

1.2 Models 129 and 140 with HFM-SFI

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1.2 Base Module (BM)

Models 129 and 140 with HFM-SFI

Diagnosis - Diagnostic Trouble Code (DTC) Memory

Test Preparation for DTC Readout

1. Connect impulse counter scan tool and adapter or HHT to data link connector (X11/4) as shown in section 0.

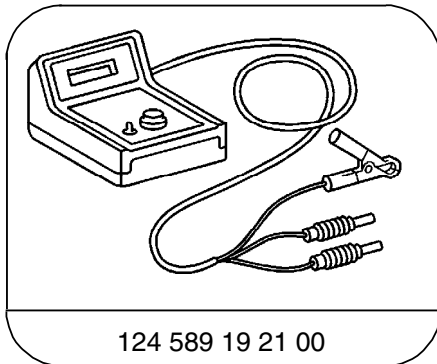
Note:

Connect yellow wire from impulse counter scan tool as follows:

Base module (BM) (N16/1)	socket 8
ABS or ABS/ASR control module (N30 or N30/1)	socket 6
SPS control module (N49/1)	socket 12
ADS control module (N51)	socket 11
HFM-SFI control module (N3/4)	socket 4

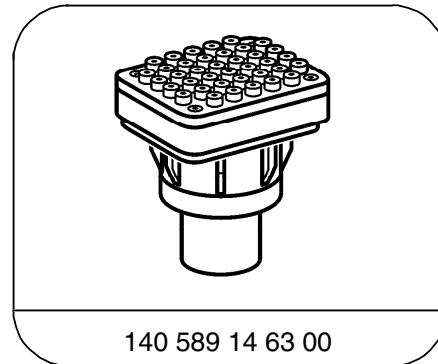
2. Ignition: **ON**
3. Read DTC memory for BM, ABS or ABS/ASR, SPS, ADS, HFM-SFI control modules.

Special Tools



124 589 19 21 00

Pulse counter



140 589 14 63 00


Adapter

Equipment

Hand-Held Tester (HHT)

see applicable Service Information in groups 58 and 99

Diagnosis - Diagnostic Trouble Code (DTC) Memory

Diagnostic trouble code (DTC) 	Possible cause	Test step/Remedy ¹⁾
1 -	No fault in system.	In case of complaint: 23 (entire test)
5 005	Maximum allowable temperature in module box exceeded ²⁾ .	23⇒ 15.0
6 006	A/C electromagnetic clutch (A9k1) jammed or poly-V-belt broken.	23⇒ 13.0, visually inspect compressor and poly-v-belt
7 007	Poly-V-belt slips.	23⇒ 13.0, check poly-v-belt tension
10 010	Base module (N16/1) voltage supply output fuse F2, open circuit.	23⇒ 8.0
11 011	Base module (N16/1) voltage supply output fuse F3, open circuit.	23⇒ 9.0
12 012	Base module (N16/1) voltage supply output fuse F1, open circuit.	23⇒ 6.0, 7.0
15 015	Kickdown switch (S16/6)	23⇒ 16.0
16 016	A/C electromagnetic clutch (A9k1), short circuit.	23⇒ 13.0
17 017	Module box blower motor (M2/2), short circuit ²⁾ .	23⇒ 15.0

1) Observe Preparation for Test, see 22.

2) Module box blower motor was phased out of production on model 140 starting M.Y. 1994.

Electrical Test Program - Component Locations

Component Locations

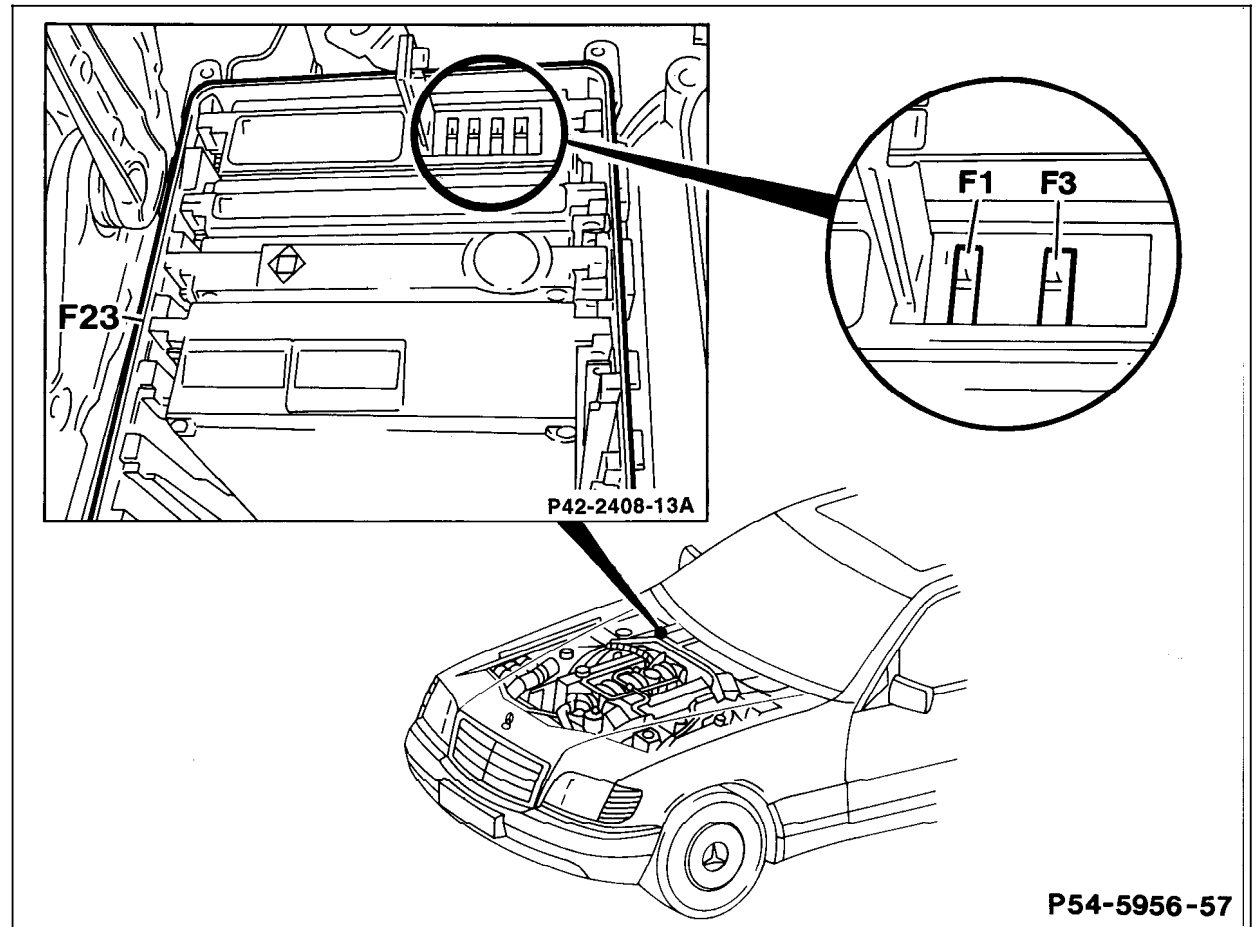


Figure 1

- N16/1 Base module (BM)
- F1 Fused voltage supply for Stop lamp switch (S9/1), ABS (N30) or ABS/ASR (N30/1) control module, Data link connector (X11/4)
- F3 Fused voltage supply for SPS (N49/1), ADS (N51), Transmission (N15/1) control modules, TR "D" contact switch (S16/9), Comfort/sport switch (S45/1)
- F23 Module box

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1.2 Base Module (BM)

Models 129 and 140 with HFM-SFI

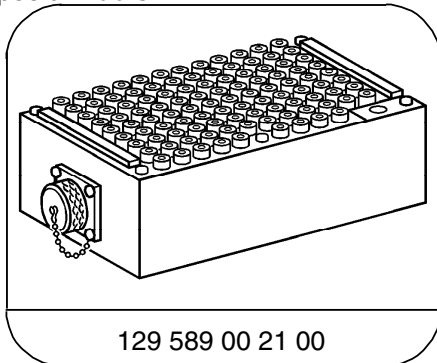
Electrical Test Program - Preparation for Test

Preliminary work:

Diagnosis - Diagnostic Trouble Code (DTC) Memory 11

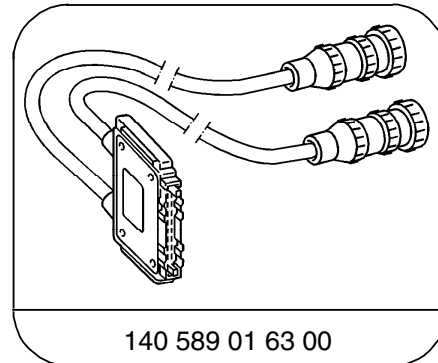
1. Ignition: **OFF**
2. Disconnect base module (BM, N16/1).
3. Connect socket box with contact module 1 and contact box according to connection diagram (Figure 1 or 2) on following pages.

Special Tools



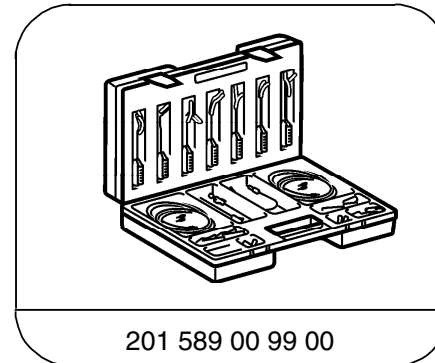
129 589 00 21 00

126-pin socket box



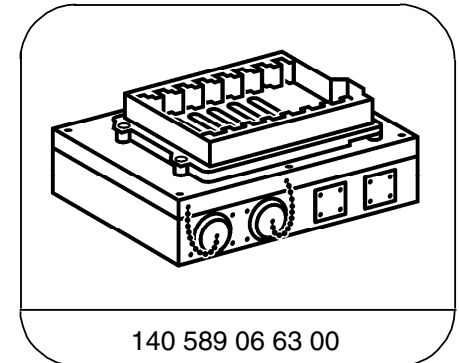
140 589 01 63 00

Contacting module 1



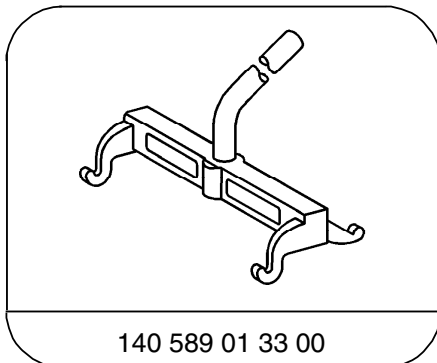
201 589 00 99 00

Electrical connecting set



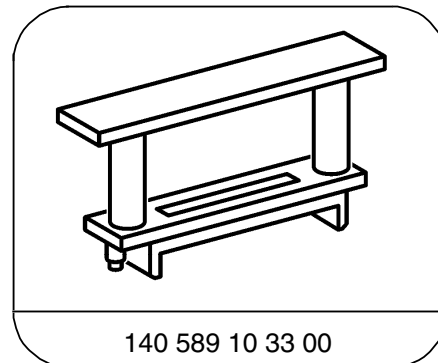
140 589 06 63 00

Contacting box



140 589 01 33 00

Mounting lever



140 589 10 33 00

Spacer

Wiring Diagrams

Electrical Troubleshooting Manual, Model 129

Electrical Troubleshooting Manual, Model 140

Equipment

Digital multimeter ¹⁾

Fluke model 23, 83, 85, 87

¹⁾ Available through the MBUSA Standard Equipment Program.

Electrical Test Program - Preparation for Test

Connection Diagram - Socket Box
Model 129

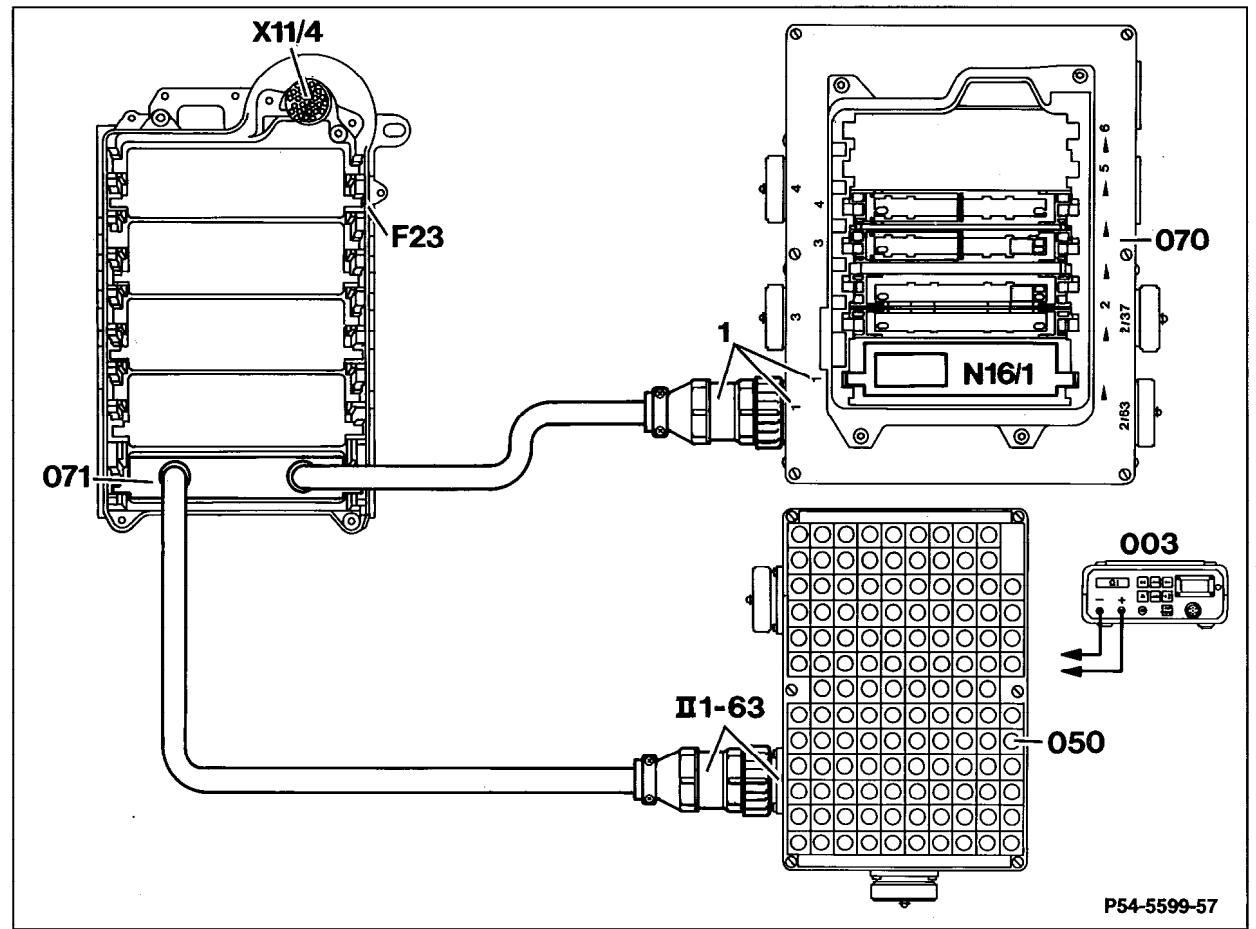


Figure 1

- 003 Multimeter
- 050 Socket box
- 070 Contact box
- 071 Contact module 1
- F23 Module box
- N16/1 Base module
- X11/4 Data link connector (DTC readout)

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Electrical Test Program - Preparation for Test

Connection Diagram - Socket Box
Model 140

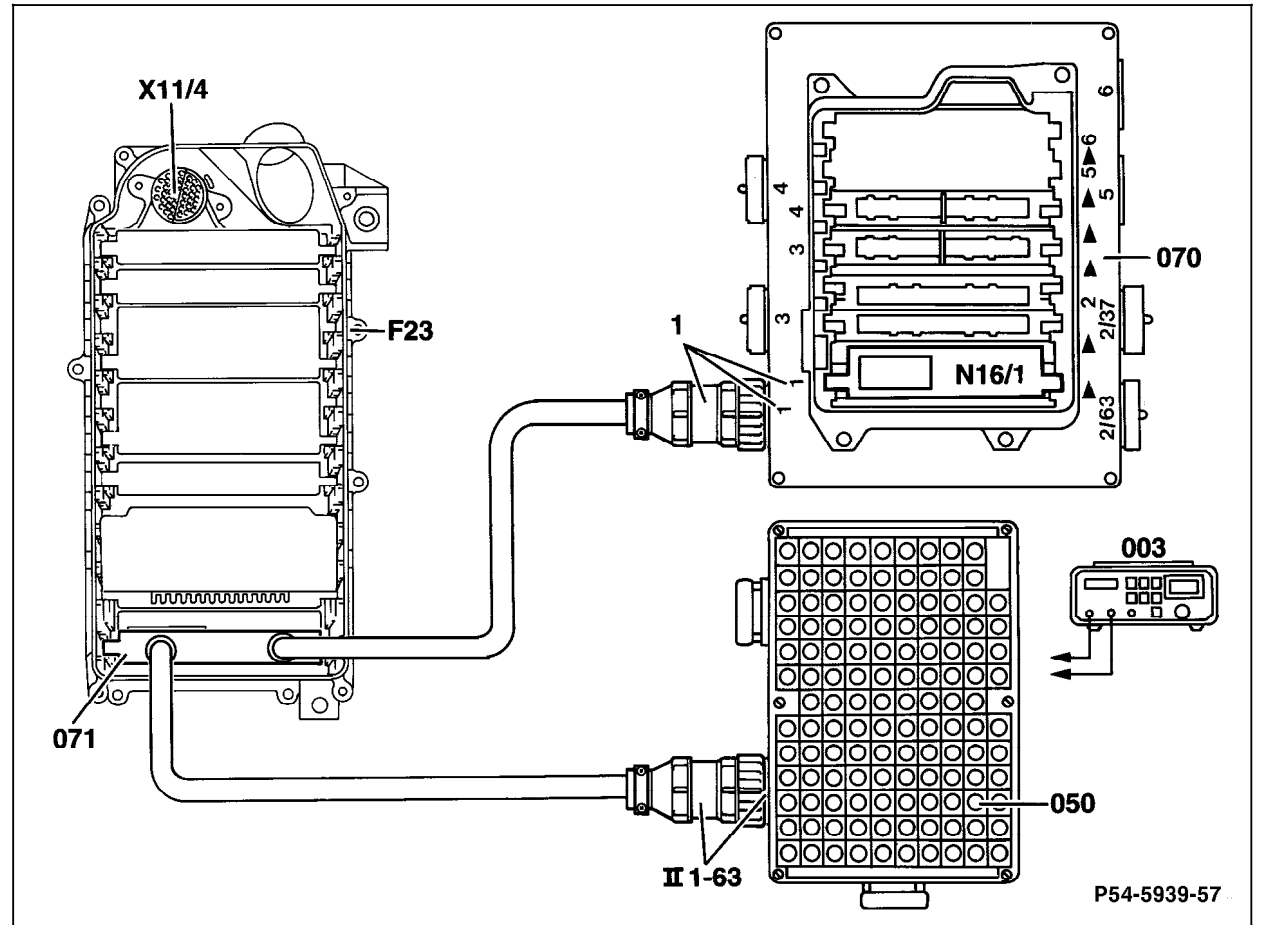


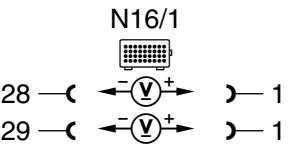
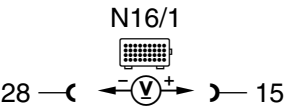
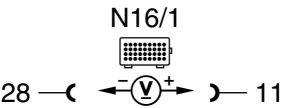
Figure 3

- 003 Multimeter
- 050 Socket box
- 070 Contact box
- 071 Contact module 1
- F23 Module box
- N16/1 Base module
- X11/4 Data link connector

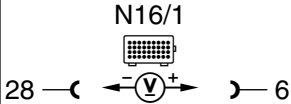
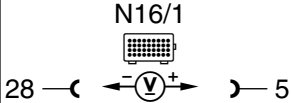

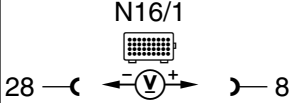

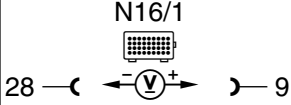
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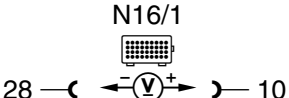
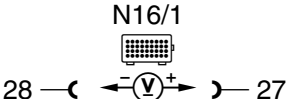
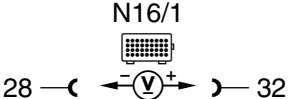


Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 1.0	Base module (N16/1) Voltage supply Circuit 30	 <p>N16/1 28 —(V)— 1 29 —(V)— 1</p>	—	11 – 14 V	Wiring, Battery (G1), Model 129 Ground (module box bracket) (W27) Model 140 Ground (electronics output ground – right footwell) (W15)
⇒ 2.0	Base module (N16/1) Voltage supply Circuit 15, unfused	 <p>N16/1 28 —(V)— 15</p>	Ignition: ON Ignition: OFF	11 – 14 V < 1 V	Wiring, Ignition/starter switch (S2/1)
⇒ 3.0	Base module (N16/1) Voltage supply Circuit 15, fused	 <p>N16/1 28 —(V)— 11</p>	Ignition: ON Ignition: OFF	11 – 14 V < 1 V	Wiring

Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 4.0	Voltage supply (unfused) for N4/1	 <p>N16/1 28 — ◀ — (V) — ▶ — 6</p>	Ignition: ON Ignition: OFF	11 – 14 V < 1 V	⇒ 2.0, Base module (N16/1).
⇒ 5.0	Voltage supply (unfused) for N3/4, N4/1, B2/5	 <p>N16/1 28 — ◀ — (V) — ▶ — 5</p>	Ignition: ON Ignition: OFF	11 – 14 V < 1 V	⇒ 2.0, Base module (N16/1).
⇒ 6.0	 Voltage supply (fused) for N30 or N30/1, S9/1	 <p>N16/1 28 — ◀ — (V) — ▶ — 8</p>	Ignition: ON Ignition: OFF	11 – 14 V < 1 V	Fuse (F1) in base module (N16/1), ⇒ 2.0, Base module (N16/1).
⇒ 7.0	 Voltage supply (fused) for X11/4	 <p>N16/1 28 — ◀ — (V) — ▶ — 9</p>	Ignition: ON Ignition: OFF	11 – 14 V < 1 V	Fuse (F1) in base module (N16/1), ⇒ 2.0, Base module (N16/1).

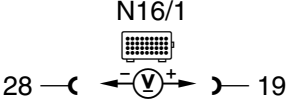
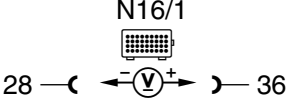
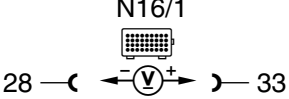

Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 8.0 I1	Voltage supply (fused) for N3/4	N16/1  28 —(—(←(V)→ —(—()— 10	Ignition: ON Ignition: OFF	11 – 14 V < 1 V	⇒ 2.0, ⇒ 3.0, Base module (N16/1).
⇒ 9.0 II	Voltage supply (fused) for N49/1, N51, N15/1, S16/9, S45/1	N16/1  28 —(—(←(V)→ —(—()— 27	Ignition: ON Ignition: OFF	11 – 14 V < 1 V	Fuse (F3) in base module (N16/1), ⇒ 2.0, Base module (N16/1).
⇒ 10.0	Idle speed increase signal for N3/4, N4/1	N16/1  28 —(—(←(V)→ —(—()— 32	Engine: at Idle  	10 – 14 V < 1 V	⇒ 11.0, ⇒ 12.0, ⇒ 2.0, Base module (N16/1).

Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 11.0	A/C compressor RPM sensor signal (A9I1)	<p>N16/1</p>	<p>Engine: at Idle</p>	<p>Model 129 > 0.30 V Model 140 > 0.04 V</p>	⇒ 11.1
⇒ 11.1	Resistance	<p>N16/1</p>	<p>Ignition: OFF</p> <p>Disconnect base module (N16/1) from contact box.</p>	<p>Model 129 530 – 900 Ω Model 140 165 – 205 Ω</p>	Wiring, A9/1.
⇒ 12.0	A/C “ON” signal from A/C pushbutton control module (N22)	<p>N16/1</p>	<p>Ignition: ON</p>	<p>11 – 14 V</p> <p>< 2 V</p>	Wiring, See DM, Climate Control, Vol. 1, section 3.1 or 3.2 23
⇒ 13.0	<p>A/C compressor electromagnetic clutch (A9k1) Voltage supply Circuit 15</p>	<p>N16/1</p>	<p>Engine: at idle</p>	<p>11 – 14 V</p> <p>< 2 V</p>	⇒ 11.0, ⇒ 2.0, Base module (N16/1).
⇒ 14.0	RPM signal TN (input) from engine control module (N3/4)	<p>N16/1</p>	<p>Engine: at Idle</p>	>3 V	Wiring, N3/4, Base module (N16/1).

Electrical Test Program - Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 15.0 5 17 Model 129 only	Module box blower motor (M2/2) ¹⁾ Voltage supply	N16/1 	Engine: start RPM > 1500 rpm	11 – 14 V only for approx. 1.5 seconds after reaching 1500 rpm	Wiring, ⇒14.0, ⇒2.0, Base module (N16/1).
⇒ 16.0 15	Kickdown switch (S16/6) Voltage supply	N16/1 	Engine: at Idle Engine: OFF	11 – 14 V < 1 V	⇒ 14.0, ⇒ 2.0, Wiring, Base module N16/1).
⇒ 17.0	Diagnostic output	N16/1 	Ignition: ON	10 – 14 V	Wiring, Base module (N16/1).
⇒ 18.0	Vehicle speed signal (VSS) from ABS control module (N30) or ABS/ASR control module (N30/1)	N16/1 	Ignition: ON Raise vehicle Turn right front wheel at 1 rev./second	>3 V	Wiring, ABS DM, Chassis & Drivetrain, Vol. 2, section 6.1 or 6.2 23, ASR DM, Chassis & Drivetrain, Vol. 2, section 5.1 or 5.2 23.

¹⁾ As of M.Y. 1994, M2/2 is no longer installed on model 140.

Electrical Test Program - Test

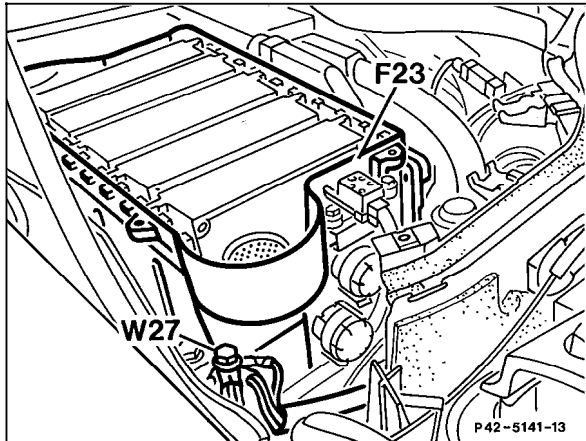


Figure 1
Model 129
W27 Ground (module box bracket)

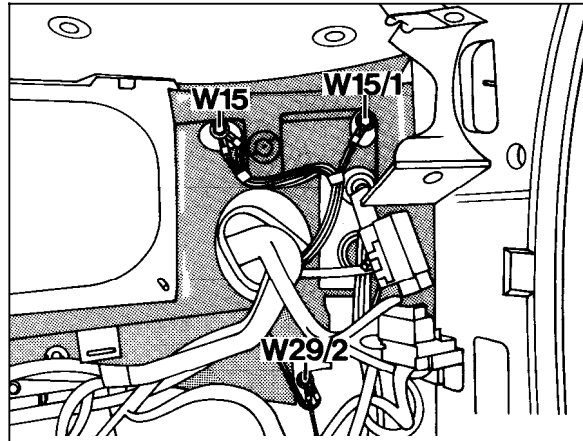


Figure 2
Model 140
W15 Ground (electronics output ground - right footwell)

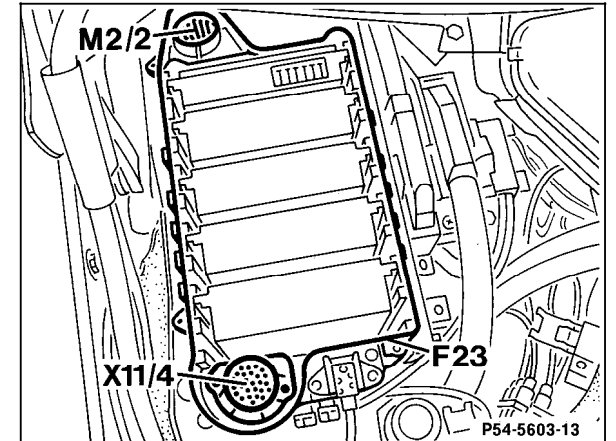
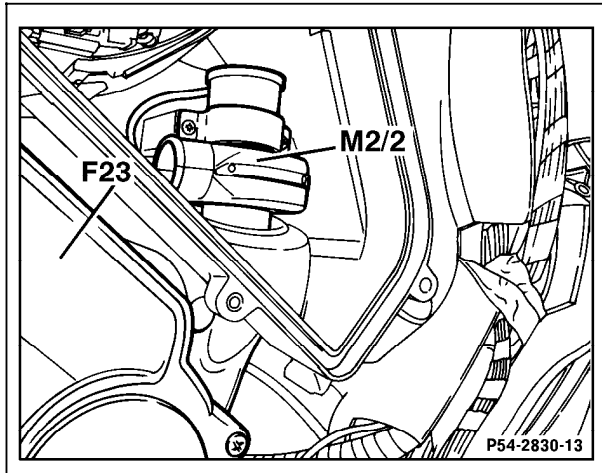


Figure 3
Model 129
M2/2 Module box blower motor

Electrical Test Program - Test



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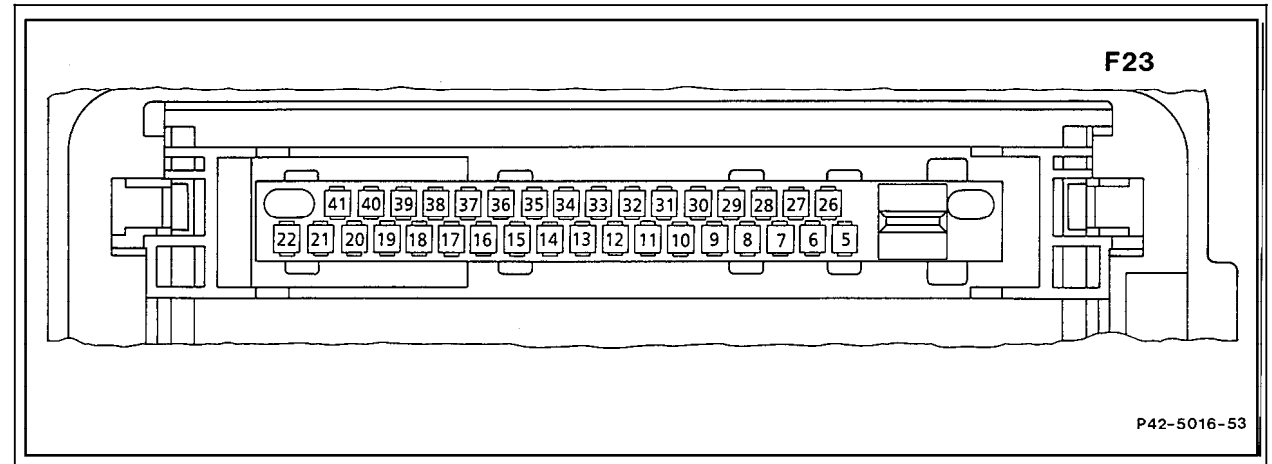
Figure 4
Model 140
M2/2 Module box blower motor

Electrical Test Program - Test

Base Module connector layout

Figure 5

- F23 Module box
- 1 Voltage supply circuit 30 (wide socket)
- 2-4 Not used
- 5 Engine control module (N3/4), EA control module (N4/1)
- 6 EA control module (N4/1)
- 7 Not used
- 8 ABS control module (N30) or ABS/ASR control module (N30/1), ASD/ASR stop lamp switch (S9/1)
- 9 Voltage supply for data link connector (X11/4)
- 10 Engine control module (N3/4)
- 11 Voltage supply circuit 15
- 12-13 Not used
- 14 Processed right front VSS from ABS (N30) or ABS/ASR (N30/1) control module
- 15 Voltage supply circuit 15
- 16-18 Not used
- 19 Module box blower motor (M2/2)
- 20 Electromagnetic clutch (A9k1)
- 21-26 Not used
- 27 ADS (N51), SPS (N49/1), Transmission, (N15/1) control modules, TR "D" contact switch (S16/9), Comfort/sport switch (S45/1)
- 28 Ground (W15 or W27)
- 29 Ground (W15 or W27)
- 30 Not used



P42-5016-53

- 31 Engine speed signal TN (input) from Engine control module (N3/4)
- 32 Idle speed increase signal for EA control module (N4/1)
- 33 Diagnosis (output)
- 34-38 Not used
- 39 A/C "ON" signal
- 40 A/C compressor speed sensor (A9I1) (-)
- 41 A/C compressor speed sensor (A9I1) (+)