

### 14.2b Model 140

#### Heated rear seats

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### Diagnosis - Function Test

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 1.0    Seat heating stage <b>I</b>	Ignition: <b>ON</b> Press front of left rear seat heater switch (S51/3) or right rear seat heater switch (S51/4) respectively.	Switch indicator lamp for stage <b>I</b> lights up. Seat cushion and backrest cushion warm up.	23⇒ 1.0, 3.0, 9.0  23⇒ 4.0, 5.0
⇒ 2.0    Seat heating stage <b>II</b>	Ignition: <b>ON</b> Press rear of left rear seat heater switch (S51/3) or right rear seat heater switch (S51/4) respectively.	Switch indicator lamp for stage <b>II</b> lights up. Seat cushion and backrest cushion warm up noticeable more than in stage <b>I</b>	23⇒ 1.0, 3.0, 9.0  23⇒ 4.0, 5.0
⇒ 3.0    Dimming of indicator lamps in stages <b>I</b> or <b>II</b>	Ignition: <b>ON</b> Rear seat heaters switched on.  Parking lamps switched on.	Switch indicator lamp for stage <b>I</b> or <b>II</b> lights up brightly.  Indicator lamps become dimmer.	23⇒ 8.0, 13.0

<sup>1)</sup> Observe Preparation for Test, see 22.

Diagnosis - Function Test

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
<p>⇒ 4.0    Seat heating switches off with ignition: <b>OFF</b> When engine is restarted, or ignition is switched on, the seat heater is switched <b>ON</b> again automatically.</p>	<p>Ignition: <b>ON</b> Left rear seat heater switch (S51/3) or right rear seat heater switch (S51/4), respectively in stage <b>I</b> or <b>II</b></p> <p>Ignition: <b>OFF</b></p> <p>Ignition: <b>ON</b></p>	<p>Seat heating: <b>ON</b></p> <p>Seat heating: <b>OFF</b></p> <p>Seat heating automatically: <b>ON</b></p>	<p>23⇒ 1.0</p>
<p>⇒ 5.0    <b>Only with 8 or 12 cylinder engines</b> Increased CTP (idle) RPM with seat heating in stage <b>II</b>.</p>	<p>Engine runs, seat heating switched on.</p> <p>Stage <b>I</b></p> <p>Stage <b>II</b></p>	<p>Idle speed increases approx. 100 RPM</p>	<p>23⇒ 11.0</p>

<sup>1)</sup> Observe Preparation for Test, see 22.

### Diagnosis - Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
Entire rear seat heater does not operate.	Rear HS control module (N25/6), voltage supply.	23 ⇒ 1.0
Left rear seat cushion and backrest heating does not operate.	Rear HS control module (N25/6), voltage supply. Left rear seat heater switch (S51/3). Left rear seat cushion heater element (R13/5) and left rear backrest heater element (R13/6).	23 ⇒ 1.0 23 ⇒ 3.0  23 ⇒ 4.0
Right rear seat cushion and backrest heating does not operate.	Rear HS control module (N25/6), voltage supply. Right rear seat heater switch (S51/4). Right rear seat cushion heater element (R13/7) and right rear backrest heater element (R13/8).	23 ⇒ 1.0 23 ⇒ 9.0  23 ⇒ 5.0
Indicator lamps in left rear seat heater switch (S51/3) or right rear seat heater switch (S51/4) not operating. Seat heater operates.	S51/3 indicator lamps. S51/4 indicator lamps.	23 ⇒ 7.0 23 ⇒ 12.0
Dimming of indicator lamps in left rear seat heater switch (S51/3) or right rear seat heater switch (S51/4) not operating.	S51/3 dimming. S51/4 dimming.	23 ⇒ 2.0, 8.0 23 ⇒ 2.0, 13.0
Illumination in left rear seat heater switch (S51/3) or right rear seat heater switch (S51/4) not operating.	S51/3 illumination. S51/4 illumination.	23 ⇒ 6.0 23 ⇒ 10.0

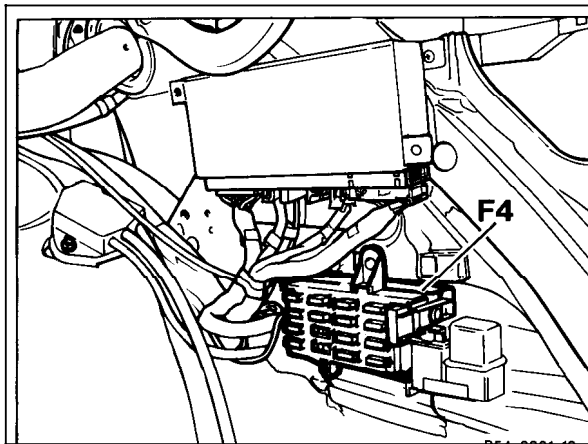
<sup>1)</sup> Observe Preparation for Test, see 22.

Diagnosis - Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
Seat heating switches off with ignition: <b>OFF</b> When ignition is turned on again, the seat heaters are <b>not</b> switched <b>ON</b> .	Rear HS control module (N25/6), voltage supply.	23 ⇒ 1.0
<b>Only with 8 or 12 cylinder engines</b> CTP (idle) RPM does not increase with seat heaters in stage <b>II</b>	Left rear seat heater switch (S51/3), Right rear seat heater switch (S51/4), CTP (idle) RPM increase with seat heater switch in stage <b>II</b> .	23 ⇒ 3.0 23 ⇒ 9.0 23 ⇒ 11.0

1) Observe Preparation for Test, see 22.

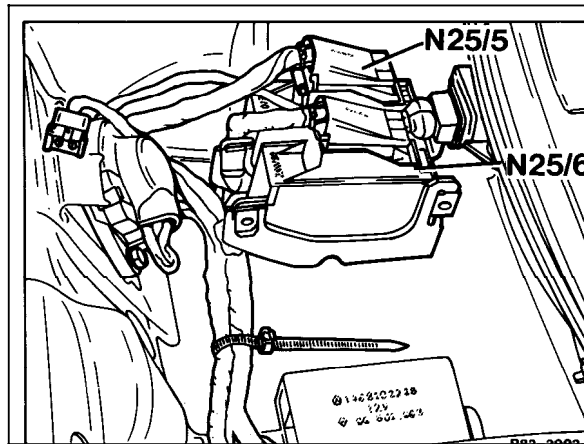
Electrical Test Program - Component Locations



P54-2801-13

Figure 1

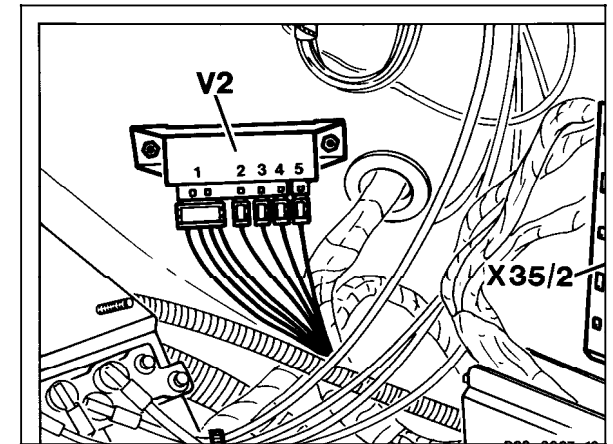
F4 Rear fuse box (17-fuse, in trunk)



P82-2992-13

Figure 2

N25/5 Front HS control module  
N25/6 Rear HS control module



P82-3067-13

Figure 3

V2 Engine speed increase diode matrix

Electrical Test Program - Component Locations

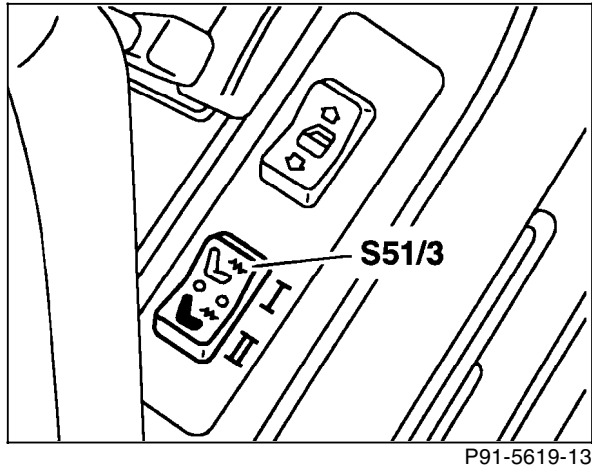


Figure 4

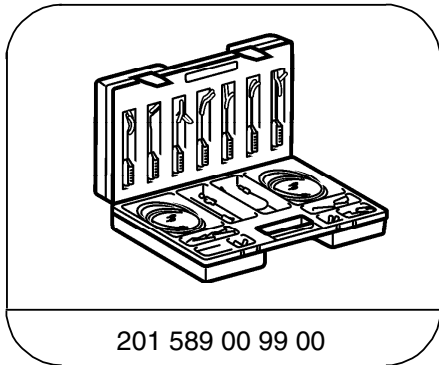
S51/3 Left rear seat heater switch

### Electrical Test Program - Preparation for Test

1. Battery voltage 11–14 V.
2. Fuses F4-2 and F4-12 okay.
3. Rear seat cushion removed.

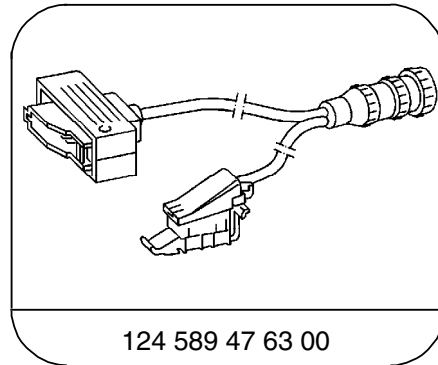
Electrical wiring diagrams :  
Electrical Troubleshooting Manual, Model 140.

### Special Tools



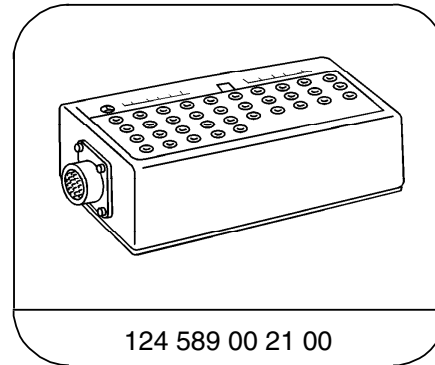
201 589 00 99 00

Electrical connecting set



124 589 47 63 00

21-pin test cable



124 589 00 21 00

35-pin socket box

### Equipment

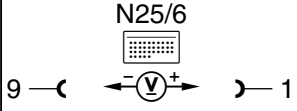
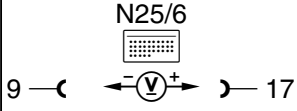
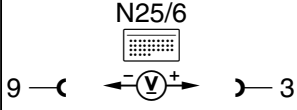
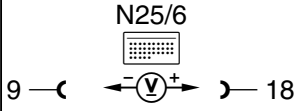
Multimeter <sup>1)</sup>

Fluke models 23, 83, 85, 87

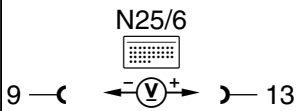

<sup>1)</sup> Available through the MBUSA Standard Equipment Program.



Electrical Test Program - Test

Test step	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 1.0	<b>Rear HS control module (N25/6)</b> Voltage supply Circuit 30  Circuit 15  Circuit 15C	  	Ignition: <b>OFF</b>  Ignition: <b>ON</b>  Ignition/starter switch in position "0" Ignition key inserted  Ignition key removed	11 – 14 V  11 – 14 V  11 – 14 V  0 – 1 V	Wiring, Combination relay module (N10/2).
⇒ 2.0	<b>Rear HS control module (N25/6)</b> Voltage supply Circuit 58d		Parking lamps turned off  Parking lamps turned on	0 – 1 V  11 – 14 V	Wiring.

Electrical Test Program - Test

Test step	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 3.0	<b>Left rear seat heater switch (S51/3)</b> Voltage supply	 <p>N25/6 9 — ◀ — (V) — ▶ — 13</p>	Ignition: <b>ON</b>  S51/3 Stage <b>II</b> held in depressed position  S51/3 Stage <b>I</b> held in depressed position	6 – 8 V  0 – 1 V  2 – 4 V	⇒ 3.1, Rear HS control module (N25/6).
⇒ 3.1	Left rear seat heater switch (S51/3) Resistance	 <p>N25/6 9 — ◀ — (Ω) — ▶ — 13</p>	Ignition: <b>OFF</b> Disconnect test cable from N25/6.  S51/3 Stage <b>II</b> held in depressed position  S51/3 Stage <b>I</b> held in depressed position	>20 kΩ  0 – 2 Ω  Approx. 165 Ω	Wiring, Left rear seat heater switch (S51/3).






Electrical Test Program - Test

Test step	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 4.0	<b>Left rear seat cushion heater element (R13/5) and left rear backrest heater element (R13/6)</b> Voltage supply	<p>N25/6</p> <p>9 —( —( ←(V)→ )— 8</p> <p>19 —( ←(V)→ )— 8</p> <p>N25/6</p> <p>9 —( ←(V)→ )— 8</p> <p>9 —( ←(V)→ )— 19</p>	Ignition: <b>ON</b>  Left rear seat heater switch (S51/3) stage <b>II</b> switched on.  S51/3 stage <b>I</b> switched on	0 – 1 V  9 – 14 V  9 – 14 V  5 – 7 V  9 – 14 V	⇒ 4.1 Rear HS control module (N25/6).
⇒ 4.1	Resistance	<p>N25/6</p> <p>19 —( ←(Ω)→ )— 8</p> <p>8 —( ←(Ω)→ )— 9</p>	Ignition: <b>OFF</b> Disconnect test cable from N25/6.	2.0 – 3.0 Ω  2.0 – 3.0 Ω	Wiring, Left rear seat cushion heater element (R13/5), Left rear backrest heater element (R13/6).

Electrical Test Program - Test

Test step	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 5.0	<b>Right rear seat cushion heater element (R13/7) and right rear backrest heater element (R13/8)</b> Voltage supply		Ignition: <b>ON</b>  Right rear seat heater switch (S51/4) stage <b>II</b> switched on.  S51/4 stage <b>I</b> switched on	0 – 1 V  9 – 14 V  9 – 14 V  5 – 7 V  9 – 14 V	⇒ 5.1 Rear HS control module (N25/6).
⇒ 5.1	Resistance		Ignition: <b>OFF</b> Disconnect test cable from N25/6.	2.0 – 3.0 Ω  2.0 – 3.0 Ω	Wiring, Right rear seat cushion heater element (R13/7), Right rear backrest heater element (R13/8).

Electrical Test Program - Test

Test step	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 6.0	<b>Left rear seat heater switch (S51/3), illumination</b> Voltage supply	S51/3 6 —  — 5	Disconnect plug on S51/3 Turn on parking lamps	11 – 14 V	Wiring,
⇒ 7.0	<b>Left rear seat heater switch (S51/3), indicator lamps</b> Voltage supply	N25/6  9 —  — 12	Ignition: <b>ON</b>	0 – 1 V	Wiring, Left rear seat heater switch (S51/3), Rear HS control module (N25/6).
			S51/3 Stage <b>I</b> turned on	8 – 13 V	
		S51/3 Stage <b>II</b> turned on	8 – 13 V		
		N25/6  9 —  — 20	S51/3 Stage <b>I</b> turned on	0 – 1 V	
S51/3 Stage <b>II</b> turned on	8 – 13 V				

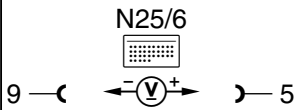
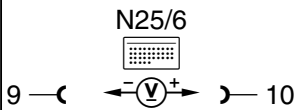
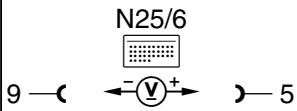
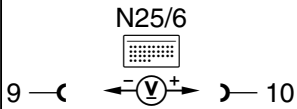
Electrical Test Program - Test

Test step	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 8.0	<b>Left rear seat heater switch (S51/3), dimming</b> Voltage supply	<p>N25/6 9 — ( ← -V+ → ) — 12 N25/6 9 — ( ← -V+ → ) — 20</p>	Ignition: <b>ON</b> S51/3 Stage <b>I</b> turned on Parking lamps turned on Parking lamps turned off S51/3 Stage <b>II</b> turned on Parking lamps turned on	0 – 1 V 8 – 13 V 2.0 – 2.8 V 8 – 13 V 2.0 – 2.8 V	Wiring, Left front seat heater switch (S51/3) Rear HS control module (N25/6).
⇒ 9.0	<b>Right rear seat heater switch (S51/4)</b> Voltage supply	<p>N25/6 9 — ( ← -V+ → ) — 11</p>	Ignition: <b>ON</b> S51/4 Stage <b>II</b> held in depressed position S51/4 Stage <b>I</b> held in depressed position	6 – 8 V 0 – 1 V 2 – 4 V	⇒ 9.1, Rear HS control module (N25/6).

Electrical Test Program - Test

Test step	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 9.1	Right rear seat heater switch (S51/4) Resistance	<p>N25/6 9 —(Ω)— 11</p>	Ignition: <b>OFF</b> Disconnect test cable from N25/6.  S51/4 Stage <b>II</b> held in depressed position  S51/4 Stage <b>I</b> held in depressed position	>20 kΩ  0 – 2 Ω  Approx. 165 Ω	Wiring, Right rear seat heater switch (S51/4).
⇒ 10.0	<b>Right rear seat heater switch (S51/4), illumination</b> Voltage supply	<p>S51/4 6 —(V)— 5</p>	Disconnect plug on S51/4  Turn on parking lamps	11 – 14 V	Wiring.
⇒ 11.0  Only 8 and 12 cylinder engines	<b>Increased CTP (idle) RPM with seat heating in stage II.</b>	<p>V2 ⊥ —(V)— 2</p>	Unplug connector on engine speed increase diode matrix (V2). Seat heater stage <b>II</b> switched on	11 – 14 V	Wiring, Rear HS control module (N25/6), ⇒ 3.0 or 9.0.  Values O.K.: See DM, Engines, Volume 3, section 6.2 or 6.3 EA, Engine Speed Increase Diode Matrix Test.

Electrical Test Program - Test

Test step	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 12.0	<b>Right rear seat heater switch (S51/4), indicator lamps</b> Voltage supply		Ignition: <b>ON</b>	0 – 1 V	Wiring, Right rear seat heater switch (S51/4), Rear HS control module (N25/6).
			S51/4 Stage <b>I</b> turned on	8 – 13 V	
		S51/4 Stage <b>II</b> turned on	8 – 13 V		
			S51/4 Stage <b>I</b> turned on	0 – 1 V	
S51/4 Stage <b>II</b> turned on	8 – 13 V				
⇒ 13.0	<b>Right rear seat heater switch (S51/4), dimming</b> Voltage supply		Ignition: <b>ON</b>	0 – 1 V	Wiring, Left front seat heater switch (S51/4) Rear HS control module (N25/6).
			S51/4 Stage <b>I</b> turned on	8 – 13 V	
		Parking lamps turned on	2.0 – 2.8 V		
			Parking lamps turned off	8 – 13 V	
S51/4 Stage <b>II</b> turned on					
Parking lamps turned on	2.0 – 2.8 V				



Electrical Test Program - Test

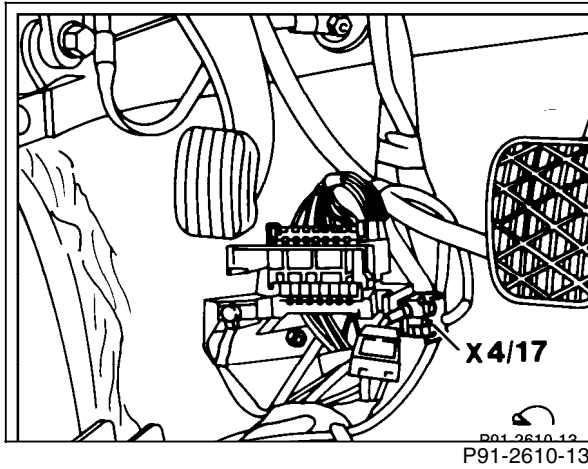


Figure 1

X4/17 Terminal block (circuit 15C)

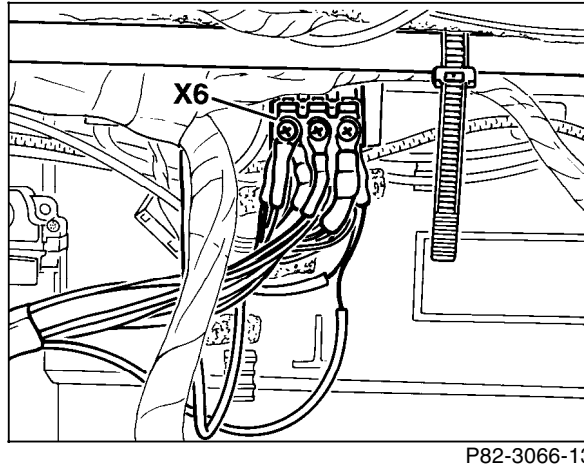


Figure 2

X6 Terminal block (circuit 58d) (3- or 4-pole)

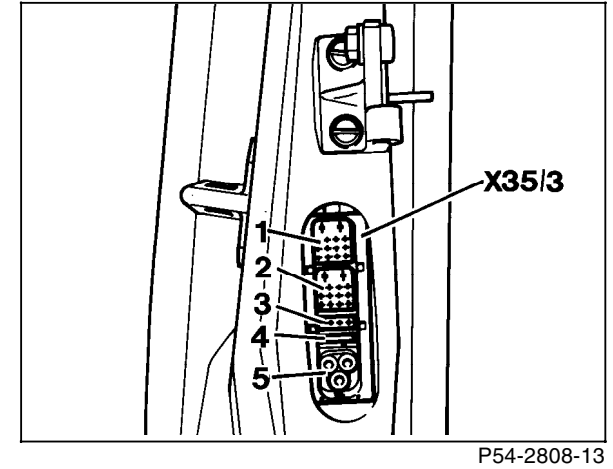


Figure 3

X35/3 (2) Left rear door separation point

Electrical Test Program - Test

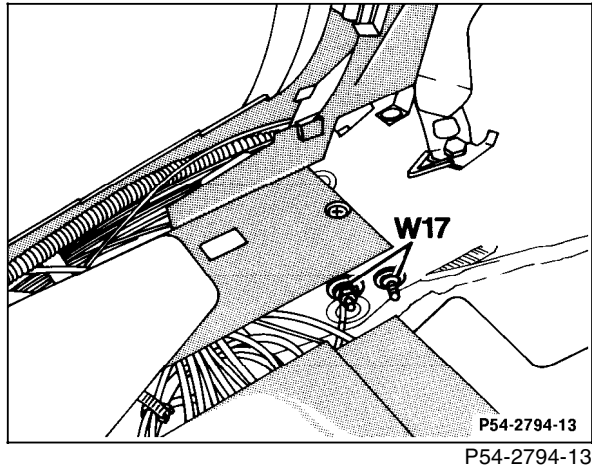


Figure 4

W17      Ground (right rear seat)