

7.3 Cruise Control/Idle Speed Control (CC/ISC)

Contents

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

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Diagnosis - Diagnostic Trouble Code (DTC) Readout

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: HHT

Note concerning Electronic Traction System (ETS) adaptation (only model 202, as of 06/94)

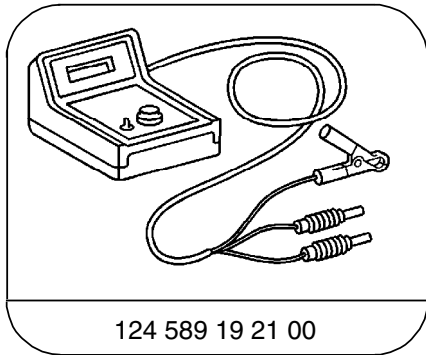
If the CC/ISC control module (N4/3) is replaced, or if a control module from another vehicle is temporarily installed, the ETS adaptation must be activated. Thereby allowing the CC/ISC control module to adapt to the vehicle configuration, ie: with ETS or ABS only.

ETS Adaptation

1. Ignition: **ON**
2. Wait 3 seconds
3. Engine: **Start**
4. Wait seven seconds
5. Ignition: **OFF** ⚠ Absolutely required.
6. Ignition: **ON**

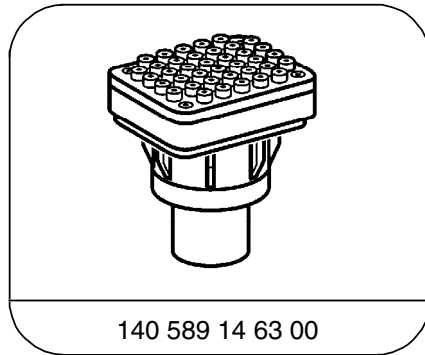
Diagnosis - Diagnostic Trouble Code (DTC) Readout

Special Tools



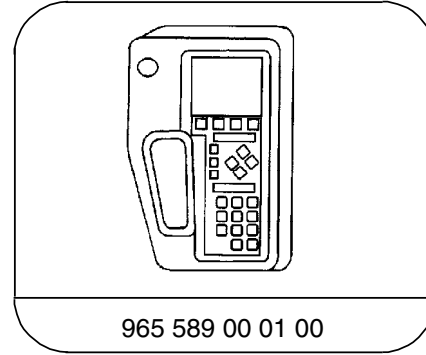
124 589 19 21 00

Pulse counter



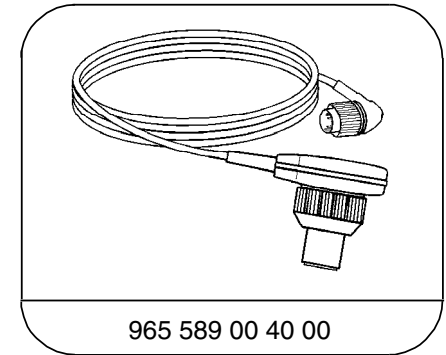
140 589 14 63 00

Adapter



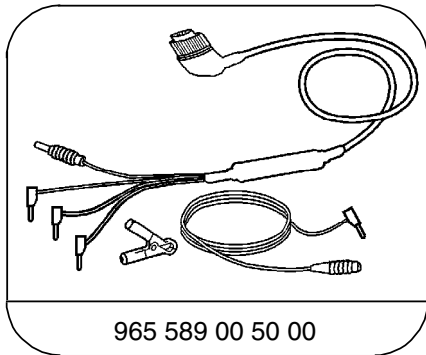
965 589 00 01 00

Hand-Held-Tester



965 589 00 40 00



Test cable



965 589 00 50 00



Adapter cable

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC 		Possible cause	Test step/Remedy ¹⁾
1	-	No fault in system	-
2	002 006 007 008 009 025	CC/ISC control module (N4/3) Closed throttle position switch (M16/3s2) Stop lamp switch (S9/1) Cruise control switch (S40) OFF CC/ISC control module (N4/3) Actual value potentiometer Starter lock-out/back-up lamp switch (S16/3) (transmission range recognition) Engine speed (TN) signal Vehicle speed signal (VSS) Safety relay within CC/ISC control module (N4/3) CC/ISC control module (N4/3) Engine harness	N4/3 23⇒ 6.0–8.0 24⇒ 16.0 23⇒ 2.0 N4/3 23⇒ 4.0, 5.0 23⇒ 11.0 23⇒ 13.0 23⇒ 15.0 N4/3 N4/3 Check harness wire insulation.
-	037	Conditions for activation of CC/ISC actuator (M16/2) 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, 056 048 049 050 051 057 055	CC/ISC actuator (M16/2) Throttle valve actual value potentiometer (M16/2r1) Drive actual value potentiometer (M16/2r2) Safety contact switch (M16/2s1) CTP switch recognition (M16/2s2) Potentiometer voltage supply Reset not accomplished (actuator adaptation)	23⇒ 3.0–10.0 23⇒ 5.0 23⇒ 4.0 23⇒ 6.0, 8.0 23⇒ 7.0 23⇒ 3.0 Erase DTC: Ignition: OFF Ignition: ON (for at least 90 seconds) If DTC reappears: CC/ISC actuator (M16/2)
4	064	CC switch (S40)	23⇒ 2.0
5	080	Stop lamp switch (S9/1)	23⇒ 16.0
6	097	<i>Not valid for U.S. vehicles</i>	

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

DTC 		Possible cause	Test step/Remedy ¹⁾
7	112 115, 117	CAN databus: Message from CC/ISC control module (N4/3) faulty Reception from engine control module (N3/4) faulty	23⇒ 19.0 N4/3
8	128, 129, 130	Left front axle VSS sensor (L6/1) from ABS (N30) or ETS/SPS (N47-2) control module	23⇒ 14.0
9	144	Rear axle VSS sensor (L6) from ABS control module (N30) Left rear axle VSS sensor (L6/3) from ETS/SPS control module (N47-2)	23⇒ 15.0
9	145	Incorrect CC/ISC control module (N4/3) installed	N4/3
9	146	ETS signal	23⇒ 20.0
10	160	Engine speed signal (TN) from engine control module (N3/4)	23⇒ 13.0
11	176–178, 182	Fuel safety shut-off signal to engine control module (N3/4)	23⇒ 17.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Cruise control/idle speed control in “limp-home” mode	CC/ISC control module (N4/3) voltage supply CC/ISC actuator (M16/2)	23 ⇒ 1.0 23 ⇒ 3.0 – 10.0
Engine speed limiter operates at 1200 – 1900 rpm	Fuel safety shut-off to engine control module (N3/4)	23 ⇒ 17.0

¹⁾ Observe Preparation for Test, see 22.

Electrical Test Program – Component Locations

Model 124

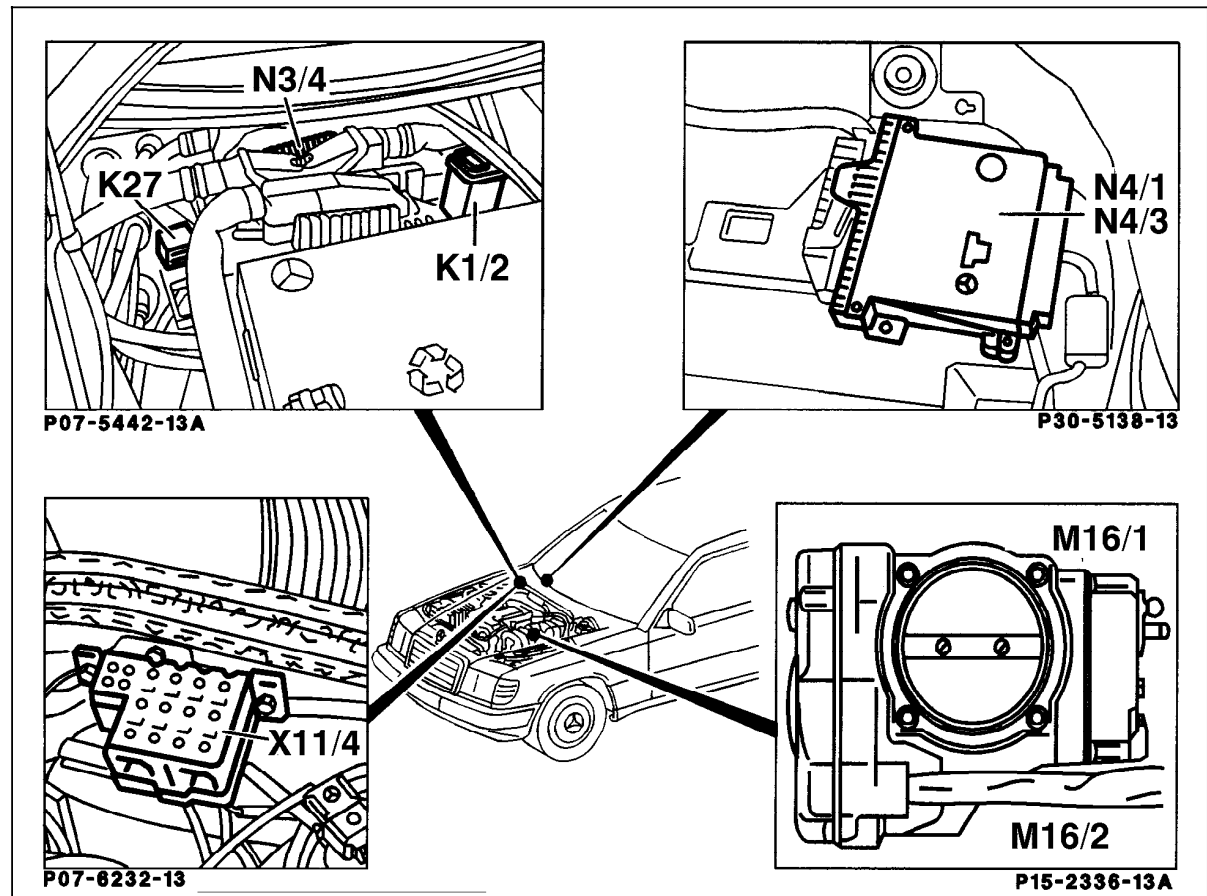


Figure 1

- K1/2 Overvoltage protection relay module (9-pole)
- M16/2 CC/ISC actuator
- N3/4 Engine control module (HFM-SFI)
- N4/3 CC/ISC control module
- X11/4 Data link connector (DTC readout)

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Electrical Test Program – Component Locations

Model 124

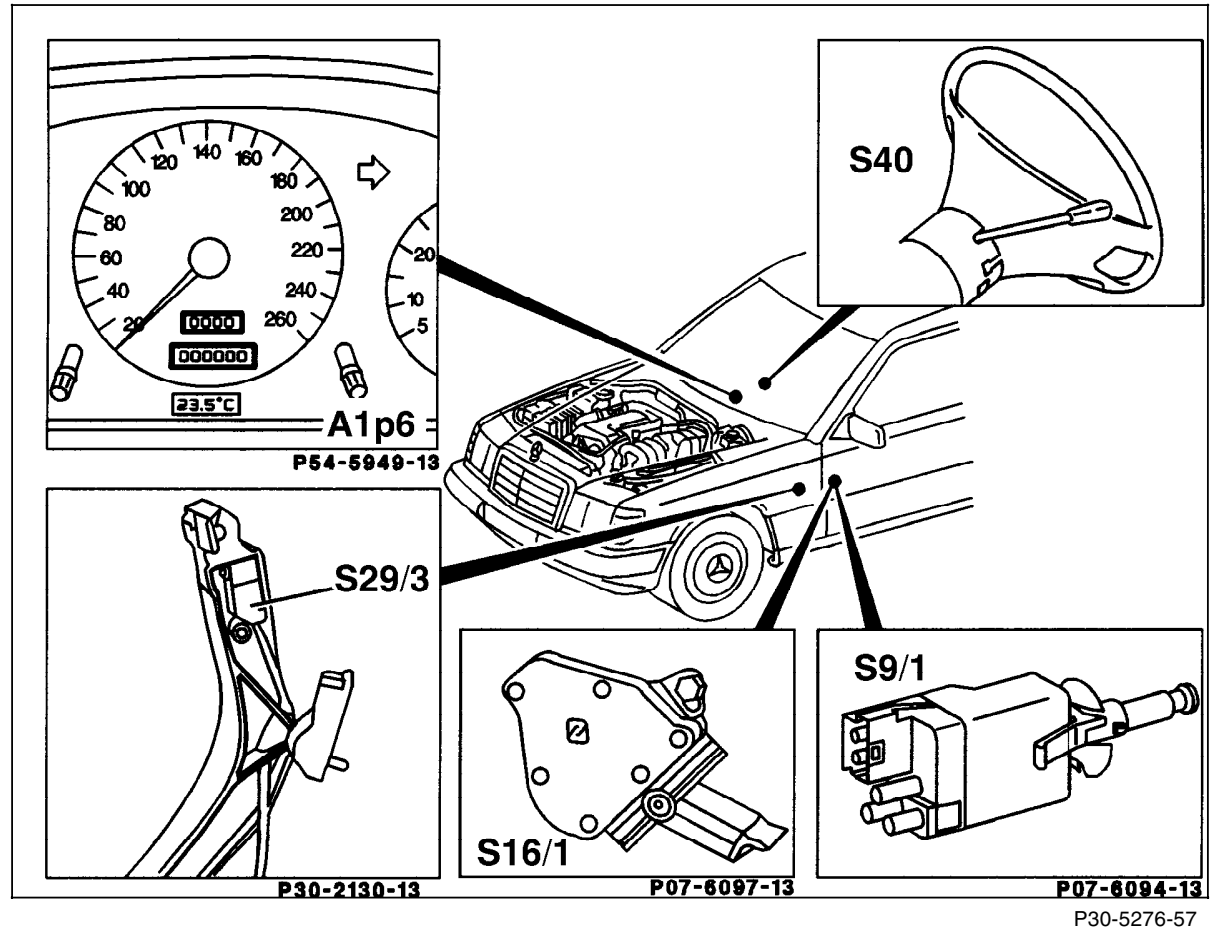
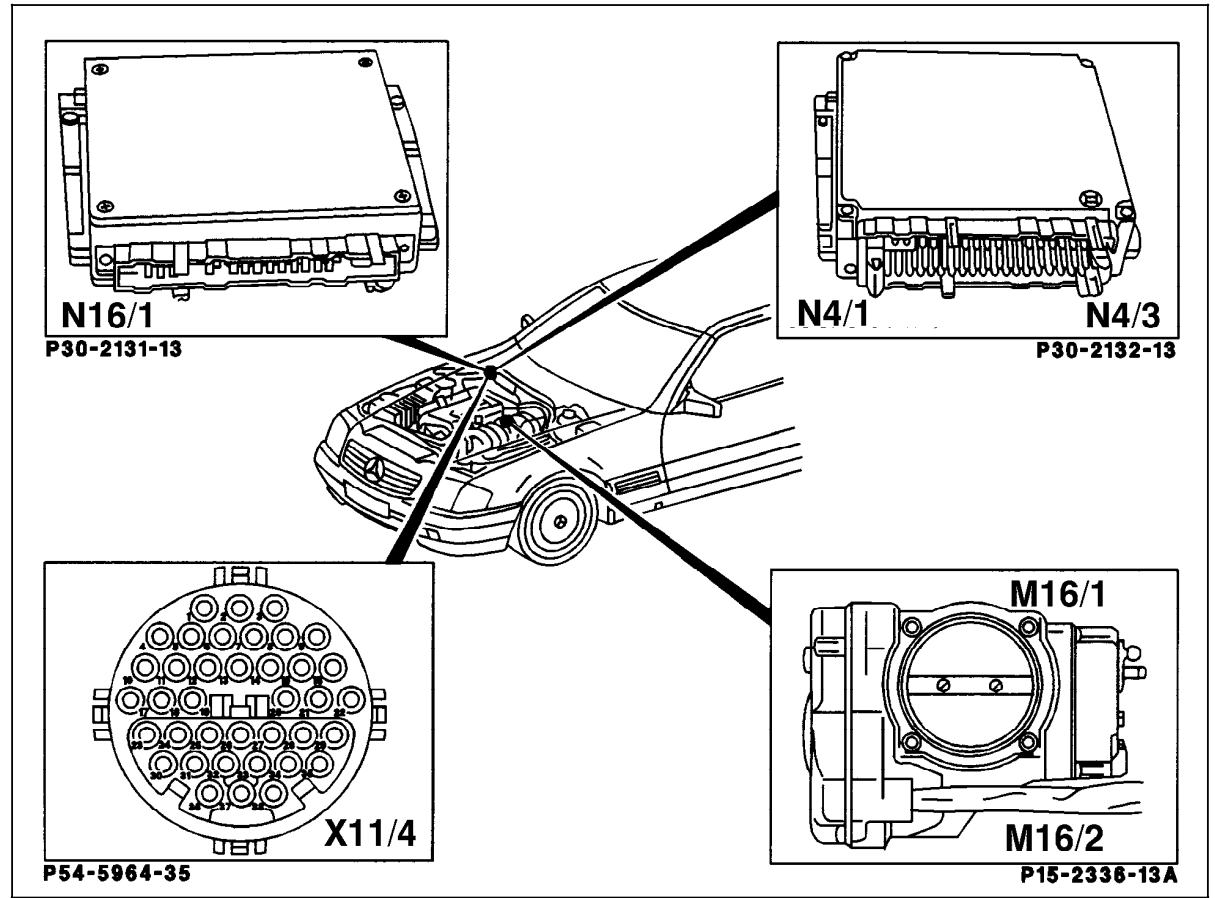


Figure 2

- A1p8 Electronic speedometer
- S9/1 Stop lamp switch
- S16/1 Starter lock-out/backup lamp switch
- S40 CC switch

Electrical Test Program – Component Locations

Models 129, 140



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Figure 3

- M16/2 CC/ISC actuator
- N4/3 CC/ISC control module
- N16/1 Base module (BM)
- X11/4 Data link connector (DTC readout)

Electrical Test Program – Component Locations

Models 129, 140

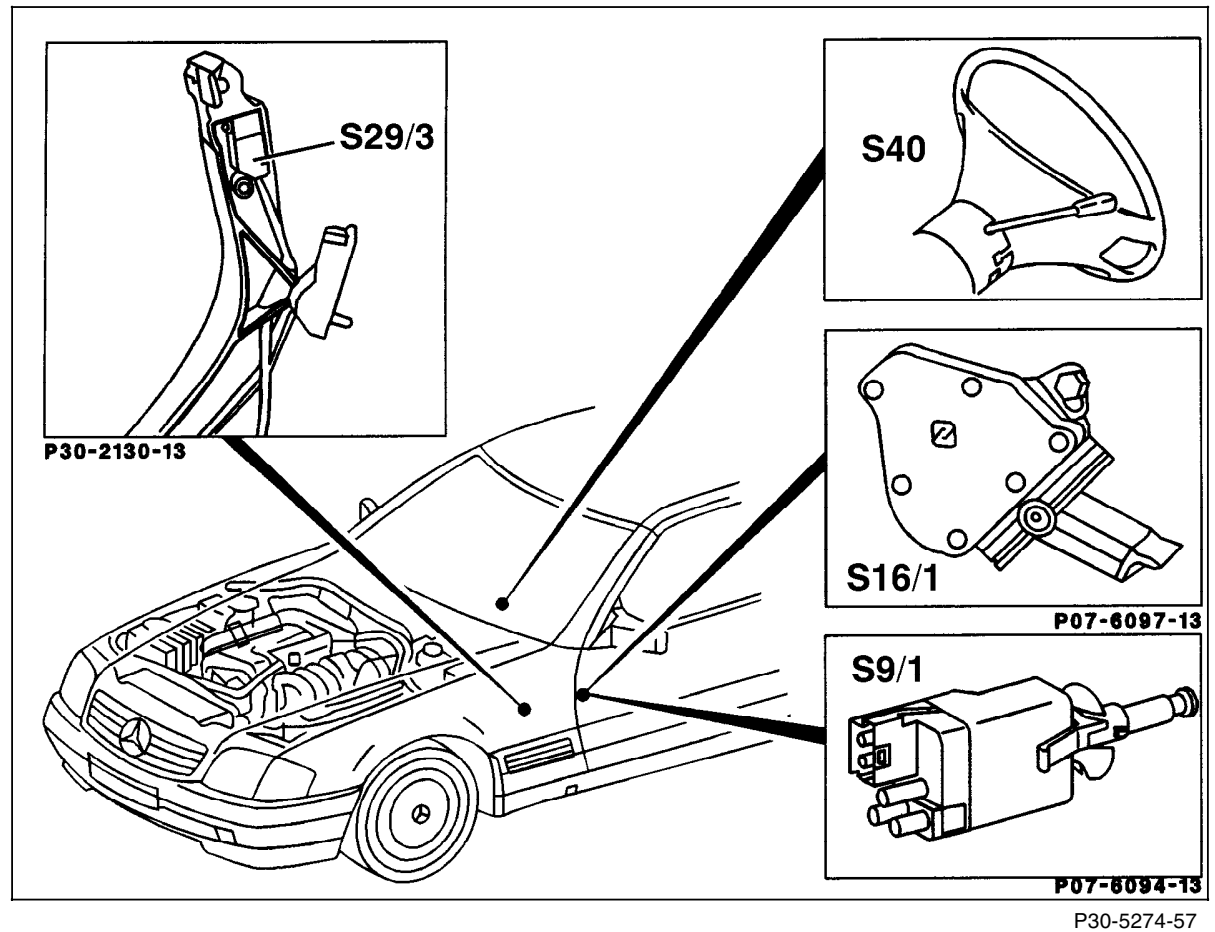


Figure 4

- S9/1 Stop lamp switch
- 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 202

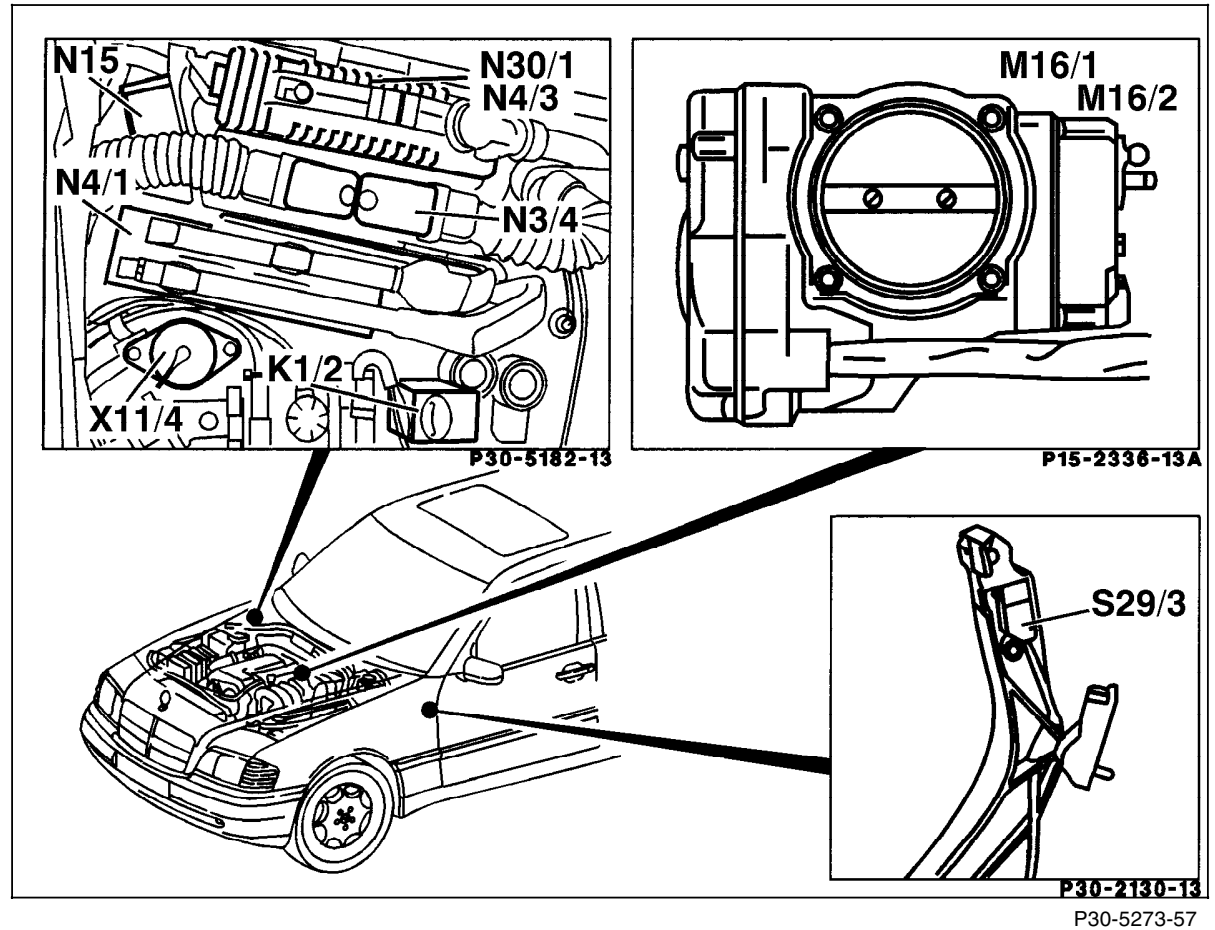


Figure 5

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

Electrical Test Program – Component Locations

Model 202

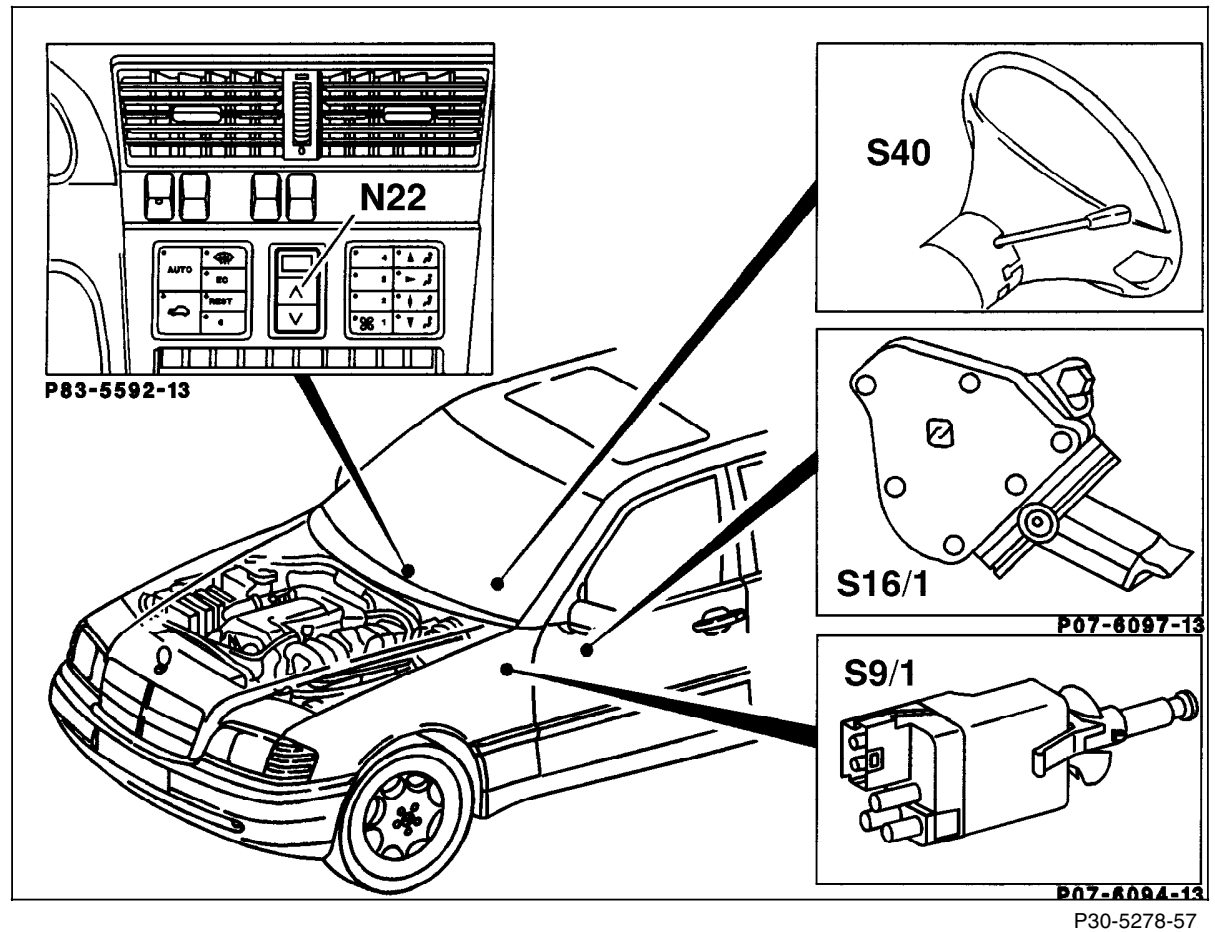


Figure 6

- N22 A/C pushbutton control module
- S9/1 Stop lamp switch
- 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

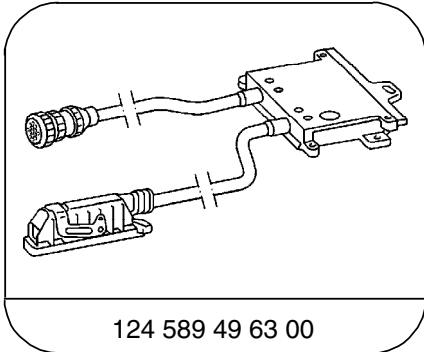
1. Ignition: **OFF**.
2. Connect socket box according to connection diagram (Figure 1 to 3).

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

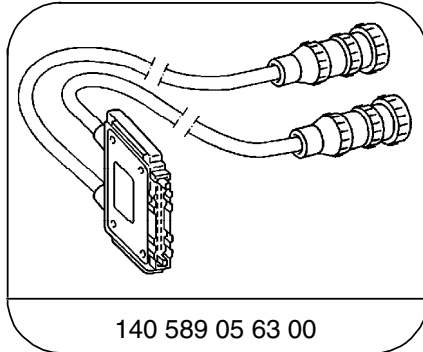
Electrical Test Program - Preparation for Test

Special Tools



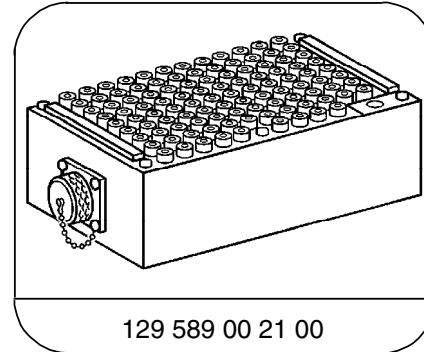
124 589 49 63 00

38-pin test cable



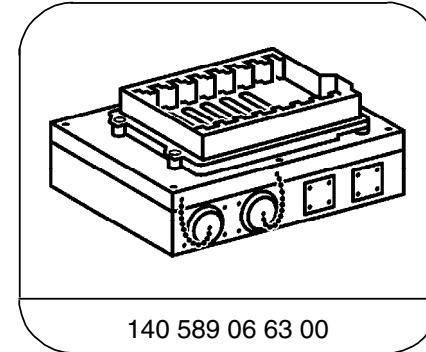
140 589 05 63 00

Contacting module 5



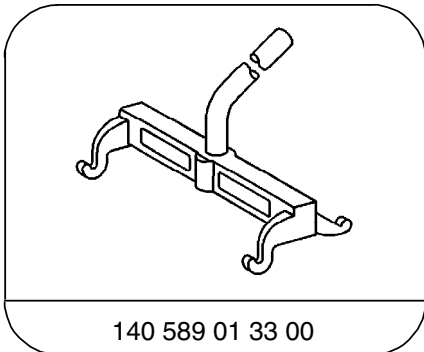
129 589 00 21 00

126-pin socket box



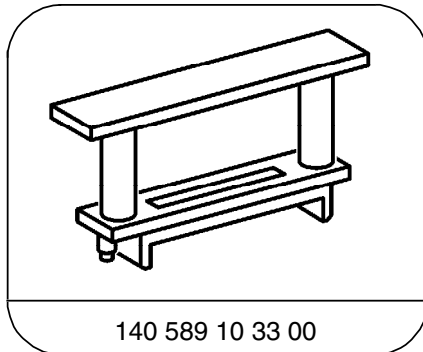
140 589 06 63 00

Contacting box



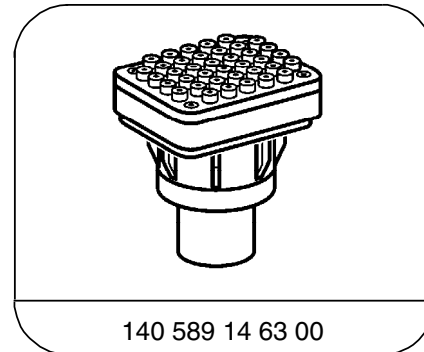
140 589 01 33 00

Mounting lever



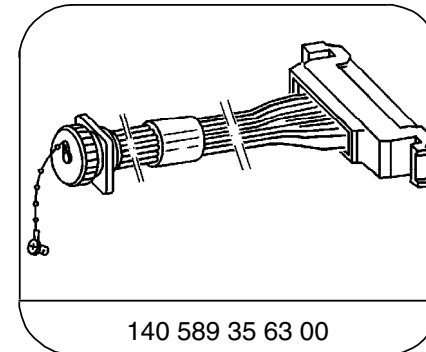
140 589 10 33 00

Spacer



140 589 14 63 00

Adapter



140 589 35 63 00

Retrofitting kit for contacting box

Conventional tools, test equipment

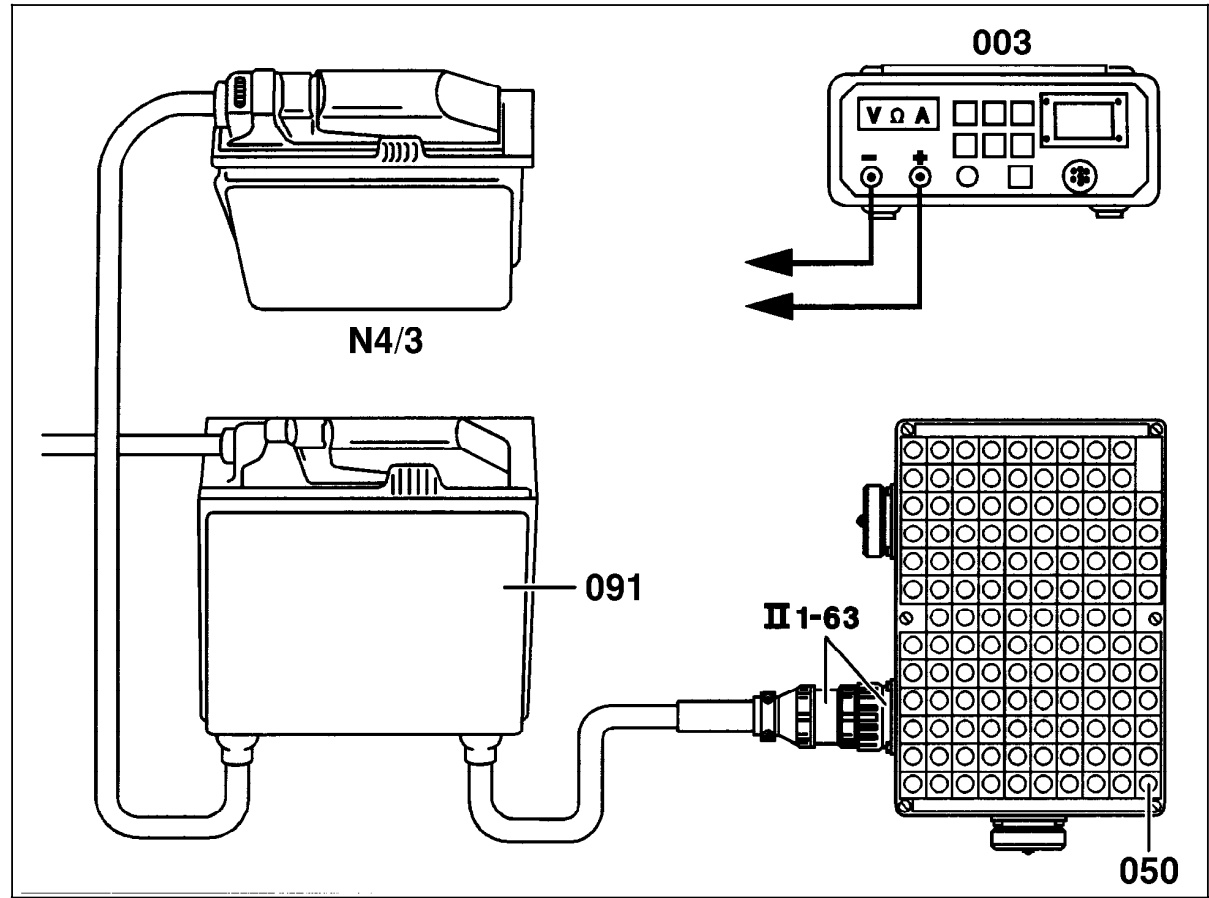
Description	Brand, model, etc.
Multimeter ¹⁾	Fluke models 23, 83, 85, 87
Signal generator ^{1) 2)}	Sun DTR 8416

¹⁾ Available through the MBUSA Standard Equipment Program.

²⁾ Two signal generators are required for testing the potentiometer and cruise control.

Electrical Test Program – Component Locations

Connection Diagram – Socket Box
Models 124, 202, 210



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Figure 1

- 003 Digital multimeter
- 050 Socket box, 126-pole
- 091 Diagnostic test cable
- N4/3 CC/ISC control module

Electrical Test Program – Component Locations

Connection Diagram – Socket Box Model 129

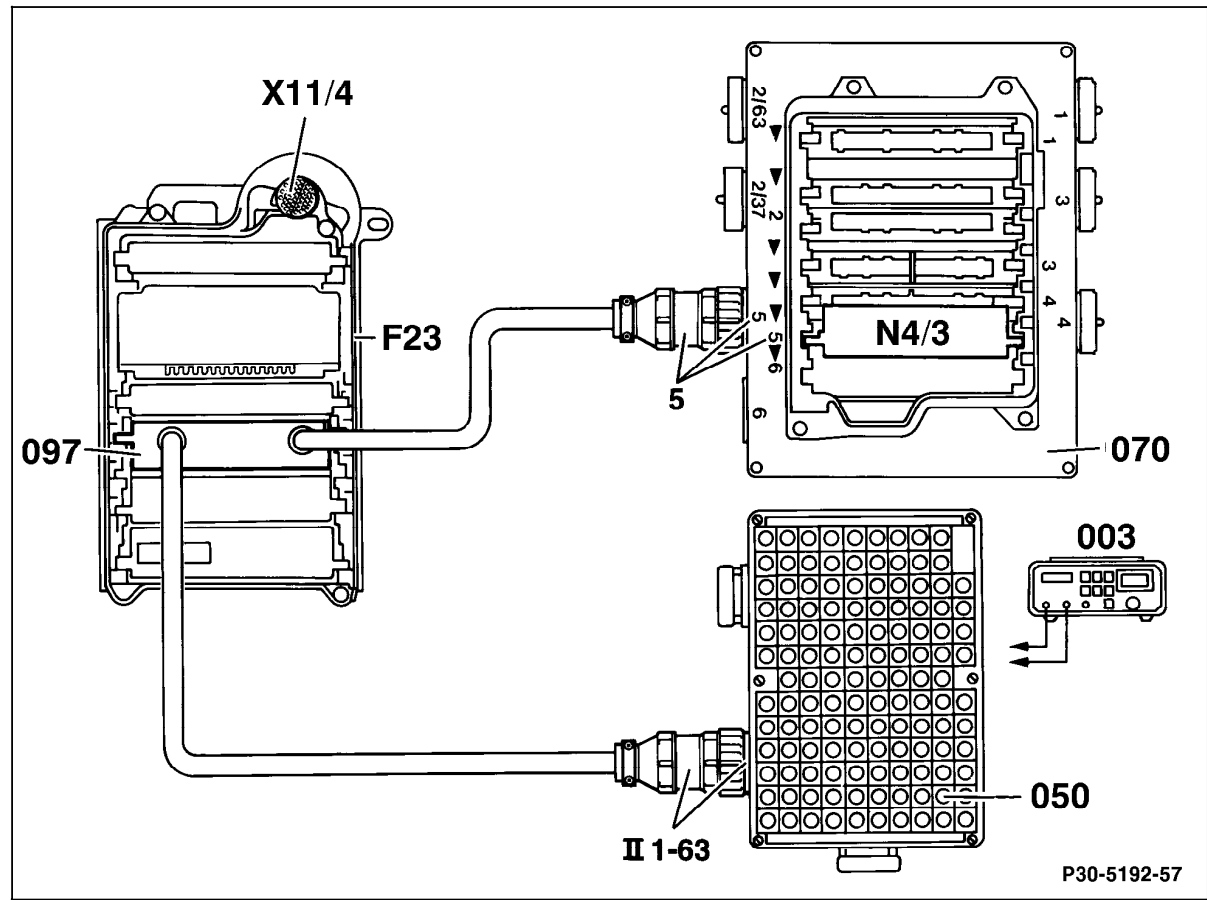


Figure 2

- 003 Digital multimeter
- 050 Socket box, 126-pole
- 070 Contact box
- 097 Contact module 5
- F23 Module box
- N4/3 CC/ISC control module
- X11/4 Data link connector (DTC readout)

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Electrical Test Program – Component Locations

Connection Diagram – Socket Box
Model 140

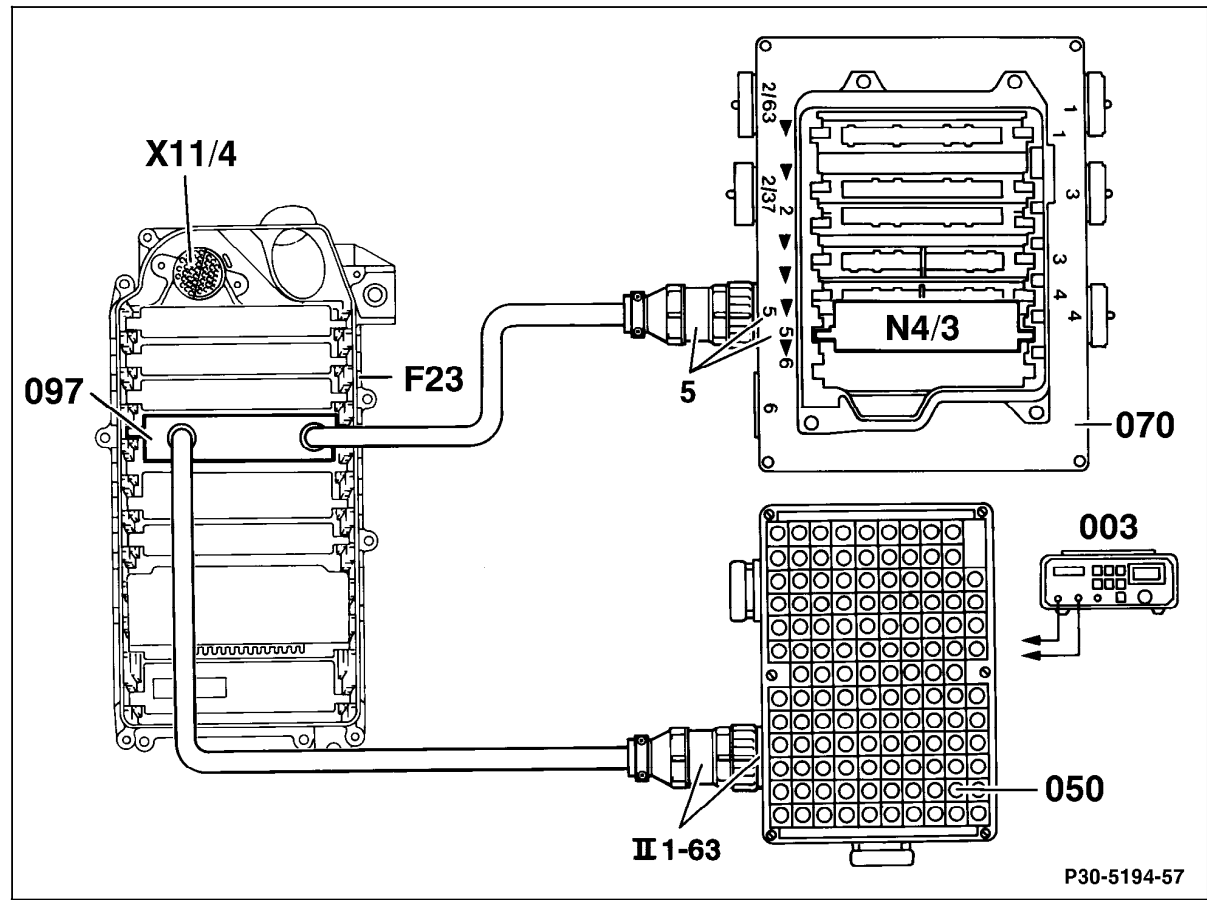


Figure 3

- 003 Digital multimeter
- 050 Socket box, 126-pole
- 070 Contact box
- 097 Contact module 5
- F23 Module box
- N4/3 CC/ISC control module
- X11/4 Data link connector (DTC readout)

P30-5194-57

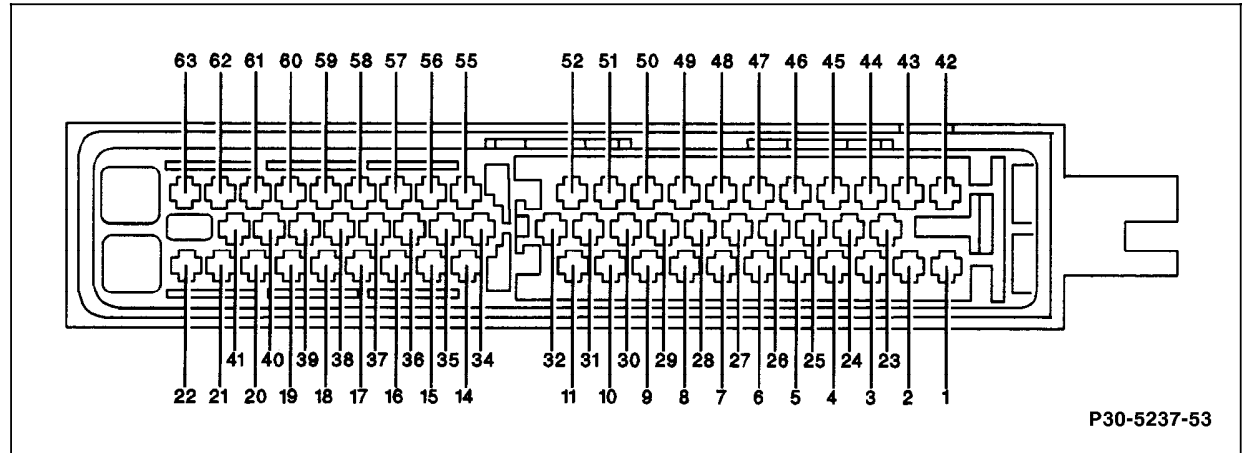
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Electrical Test Program - Preparation for Test

Layout of CC/ISC Control Module Connector

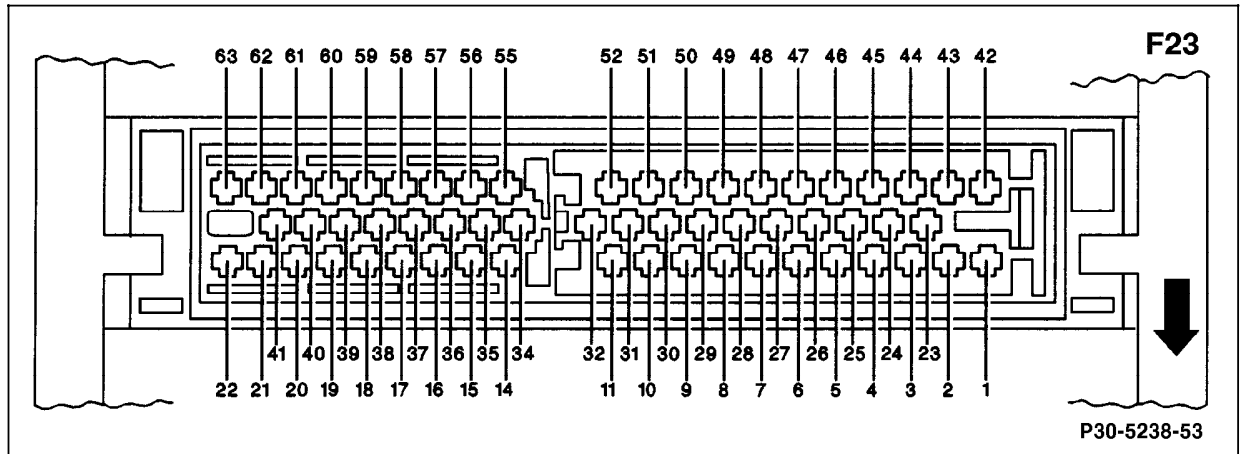
Figures 4 and 5

- 1 Data link connector
Model 124: socket 14
All other models: socket 7
- 2 -
- 3-4 Ground
Model 124: W1
Models 129, 140: W15
Model 202: W16/4
Model 210: W15/1
- 5 Left front axle VSS (from ABS control module)
- 6 ETS signal (from ETS/SPS control module)
- 7 TN signal
Models 124, 202, 210: Engine control module
Models 129, 140: Base module
- 8 -
- 9 Rear axle VSS (from ABS control module)
- 10 -
- 11 CC switch, safety switch
- 12-14 -
- 15-16 CC/ISC actuator, motor (-)
- 17-18 CC/ISC actuator, motor (+)
- 19 -
- 20 CC/ISC actuator, safety and CTP switch (+)
- 21-22 -
- 23 Stop lamp switch
- 24 Stop lamp switch
- 25 CTP recognition (for Engine control module)
- 26 Ground via circuit 50 (selector lever position recognition P/N)
- 27 A/C compressor ON/OFF signal
- 28-32 -



Models 124, 202, 210

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Models 129, 140

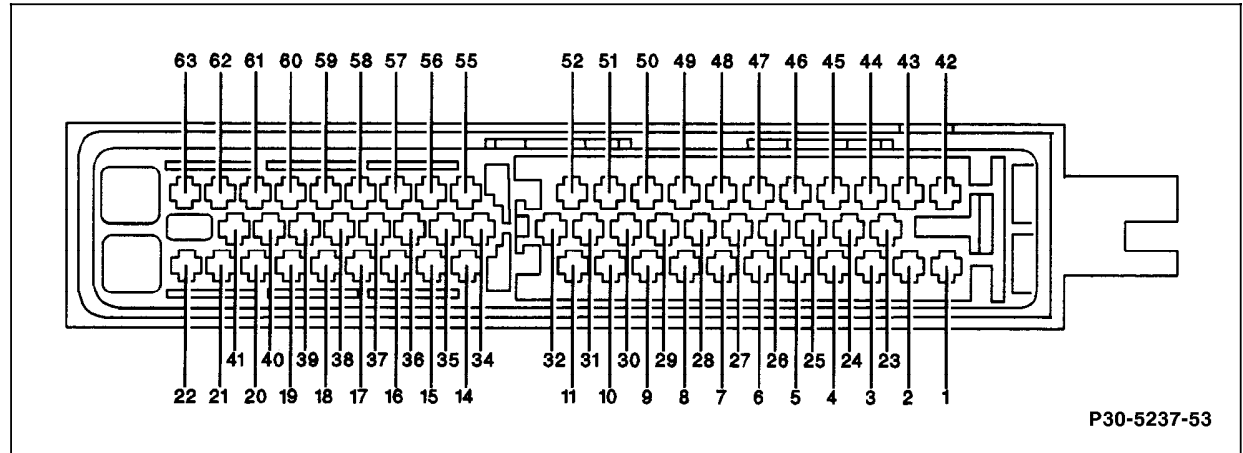
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Electrical Test Program - Preparation for Test

Layout of CC/ISC Control Module Connector

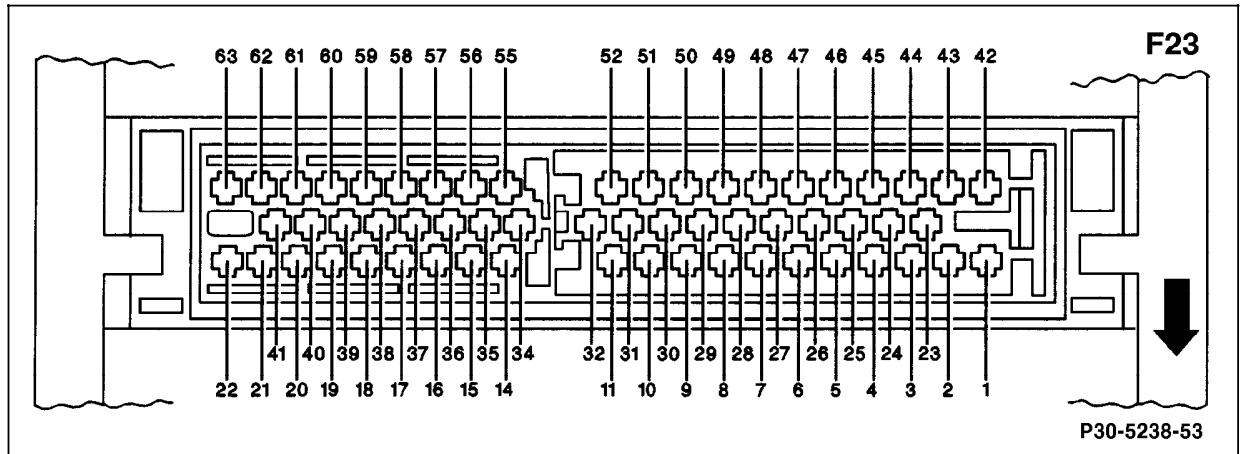
Figures 6 and 7

- 34 CC/ISC actuator, magnetic clutch (+)
- 35-36 -
- 37 CC/ISC actuator, CTP recognition switch (-)
- 38-39 -
- 40 CC/ISC, throttle valve and drive actual value potentiometer (+)
- 41 CC/ISC, throttle valve and drive actual value potentiometer (-)
- 42-43 -
- 44 H data line (CAN)
- 45 L data line (CAN)
- 46 -
- 47 CC switch, resume
- 48 CC switch, off
- 49 CC switch, accelerate/set
- 50 CC switch, decelerate/set
- 51-52 CC/ISC control module voltage supply, unfused
- Models 124, 202:** Overvoltage protection relay module (K1/2)
- Models 129, 140:** Base module (N16/1)
- Model 210:** Relay module (K40)
- 53-55 -
- 56 CC/ISC actuator, magnetic clutch (-)
- 57-58 -
- 59 CC/ISC actuator, safety contact switch (-)
- 60 -
- 61 CC/ISC actuator, drive value potentiometer (actual value)
- 62 -
- 63 CC/ISC actuator, throttle valve actual value potentiometer



Models 124, 202, 210


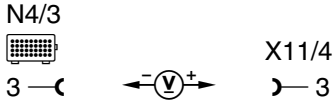
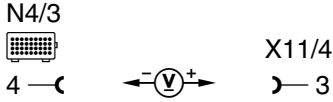
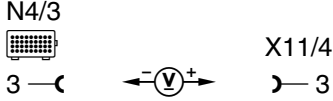
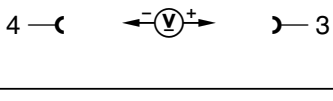
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Models 129, 140

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


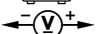
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
[1.1]		Ground Model 129 Module box bracket (W27) Model 140 Right footwell (W15) Model 210 Right footwell (W15/1)	N4/3  N4/3  N4/3  	Ignition: OFF Ignition: OFF Ignition: OFF	11 – 14 V	Model 129: W27 Model 140: W15 Model 210: W15/1












Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
2.0	054	CC switch (S40) V Decelerate/Set SP Resume B Accelerate/Set A Off Control switch contact	N4/3 4 — — — 50 4 — — — 47 4 — — — 49 4 — — — 48 4 — — — 11	Ignition: ON CC switch not activated Position: DECEL/SET Position: RESUME Position: ACCEL/SET CC switch not activated Position: OFF CC control switch contact in position: DECEL/SET, ACCEL/SET, RESUME, OFF	< 1 V 11 – 14 V 11 – 14 V 11 – 14 V 11 – 14 V < 1 V 11 – 14 V	Wiring, CC switch (S40).
3.0	054 056 048 049	CC/ISC actuator (M16/2) Voltage supply, throttle valve actual value potentiometer (M16/2r1) and drive actual value potentiometer (M16/2r2)	N4/3 41 — — — 40	Ignition: ON	4.7 – 5.3 V Reference value for tables I, II and III.	Wiring, CC/ISC actuator (M16/2), CC/ISC control module (N4/3).










Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	049	<p>CC/ISC actuator (M16/2) Drive actual value potentiometer (M16/2r2) signal</p>	<p style="text-align: center;">N4/3 </p> <p>4 —   5</p> <p>3 —   9</p> <p>3 —   61</p>	<p>Ignition: OFF Disconnect ABS control module (N30) Connect first signal generator. (front axle speed simulation) U=set to 10 V f=value from tabel IV</p> <p>Connect second signal generator. (rear axle speed simulation) U=set to 10 V f=value from tabel IV</p> <p>Ignition: ON Accelerator pedal position: Closed throttle position</p> <p>Activate CC switch in position “Accel/Set” until a constant voltage value can be read.</p>	<p>Table I, column “a”.</p> <p>Table I, column “b”.</p>	<p>Wiring, CC/ISC actuator (M216/2), CC/ISC control module (N4/3).</p> <p>Note: Upon completion of test, erase DTC’s stored in ASD control module (N30/2), DM, Chassis & Drivetrain, Vol. 1, sections 4.1 to 4.3</p>


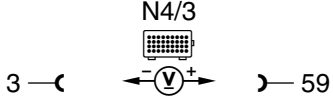
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	 48	CC/ISC actuator (M16/2) Throttle valve actual value potentiometer (M16/2r1) signal	3 —  —  — 63	Ignition: ON Accelerator pedal position: Closed throttle position Wide open throttle or Kickdown	Table II column “e” column “f”	Wiring, CC/ISC actuator (M16/2), CC/ISC control module (N4/3).
6.0	 50  51	CC/ISC actuator (M16/2) Voltage supply Safety contact switch (M16/2s1) and CTP switch (M16/2s2)	3 —  —  — 20	Ignition: ON Accelerator pedal position: Closed throttle position	6 – 12 V (value jumps)	Wiring, CC/ISC actuator (M16/2).
7.0	 51	CC/ISC actuator (M16/2) CTP switch (M16/2s2) switching point	3 —  —  — 37	Ignition: ON Accelerator pedal position: Closed throttle position Slowly depress accelerator until switching point occurs.	6 – 12 V (value jumps) 1 V	Wiring, CC/ISC actuator (M16/2).


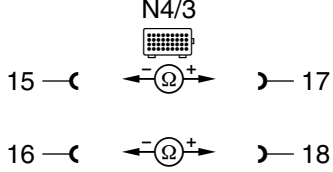
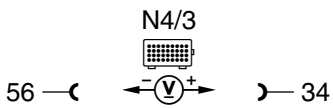
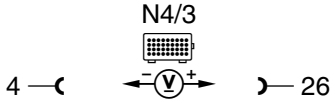
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0		<p>CC/ISC actuator (M16/2) Safety contact switch (M16/2s1) switching point</p> <p> To reference the correct voltage value in Table III, columns “h” and “i”, observe the reference value obtained in test step 3.0.</p>	<p style="text-align: center;">N4/3 </p> <p>4 — ◀  — 5</p> <p style="text-align: center;">N4/3 </p> <p>3 — ◀  — 9</p> <p style="text-align: center;">N4/3 </p> <p>3 — ◀  — 61</p>	<p>Ignition: OFF Disconnect ABS control module (N30)</p> <p>Connect first signal generator. (front axle speed simulation) U= set to 10 V f=value from tabel IV</p> <p>Connect second signal generator. (rear axle speed simulation) U= set to 10 V f=value from tabel IV</p> <p>Connect first multimeter</p>		<p>Wiring, CC/ISC actuator (M16/2).</p>







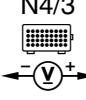







Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
[8.0]				<p>Connect 2nd multimeter</p> <p>Ignition: ON</p> <p>Read voltage value from first multimeter (drive actual value potentiometer)</p> <p>Read voltage value from second multimeter (safety contact switch)</p> <p>Activate CC switch in position “Accel/Set” until voltage value on first multimeter does not decrease</p> <p>Simultaneously read voltage value from second multimeter</p>	<p>Tabel III column “h”</p> <p>6 – 10 V (value jumps, safety contact switch closed)</p> <p>Tabel III column “i”</p> <p>1 V (safety switch open)</p>	<p>⇒ 1.1, W15 Masse Federdom rechts, Leitungen.</p>


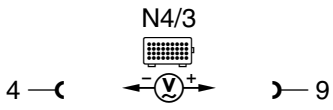
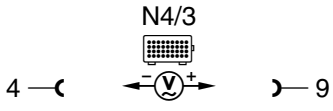
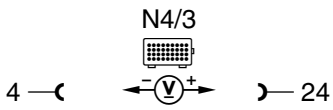
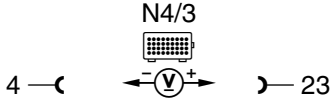
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
[8.0]				Note: If voltage does not drop, release CC switch, adjust frequency on second signal generator and repeat test procedure		
9.0	054 056	CC/ISC actuator (M16/2) Actuator motor (M16/2m1) resistance		Ignition: OFF	< 10 Ω	Wiring, CC/ISC actuator (M16/2).
10.0	054 056	CC/ISC actuator (M16/2) Magnetic clutch (M16/2k1)		Ignition: ON	7.0 – 10 V	Wiring, CC/ISC actuator (M16/2), CC/ISC control module (N4/3).
11.0		Starter lock-out/backup lamp switch (S16/1) P/N recognition		Ignition: ON Transmission range: P/N R/D/3/2	0 V 11 – 14V	Wiring, Starter lock-out/backup lamp switch (S16/1), CC/ISC control module (N4/3), Ignition/starter switch (S2/1).

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
12.0		CC/ISC control module (N4/3) A/C compressor signal	4 —    — 27	Engine: Start Accelerator pedal position: Closed throttle position Set temperature selector wheel to MIN and blower to highest speed	<1 V 11 – 14 V	Wiring, Model 124: A/C compressor control module (N6) Models 129, 140: Base module (N16/1) Model 202, 210: A/C pushbutton control module (N22).
13.0		CC/ISC control module (N4/3) Engine speed signal (TN) from engine control module (N3/4)	4 —    — 7	Engine: Start Accelerator pedal position: Closed throttle position	6 – 12 V	⇒ 15.0, Engine control module (N3/4), Instrument cluster, CC/ISC control module (N4/3).
14.0	  	Left front axle VSS sensor (L6/1) Speed signal	4 —    — 5	Raise front of vehicle. ABS (N30) or ETS/SPS (N47-2) control module connected. Ignition: ON Turn left front wheel by hand	2 – 5 V	Wiring, ABS control module (N30), see DM, Chassis & Drivetrain, Vol. 2, sections 6.1 to 6.3. ETS/SPS control module (N47-2), see DM, Chassis & Drivetrain, Vol. 3.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
15.0	144	Rear axle VSS sensor (L6) Speed signal (ABS)		Raise rear of vehicle. ABS control module (N30) connected. Ignition: ON Turn left rear wheel by hand	2 – 5 V	⇒ 15.1 Wiring, ABS control module (N30), see DM, Chassis & Drivetrain, Vol. 2, sections 6.1 to 6.3.
15.1	144 146	Left rear axle VSS sensor (L6/3) Speed signal (ETS)		Raise rear of vehicle. ETS/SPS control module (N47-2) connected. Ignition: ON Turn left rear wheel by hand	2 – 5 V	Wiring, ETS/SPS control module (N47-2), see DM, Chassis & Drivetrain, Vol. 3.
16.0	5	Stop lamp switch (S9/1) Signal (N.C. contact) Signal (N.O. contact)	 	Ignition: ON Brake pedal not applied Brake pedal applied Ignition: ON Brake pedal not applied Brake pedal applied	< 1 V 11 – 14 V 11 – 14 V < 1 V	Wiring, S9/1

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
17.0		CC/ISC control module (N4/3) Fuel safety shut-off signal to engine control module (N3/4)	4 — — — — 42	Ignition: ON	2.0 – 11 V (value jumps).	Wiring, CC/ISC actuator (M16/2), N4/3
18.0		CC/ISC control module (N4/3) Closed throttle position recognition signal to engine control module (N3/4)	4 — — — — 25	Ignition: ON Accelerator pedal position: Closed throttle position Accelerator pedal applied	4.8 V 5.5 V	Wiring, N4/3
19.0	∩	Serial data bus (CAN)	45 — — — — 44 (CAN-L) (CAN-H)	Ignition: OFF Disconnect CC/ISC control module (N4/3)	Models 124, 202, 210: 55 – 65 Ω Models 129, 140: 115 – 125 Ω	Wiring, Engine control module (N3/4), see DM, Engines, Vol. 2, section 1.1.
20.0	9	ETS signal	4 — — — — 6	Ignition: ON Engine: at Idle	< 1 V 11 – 14 V	Wiring, ETS/SPS control module (N47-2).

Electrical Test Program – Test

Table I Voltage values - Drive actual value potentiometer (M16/2r2)

Reference voltage supply value	“a” Accelerator pedal position: Closed throttle	“b” Activate CC switch until voltage value is constant
4.7 V	4.46 V	0.23 V
4.8 V	4.56 V	0.24 V
4.9 V	4.65 V	0.24 V
5.0 V	4.75 V	0.25 V
5.1 V	4.84 V	0.25 V
5.2 V	4.94 V	0.26 V
5.3 V	5.03 V	0.26 V

Electrical Test Program – Test

Table II Voltage values - Throttle valve actual value potentiometer (M16/2r1)

Reference voltage supply values	“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 – Test

Table III Voltage values - Drive actual value potentiometer (M16/2r2)

Reference voltage supply values	“h” Safety switch: Closed	“i” Safety switch: Open
4.7 V	4.09 V	3.66 V
4.8 V	4.17 V	3.74 V
4.9 V	4.26 V	3.82 V
5.0 V	4.35 V	3.90 V
5.1 V	4.43 V	3.97 V
5.2 V	4.52 V	4.05 V
5.3 V	4.61 V	4.13 V

Electrical Test Program – Test

Table IV Frequency values for vehicle speed simulation (front and rear axle VSS sensors)

Model	Front axle (ABS)	Rear axle (ABS)				Front and Rear axle (ETS)
	Frequency (Hz)	4 speed AT Axle ratio	Frequency (Hz)	5 speed AT Axle ratio	Frequency (Hz)	Frequency (Hz)
124.028 124.032/052/066/092	1375	2.65	1370			–
		2.65	1370	3.69	1378	
129.063	1375	–	–	3.69	1337	669
140.032	688	3.27	1255	3.46	1282	635
202.028	688	2.87	1360	–	–	689