <p>< 1 V</p> <p>11 – 14 V</p>	

Electrical Test Program – Test (CC)

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
2.0		<p>Stop lamp switch (S9/1) Signal (N.O. contact) Model 124, 202, 210</p> <p>Model 129, 140</p> <p>Signal (N.C. contact) Model 124, 202, 210</p> <p>Model 129, 140</p>	<p>N4/1 38 —(1.38) — N4/1 —(1.30) — 30</p> <p>N4/1 79 —(1.38) — N4/1 —(1.30) — 71</p> <p>N4/1 38 —(1.38) — N4/1 —(1.13) — 13</p> <p>N4/1 79 —(1.38) — N4/1 —(1.13) — 54</p>	<p>Ignition: ON Brake pedal not applied</p> <p>Brake pedal applied</p> <p>Ignition: ON Brake pedal not applied</p> <p>Brake pedal applied</p>	<p><1 V</p> <p>11 – 14 V</p> <p>11 – 14 V</p> <p><1 V</p>	<p>Wiring, Stop lamp switch (S9/1).</p>

Electrical Test Program – Test (CC)

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	128 129 130	Left front axle VSS sensor (L6/1) Speed signal Model 124, 202, 210	 	Lift front of vehicle: Ignition: ON Turn left front wheel by hand. Note: Upon completion of test, erase DTC's from ASR control module memory	> 3 V > 3 V	Wiring, Left front axle VSS sensor (L6/1), DM, Chassis & Drivetrain, Vol. 1, section 5.
5.0	112 115 117	CAN data bus Model 124, 202, 210	 	Ignition: OFF Ignition: OFF Remove contact module. Measure resistance at connector for control module N4/1.	55 – 65 Ω 115 – 125 Ω	Wiring, Engine control module (N3/4), EA/CC/ISC control module (N4/1).