

15.3 Electric Seat Adjustment (ESA) Model 210

Page

Diagnosis

Diagnostic Trouble Code (DTC) Memory	12/1
Actual Values	13/1
Complaint Related Diagnostic Chart (Seat adjustment with memory, left or right seat)	14/1

Electrical Test Program (Seat adjustment with memory)

Component Locations	20/1
Connection of Components	21/1
Preparation for Test	22/1
Test (left or right seat)	23/1

Diagnosis – Diagnostic Trouble Code (DTC) Memory (CF)

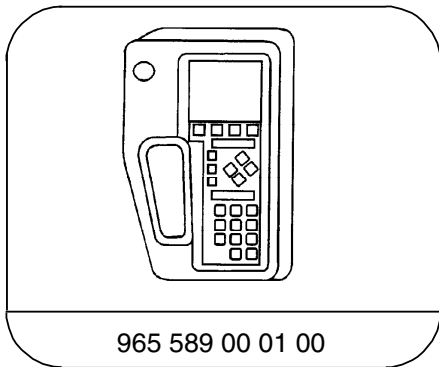
Preparation for Test:

1. Check Fuse F1–22, and F4–3 ok,
2. Check fuse F4–8, F4–9 (for left front ESA control module (N32/1).
3. Check fuse F4–13, F4–14 (for right front ESA control module (N32/2).
4. Connect the Hand-Held Tester (HHT) to X11/4, according to diagram, see section 0.



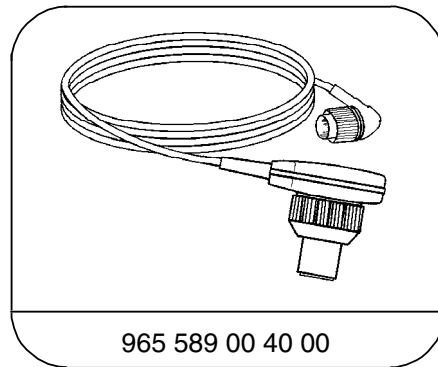
The diagnostic trouble codes (DTC's) can only be read out and erased via the Hand-Held-Tester.

Special Tools



965 589 00 01 00


Hand-Held-Tester



965 589 00 40 00


Test cable

Diagnosis – Diagnostic Trouble Code (DTC) Memory (ESA)

DTC 	Possible cause	Test step/Remedy ¹⁾
B1000	Combination control module (N10-1) defective.	–
B1001	Left/right front ESA control modules (N32/1, N32/2)	–
B1010	Low voltage, < 10 V (N10-1)	–
B1011	Excess voltage, >15.5 V (N10-1)	–
B1012	Low voltage, < 10 V (N32/1, N32/2)	–
B1015	Circuit 30C	D.M., Body and Accessories, Volume 1, 2.1, 23 ⇒ 4.0
B1017	Circuit 31B	D.M., Body and Accessories, Volume 1, 2.1, 23 ⇒ 5.0
B1022	Left front power seat does not communicate on CAN data line Left front ESA control module (N32/1)	23 ⇒ 1.0, 21.0, 22.0, 23.0, 24.0, 25.0
B1023	Right front power seat does not communicate on CAN data line Right front ESA control module (N32/2)	23 ⇒ 1.0, 21.0, 22.0, 23.0, 24.0, 25.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory (ESA)

DTC 	Possible cause	Test step/Remedy ¹⁾
B1024	Interior CAN Low	23 ⇒ 22.0, 24.0, 25.0
B1025	Interior CAN high	23 ⇒ 21.0, 23.0, 25.0
B1111	Backrest switch harness Γ1-	23 ⇒ 2.0, 12.0, 13.0
B1112	Front head restraint adjustment and height adjustment harness Γ1-	23 ⇒ 2.0, 15.0, 16.0
B1113	Rear fore/aft adjustment and height adjustment harness Γ1-	23 ⇒ 2.0, 3.0, 4.0
B1114	Steering column adjustment harness Γ1-	23 ⇒ 6.0, 7.0, 9.0, 10.0
B1200	Hall-sensor for fore/aft motor (M27m1)	23 ⇒ 5.0
B1201	Hall-sensor for front raise/lower motor (M27m3)	23 ⇒ 8.0
B1202	Hall-sensor for rear raise/lower motor (M27m2)	23 ⇒ 11.0
B1203	Hall-sensor for head restraint raise/lower motor (M27m4)	23 ⇒ 17.0
B1204	Hall-sensor for backrest fore/aft motor (M27m5)	23 ⇒ 14.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

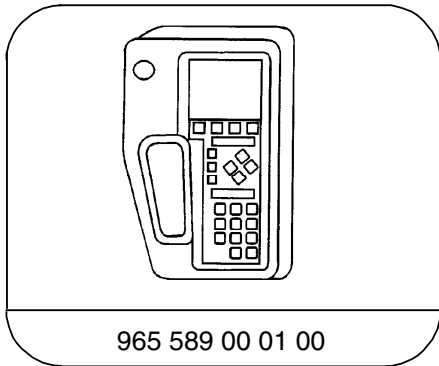
Preparation for recalling actual values:

1. Fuses F1–22 and F4–3 ok,
2. Check fuse F4–8, F4–9 (for left front ESA control module (N32/1).
3. Check fuse F4–13, F4–14 (for right front ESA control module (N32/2).
4. Connect the Hand-Held Tester (HHT) to X11/4, according to diagram, see section 0.



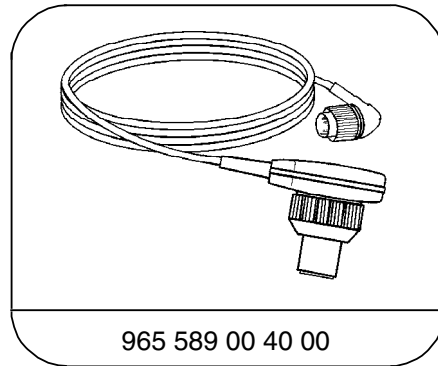
The diagnostic trouble codes (DTC's) can only be read out and erased **using the Hand-Held Tester (HHT).**

Special Tools



965 589 00 01 00


Hand-Held-Tester



965 589 00 40 00


Test cable

Diagnosis – Actual Values

Actual Value 	Possible cause	Test step/Remedy ¹⁾
01	Fore/aft switch (S91s1, S92s1)	23 ⇒ 3.0
02	Rear raise/lower switch (S91s2, S92s2)	23 ⇒ 9.0
03	Backrest fore/aft switch (S91s5, S92s5)	23 ⇒ 12.0
04	Head restraint raise/lower switch (S91s4, S92s4)	23 ⇒ 15.0
05	Memory button 1 switch (S91s6) (with memory button [S91s9]), S92s9 store memory	23 ⇒ 18.0
06	Memory button 1 switch (S91s6, S92s6) recall memory	23 ⇒ 18.0
07	Memory button 2 switch (S91s7) (with memory button [S91s9]), S92s9 store memory	23 ⇒ 18.0
08	Memory button 2 switch (S91s7, S92s7) recall memory	23 ⇒ 18.0
09	Memory button 3 switch (S91s8) (with memory button [S91s9]), S92s9 store memory	23 ⇒ 18.0
10	Memory button 3 switch (S91s8, S92s8) recall memory	23 ⇒ 18.0
11	Memory store button switch (S91s9, S92s9), pressed	23 ⇒ 18.0
12	Circuit 15R	D.M., Body and Accessories Volume 1, 2.1, 23 ⇒ 3.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Actual Values

Actual Value 	Possible cause	Test step/Remedy ¹⁾
13	Circuit 15	D.M., Body and Accessories Volume 1,2.1, 23 ⇒ 2.0
14	Left front door	D.M., Body and Accessories Volume 2, 5.2, 23 ⇒ 5.0
15	Right front door	D.M., Body and Accessories Volume 2, 5.2, 23 ⇒ 6.0
16	Hall-sensor for fore/aft motor (M27m1, M28m1)	23 ⇒ 5.0
17	Hall-sensor for rear raise/lower motor (M27m2, M28m2)	23 ⇒ 11.0
18	Hall-sensor for backrest fore/aft motor (M27m5, M28m5)	23 ⇒ 14.0
19	Hall-sensor for front raise/lower motor (M27m3, M28m3)	23 ⇒ 8.0
20	Hall-sensor for head restraint raise/lower motor (M27m4, M28m4)	23 ⇒ 17.0

1) Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Complete seat adjustment does not function.	Left or right front ESA control module (N32/1 or N32/2) (with memory) Left or right front ESA switch group (S91 or S92) (with memory)	23 ⇒ 1.0 23 ⇒ 2.0
Seat fore/aft adjustment does not function.	Fore/aft switch (S91s1 or S92s1) Fore/aft motor (M27m1 or M28m1)	23 ⇒ 3.0 23 ⇒ 4.0, 5.0
Front power seat raise/lower adjustment does not function.	Front raise/lower switch (S91s3 or S92s3) Front raise/lower motor (M27m3 or M28m3)	23 ⇒ 6.0 23 ⇒ 7.0, 8.0
Rear power seat raise/lower adjustment does not function.	Rear raise/lower switch (S91s2 or S92s2) Rear raise/lower motor (M27m2 or M28m2)	23 ⇒ 9.0 23 ⇒ 10.0, 11.0
Backrest fore/aft adjustment does not function.	Backrest fore/aft switch (S91s5 or S92s5) Backrest fore/aft motor (M27m5 or M28m5)	23 ⇒ 12.0 23 ⇒ 13.0, 14.0
Head restraint raise/lower adjustment raise/lower does not function.	Head restraint raise/lower switch (S91s4 or S92s4) Head restraint raise/lower motor (M27m4 or M28m4)	23 ⇒ 15.0 23 ⇒ 16.0, 17.0
Switch illumination does not function.	Left or right front ESA switch group (S91 or S92) (with memory) illumination	23 ⇒ 20.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Survey of Recallable Test Functions

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Convenience feature does not function or has faulty functions.	Head restraint pre-adjustment Left or right front ESA control module (N32/1 or N32/2) (with memory) Head restraint raise/lower motor (M27m4 or M28m4) Seat fore/aft motor (M27m1 or M28m1)	23 ⇒ 1.0 23 ⇒ 16.0, 17.0 23 ⇒ 4.0, 5.0
Seat position (memory) does not function.	Left or right front ESA switch group (S91 or S92) (position memory) Left or right front ESA switch group (S91 or S92) CAN L/CAN H dataline Combination control module (N10-1)	23 ⇒ 18.0, 19.0 23 ⇒ 2.0 23 ⇒ 21.0 – 25.0 D.M., Body and Accessories, Volume 1, 2.1, 23 ⇒ 2.0, 3.0
Seat adjustment does not function with left or right front door open and without ignition key: ON	Left or right front door switches (S17/3, S17/4) CAN L/CAN H dataline Combination control module (N10-1) PSE controlmodule (A37) (combined functions)	D.M., Body and Accessories, Volume 1, 3.3, 23 ⇒ 2.0, 3.0 23 ⇒ 21.0 – 25.0
Left front power seat fore/aft adjustment, rear power seat raise/lower and fore/aft adjustment operate opposite of normal function.	Programming of left or right front ESA control module (N32/1 or N32/2) Programming of combination control module (N10-1) Steering column in/out switch (S91s12)	Seat adjustment motor supplier “Brose“, “Hammerstein“ programmed in error into N32/1. Left hand driver/right hand drive programmed in error. D.M., Body and Accessories, Volume 3, 12.4b, 23 ⇒ 17.0

¹⁾ Observe Preparation for Test, see 22.

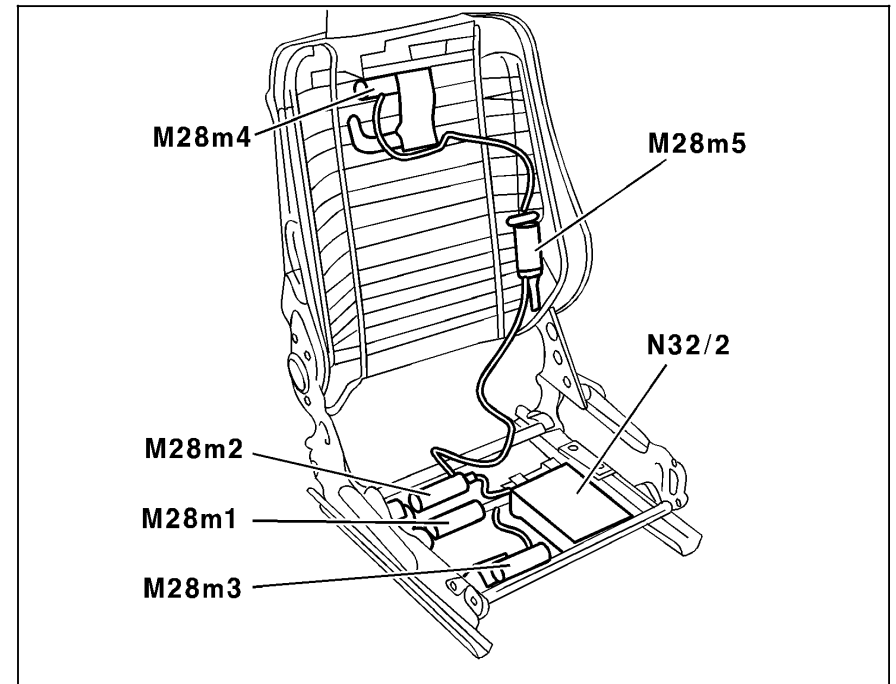
Electrical Test Program – Component Locations (Seat Adjustment with Memory)

Figure 1

- N32/2 Right front ESA control module
- M28 Right front ESA motor group (with memory)
- M28m1 Fore/aft motor
- M28m2 Rear raise/lower motor
- M28m3 Front raise/lower motor
- M28m4 Head restraint raise/lower motor
- M28m5 Backrest fore/aft motor

(No illustration, left seat adjustment layout analogue to right seat adjustment)

- N32/1 Left front ESA control module
- M27 Left front ESA motor group (with memory)
- M27m1 Fore/aft motor
- M27m2 Rear raise/lower motor
- M27m3 Front raise/lower motor
- M27m4 Head restraint raise/lower motor
- M27m5 Backrest fore/aft motor

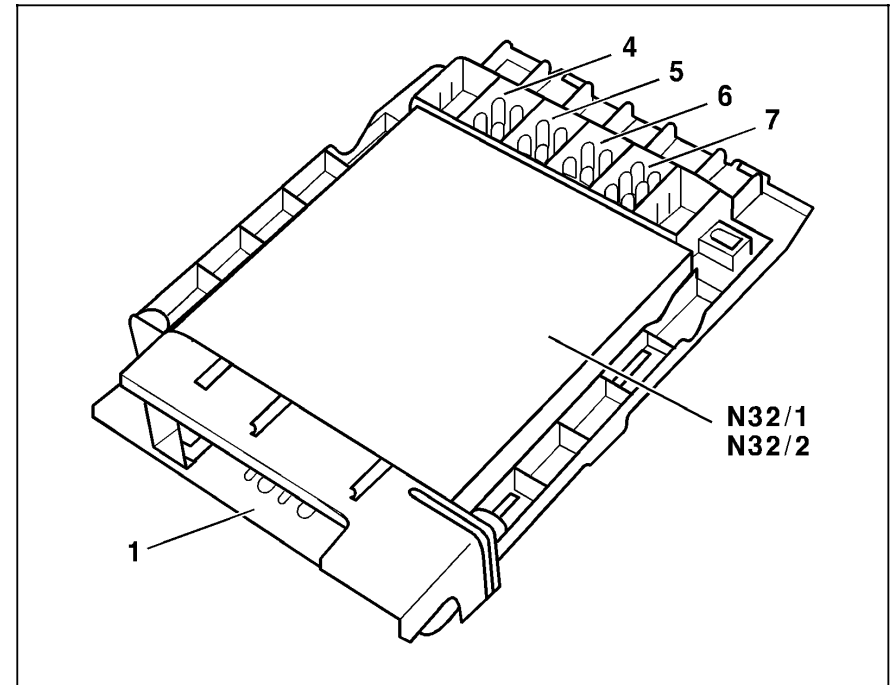


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Electrical Test Program – Component Locations (Seat Adjustment with Memory)

Figure 2

- N32/1 Left front ESA control module
- N32/2 Right front ESA control module
- 1 Connector 1, activation of left/right ESA switch group (S91, S92) (with memory)
- 4 Connector 4, activation of rear raise/lower motor
- 5 Connector 5, activation of fore/aft motor
- 6 connector 6, activation of front raise/lower motor
- 7 Connector 7, activation of headrest raise/lower motor, backrest fore/aft motor

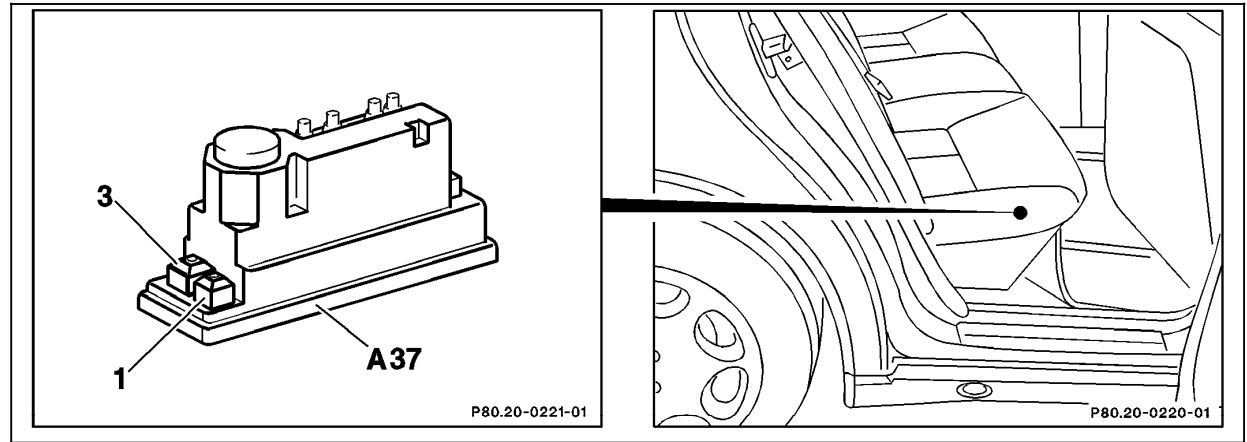


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Electrical Test Program – Components Location (Seat Adjustment with Memory)

Figure 3

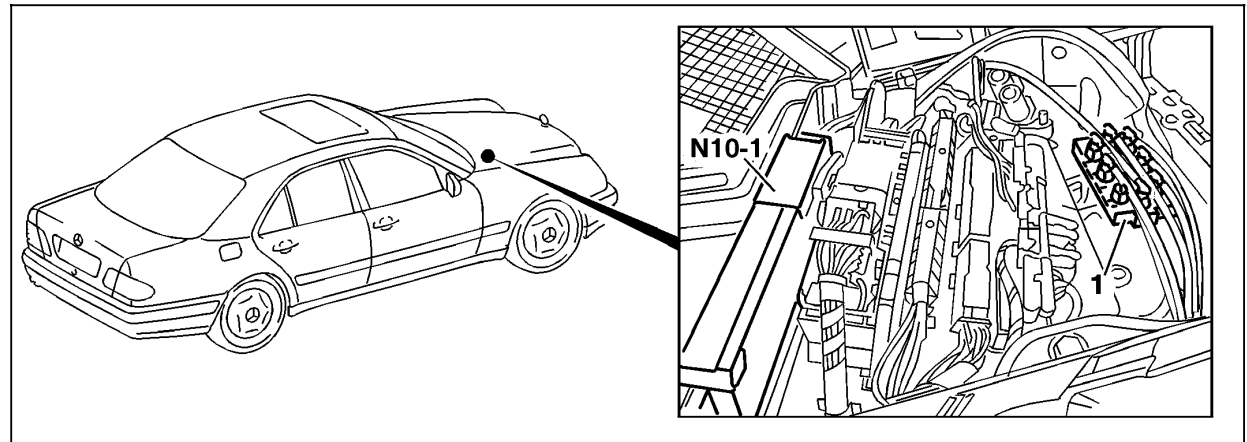
- A37 PSE control module, combined functions
- 1 Connector 1
- 3 Connector 3



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Figure 4

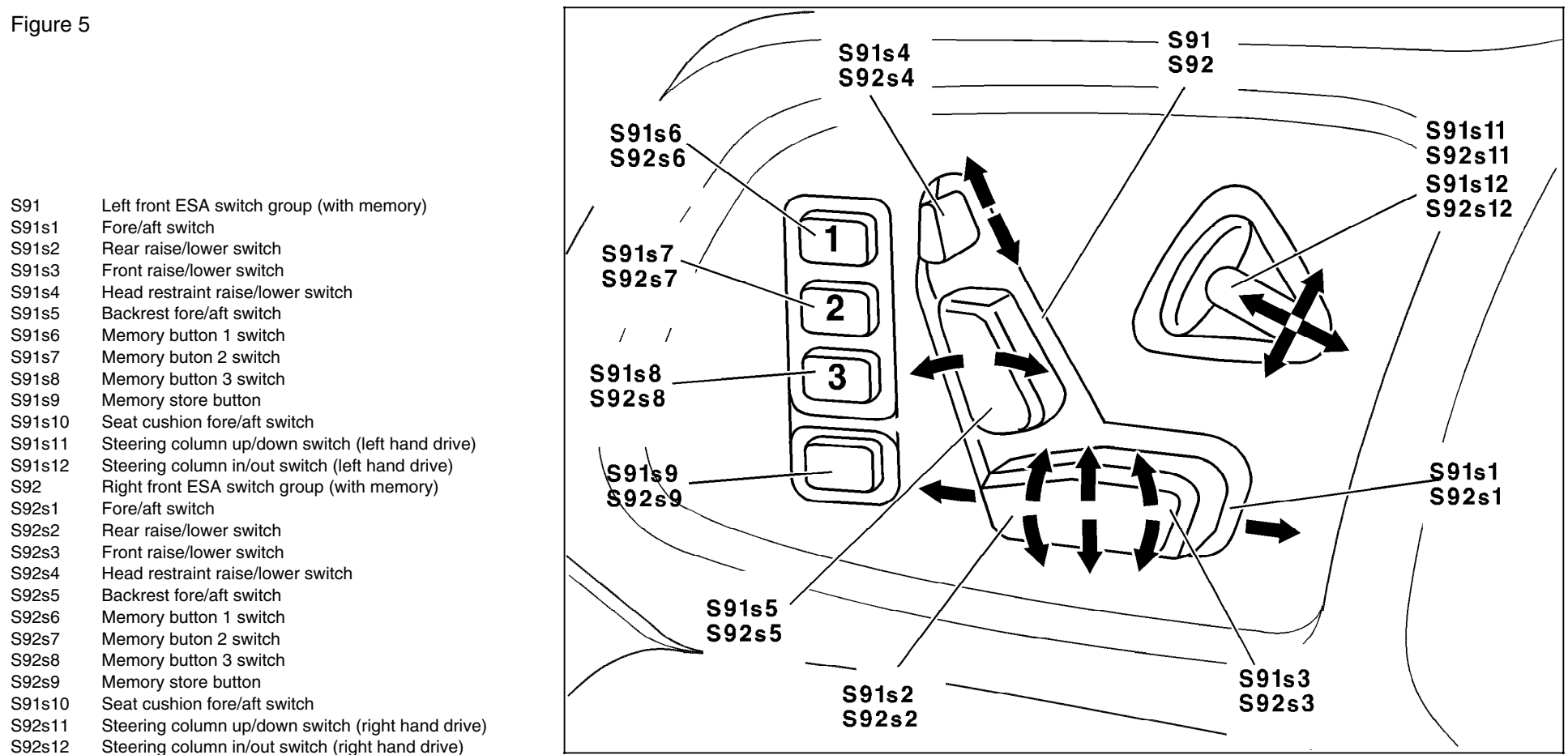
- N10-1 Combination control module



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Electrical Test Program – Component Locations (Seat Adjustment with Memory)

Figure 5



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Electrical Test Program – Connection of Components

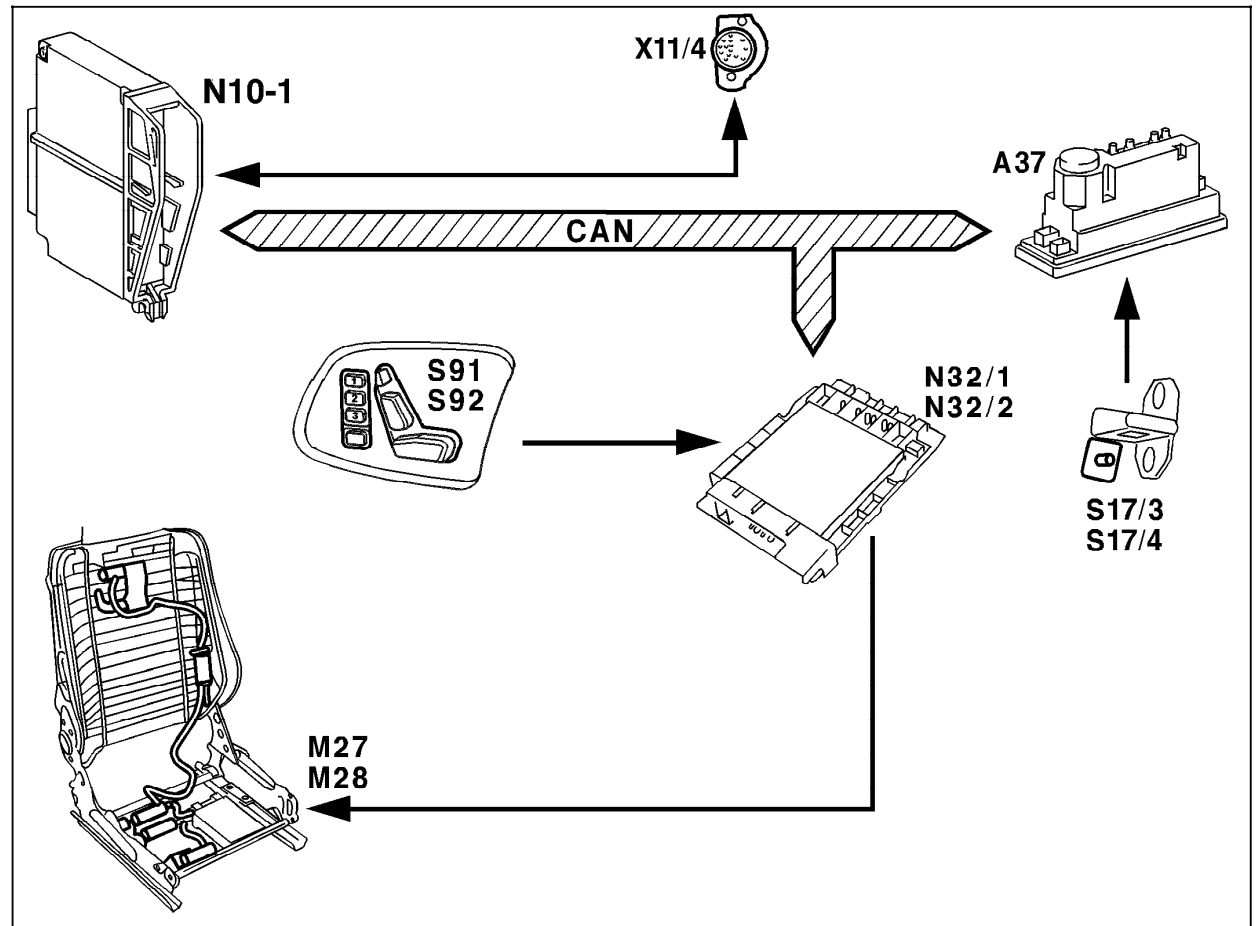


Figure 1

- A34 PSE control module, combined functions
- CAN Control-Area-Network
- M27 Left front ESA motor group (with memory)
- M28 Right front ESA motor group (with memory)
- N10-1 Combination control module
- N32/1 Left front ESA control module (with memory)
- N32/2 Right front ESA control module (with memory)
- S17/3 Left front door switch
- S17/4 Right front door switch
- S91 Left front ESA switch group (with memory)
- S92 Right front ESA switch group (with memory)
- X11/4 Data link connector (DTC readout)

U91.29-0208-06

Electrical Test Program – Preparation for Test (Seat Adjustment with Memory)

Preliminary work:

Diagnosis - Diagnostic Trouble Code (DTC) Memory 12

Preparation for Test:

1. Check fuses F1–13, F1–14, F1–22, F4–3, F4–8, F4–9, F4–13, F4–14 OK.
2. Check fuse F4–8, F4–9 for left front ESA control module (N32/1) OK.
3. Check fuse F4–13, F4–14 for right front ESA control module (N32/2) OK.
4. Battery voltage 11 – 14 V,
5. Connect Hand-Held Tester (HHT) to 38-pole data link connector (X11/4) according to connection diagram shown in section 0.
6. Prior to each connection or disconnection of connectors at the combination control module (N10-1), the battery ground cable must be disconnected (fault codes will be erroneously stored in DTC memory).

Electrical wiring diagrams:

Electrical Troubleshooting Manual, Model 210, Volume 2, group 91



The diagnostic trouble codes (DTC's) can only be read out and erased using the **Hand-Held Tester (HHT)**.

Head restraint Initial adjustment

Prerequisite for the proper operation of the head restraint is that the head restraint be operated once to its lower adjustment stop and once to its upper adjustment stop.

Left front power seat and front passenger seat memory

The left/right front ESA control modules contain a memory for both the left front power seat and front passenger seat.

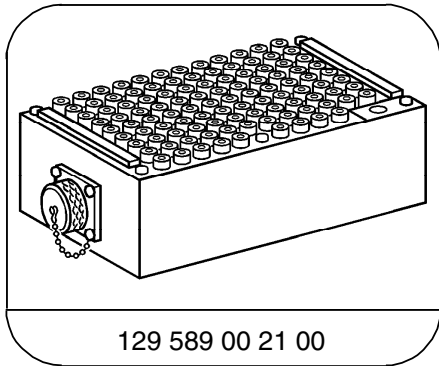
Components

The left/right front ESA control modules (N32/1, N32/2), as well as the various motors of the left/right ESA motor group (M27, M28) are of like design and can be interchanged with each other.

When changing a left/right front ESA control module (N32/1, N32/2), the seat adjustment motor supplier (Brose/Hammerstein) must be programmed into the ESA control module.

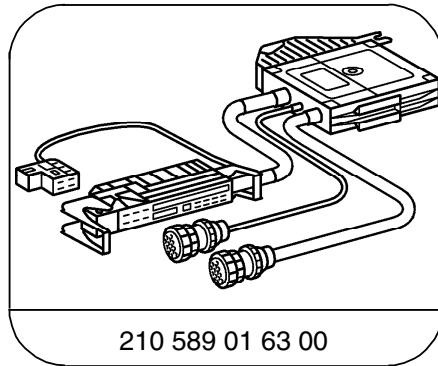
Electrical Test Program – Preparation for Test (Seat Adjustment with Memory)

Special Tools



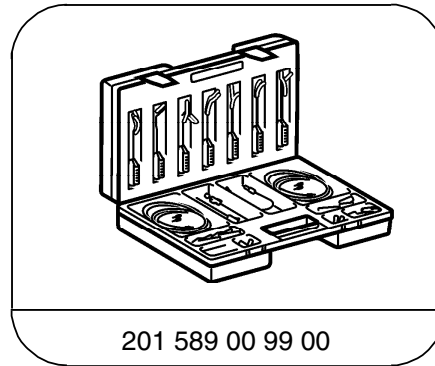
129 589 00 21 00

126-pin socket box



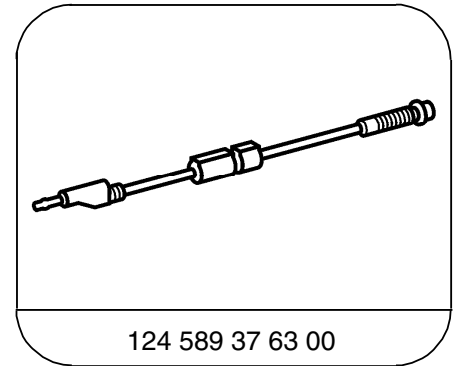
210 589 01 63 00

78-pin test cable



201 589 00 99 00

Electrical connecting set



124 589 37 63 00

Fused cable

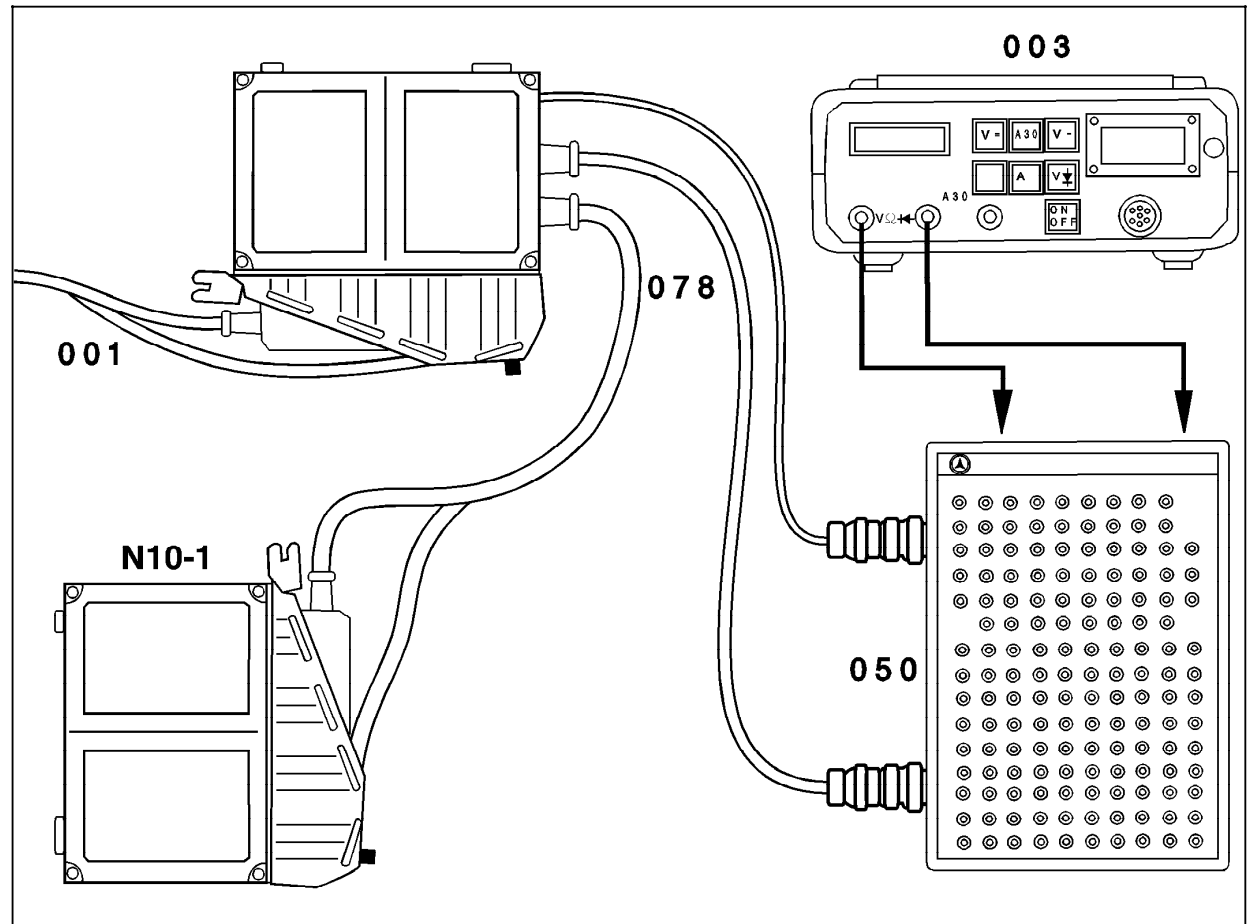
Conventional tools, test equipment

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 (Seat Adjustment with Memory)


Connection Diagram - Socket Box





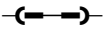
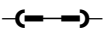

- 001 Vehicle harness
- 003 Multimeter
- 050 Socket box (126-pole)
- 078 Test cable 210 589 01 63 00
- N10-1 Combination control module

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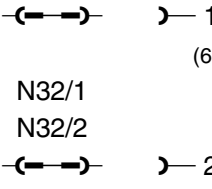

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	B1022 B1023	Left or right front ESA control module (N32/1 or N32/2) with memory Voltage supply	<p>N32/1 N32/2</p> <p>11 —(—(←(V)→)— 2 (1) (1)</p>	Disconnect connector (1) from N32/1 or N32/2.	11 – 14 V	Wiring.
1.1		Left or right front ESA control module (N32/1 or N32/2) with memory Voltage supply	<p>N32/1 N32/2</p> <p>11 —(—(←(V)→)— 3 (1) (1)</p>	see step 1.0	11 – 14 V	Wiring.
2.0	B1111 B1112 B1113	Left or right front switch group (S91 or S92) with memory Voltage supply	<p>S91 S92</p> <p>1 —(—(←(V)→)— 8</p>	Disconnect connector from S91 or S92. Parking lamps: ON	11 – 14 V	Wiring, ⇒ 20.0
3.0	B1113	Fore/aft switch group (S91s1 or S92s1) with memory Resistance	<p>N32/1 N32/2</p> <p>12 —(—(←(Ω)→)— 5 (1)</p>	Disconnect connector (1) from N32/1 or N32/2. S91s1 or S92s1: Press forward S91s1 or S92s2: Press aft	>20 kΩ approx. 43 Ω approx. 16 Ω	Wiring, S91 or S92








Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	B1113	Left or right front ESA control module (N32/1 or N32/2) with memory Seat fore/aft	<p>N32/1 N32/2</p> <p>1 —  — 2 (5) (5)</p>	Fore/aft switch (S91s1 or S92s1): Press forward S91s1 or S92s1: Press aft	(for 1 – 2 sec.) 11 – 14 V – 11 to – 14 V	⇒ 3.0, N32/1 or N32/2
5.0	B1200	Fore/aft motor (M27m1 or M28m1)	<p>N32/1 N32/2</p> <p>2 —  — 1 (1) (5)</p> <p>N32/1 N32/2</p> <p>11 —  — 2 (1) (5)</p>	Ignition: OFF ⚠ CAUTION! Disconnect connector (1 and 5) from N32/1 or N32/2. Bridge sockets 1 and 2 with fused jumper wire 124 589 37 63 00	Motor runs.	If nominal values attained, ⇒ 5.1 Wiring, M27m1 or M28m1
5.1		Fore/aft motor (M27m1 or M28m1) Hall-sensor	<p>N32/1 N32/2</p> <p>5 —  — 6 (5) (5)</p>	Connector 5 and 1 connected.	7 – 12 V	Wiring, M27m1 or M28m1



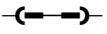
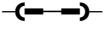

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0	B1114	Front raise/lower switch (S91s3) Resistance	<p>N32/1 N32/2</p> 	<p>Disconnect connector (1) from N32/1 or N32/2.</p> <p>S91s3 or S92s3: Press raise</p> <p>S91s3 or S92s3: Press lower</p>	<p>>20 kΩ</p> <p>approx. 43 Ω</p> <p>approx. 16 Ω</p>	<p>Wiring, S91 or S92</p>
7.0	B1114	Left or right front ESA control module (N32/1 or N32/2) with memory Front seat raise/lower	<p>N32/1 N32/2</p> 	<p>Front raise/lower switch (S91s3 or S92s3): Press raise</p> <p>S91s3 or S92s3: Press lower</p>	<p>(for 1 – 2 sec.) 11 – 14 V</p> <p>– 11 to – 14 V</p>	<p>⇒ 6.0, N32/1 or N32/2</p>
8.0	B1201	Front raise/lower motor (M27m3 or M28m3)	<p>N32/1 N32/2</p> 	<p>Ignition: OFF</p> <p> CAUTION!</p> <p>Disconnect connector (1 and 6) from N32/1 or N32/2.</p> <p>Bridge sockets 1 and 2 with fused jumper wire 124 589 37 63 00</p>	<p>Motor runs.</p>	<p>If nominal values attained: ⇒ 8.1</p> <p>Wiring, M27m3 or M28m3</p>


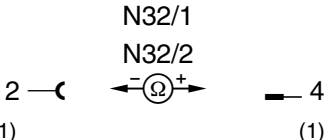
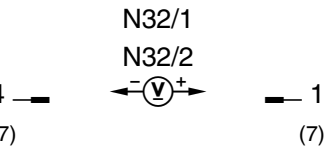
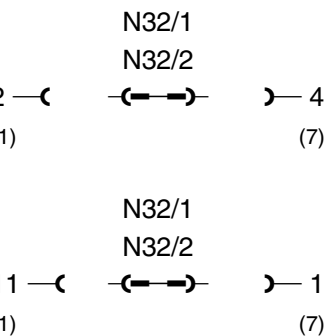

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.1		Front raise/lower motor (M27m3 or M28m3) Hall-sensor	<p>N32/1 N32/2</p> <p>5 —  —  — 6</p> <p>(6) (6)</p>	Connector 1 and 6 connected.	7 – 12 V	M27m3 or M28m3.
9.0	B1114	Rear raise/lower switch (S91s2 or S92s2) Resistance	<p>N32/1 N32/2</p> <p>12 —  —  — 5</p> <p>(1) (1)</p>	Disconnect connector (1) from N32/1 or N32/2. S91s2 or S92s2: Press raise S91s2 or S92s2: Press lower	>20 kΩ approx. 169 Ω approx. 75 Ω	Wiring, Left or right front ESA switch group (S91 or S92).
10.0	B1114	Left or right front ESA control module (N32/1 or N32/2) with memory	<p>N32/1 N32/2</p> <p>2 —  —  — 1</p> <p>(4) (4)</p>	Rear raise/lower switch (S91s2 or S92s2): Press raise S91s2 or S92s2: Press lower	(for 1 – 2 sec.) 11 – 14 V – 11 to – 14 V	⇒ 9.0, N32/1 or N32/2












Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.0	B1111	Left or right front ESA control module (N32/1 or N32/2) with memory Backrest fore/aft	<p>N32/1 N32/2</p> <p>2 —  — 4 (7) (7)</p>	<p>Backrest fore/aft switch S91s5 or S92s5: Press forward</p> <p>S91s5 or S92s5: Press aft</p>	<p>(for 1 – 2 sec.) 11 – 14 V</p> <p>– 11 to – 14 V</p>	<p>Wiring, ⇒ 12.0, N32/1 or N32/2</p>
14.0	B1204	Backrest raise/lower motor (M27m5 or M28m5)	<p>N32/1 N32/2</p> <p>2 —  — 4 (1) (7)</p> <p>N32/1 N32/2</p> <p>11 —  — 2 (1) (7)</p>	<p>Ignition: OFF ⚠ CAUTION!</p> <p>Disconnect connector (1 and 7) from N32/1 or N32/2 and connector (1) from M27m5 or M28m5. Bridge sockets 1 and 2 with fused jumper wire 124 589 37 63 00</p>	<p>Motor runs.</p>	<p>If nominal values are attained, ⇒ 14.1</p> <p>Wiring, M27m5 or M28m5</p>
14.1		Backrest raise/lower motor (M27m5 or M28m5) Hall-sensor	<p>N32/1 N32/2</p> <p>5 —  — 4 (7) (7)</p>	<p>Connectors 1 and 7 connected.</p>	<p>7 – 12 V</p>	<p>M27m5 or M28m5</p>



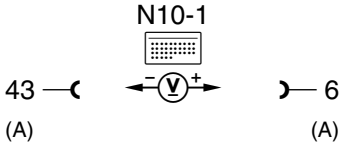
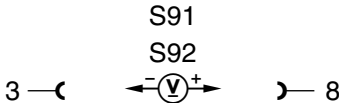
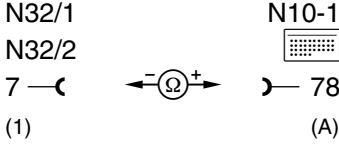
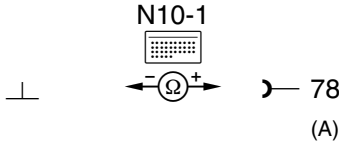
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
15.0	B1112	Head restraint raise /lower switch (S91s4 or S92s4) Resistance	 N32/1 N32/2 12 — (1) — Ω — 4 (1)	Disconnect connector (1) from N32/1 or N32/2. S91s4 or S92s4: Press raise S91s4 or S92s4: Press lower	>20 kΩ approx. 169 Ω approx. 75 Ω	Wiring, S91 or S92
16.0	B1112	Left or right front ESA control module (N32/1 or N32/2) with memory Head restraint raise/lower	 N32/1 N32/2 4 — (7) — V — 1 (7)	Head restraint raise/lower switch (S91s4 or S92s4): Press raise S91s4 or S92s4 Press lower	– 11 to – 14 V 11 – 14 V	⇒ 15.0, N32/1 or N32/2
17.0	B1203	Head restraint raise/lower motor (M27m4 or M28m4)	 N32/1 N32/2 2 — (1) — 4 (7) N32/1 N32/2 11 — (1) — 1 (7)	Ignition: OFF  CAUTION! Disconnect connector (1 and 7) from N32/1 or N32/2. Bridge sockets 2 and 4 with fused jumper wire 124 589 37 63 00	Motor runs.	If nominal values are attained, ⇒ 17.1 Wiring, M27m4 or M28m4


Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
17.1		Head restraint raise/lower motor (M27m4 or M28m4) Hall-sensor	<p>M27m4 M28m4</p> <p>5 —  —  — 3 (7) (7)</p>	Connectors 1 and 7 connected.	7 – 12 V	Wiring, M27m4 or M28m4
18.0		Left or right front switch group (S91 or S92) with memory Store memory Resistance	<p>N32/1 N32/2</p> <p>5 —  —  — 12 (1) (1)</p>	Disconnect connector (1) from N32/1 or N32/2.	<p>Memory button 1: Rest position >20 kΩ Button pressed approx. 330 Ω</p> <p>Memory button 2: Rest position >20 kΩ Button pressed approx. 330 Ω</p> <p>Memory button 3: Rest position >20 kΩ Button pressed approx. 169 Ω</p> <p>Memory store button Rest position >20 kΩ Button pressed approx. 330 Ω</p>	Wiring, S91 or S92
			<p>N32/1 N32/2</p> <p>4 —  —  — 12 (1) (1)</p>	Memory button 2: Rest position Button pressed		
			<p>N32/1 N32/2</p> <p>1 —  —  — 12 (1) (1)</p>	Memory button 3: Rest position Button pressed		
			<p>N32/1 N32/2</p> <p>1 —  —  — 12 (1) (1)</p>	Memory store button Rest position Button pressed		


Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
19.0		Left front power seat memory		Ignition: OFF	11 – 14 V	Wiring, ⇒ 21.0, 22.0, Combination control module (N10-1).
20.0		Left or right front switch group (S91 or S92) with memory Illumination		Disconnect connector from S91 or S92. Parking lamps: ON	11 – 14 V	Wiring, S91 or S92
21.0		CAN H data line from left or right front ESA control module (N32/1 or N32/2) with memory to combination control module (N10-1) -//-		Ignition: OFF ⚠ CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connector (1) from PSE (A37).	< 1 Ω	Wiring, ⇒ 21.1
21.1		CAN H data line from left or right front ESA control module (N32/1 or N32/2) with memory to combination control module (N10-1) ΓΓ-		Ignition: OFF ⚠ CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connector (1) from PSE (A37).	< 20 K Ω	Wiring, ⇒ 21.2



Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
21.2		CAN H data line from left or right front ESA control module (N32/1 or N32/2) with memory to combination control module (N10-1) Γ1+		Ignition: OFF ⚠ CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connector (1) from PSE (A37).	< 1 V	Wiring, ⇒ 22.3
22.0		CAN L data line from left or right front ESA control module (N32/1 or N32/2) with memory to combination control module (N10-1) -//-		Ignition: OFF ⚠ CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connectors (1 and 3) from PSE (A37).	< 1 Ω	Wiring, ⇒ 22.1
22.1	B1022 B1023 B1024	CAN L data line from left or right front ESA control module (N32/1 or N32/2) with memory to combination control module (N10-1) Γ1-		Ignition: OFF ⚠ CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connectors (1 and 3) from PSE (A37).	< 20 k Ω	Wiring, ⇒ 22.2

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
22.2	B1022 B1023 B1024	CAN L data line from left or right front ESA control module (N32/1 or N32/2) with memory to combination control module (N10-1) Γ1+		Ignition: OFF ⚠ CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connector (1 and 3) from PSE (A37).	< 1 V	Wiring, ⇒ 25.0
23.0	B1022 B1023 B1025	CAN H data line from right front ESA control module (N32/2) with memory to left front ESA control module (N32/1) with memory -//-		Ignition: OFF ⚠ CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connectors (1 and 3) from PSE (A37).	< 1 Ω	Wiring, ⇒ 24.0
24.0	B1022 B1023 B1024	CAN L data line from right front ESA control module (N32/2) with memory to left front ESA control module (N32/1) -//-		Ignition: OFF ⚠ CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connectors (1 and 3) from PSE (A37).	< 1 Ω	Wiring, ⇒ 25.0

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
25.0	B1022 B1023 B1024 B1025	CAN L /CAN H data lines 1 to each other	N32/1 N32/2 6 — ◀ — Ω — ▶ — 7	Ignition: OFF  CAUTION! Disconnect connector 1 from N32/1 or N32/2, connector (A) from N10-1 and connectors (1 and 3) from PSE (A37).	>20 kΩ	Wiring, D.M., Body and Accessories, Volume 1, 5.2, 23 ⇒ 10.0