

15.5 Electric Seat Adjustment (ESA) Model 163

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Diagnosis – Function Test

CAUTION!

Injury hazard from pinching and crushing, in extreme cases extremities can even be severed when caught in the mechanism.

CAUTION!

When working on components activated via hand, electrically via motors, hydraulically, pneumatically via linkages, it is possible that severe injury can result in the severing, pinching, or crushing of body parts.

Do not allow any body parts to be in the general area of the moving components.

Protective measures:

- Supervise work.
- Do not reach into the moving mechanism at any time during any tests.
- Keep away from the moving mechanism of components which are being activated via the HHT and or directly via circuit 30.
- Ensure that all test cables are of sufficient length.

Preparation for Test:

1. Fuses ok.
2. Battery voltage 11 to 14 V
3. Convenience Feature is functional.

Electrical wiring diagrams:

Electrical Troubleshooting Manual, Model 163,
(available in Work Shop Information System [WIS] only)

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy ¹⁾
⇒ 1.0 Left front power seat Forward/Backward	Press seat fore/aft switch (S22s3) forward:	Seat moves forward.	23 ⇒2.0, 23 ⇒3.0, 23 ⇒4.0
	Press seat fore/aft switch (S22s3) backward:	Seat moves backward.	

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Function Test

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy ¹⁾
⇒ 2.0 Left front power seat Raise/lower rear seat height	Press seat height, rear switch (S22s4) upward: Push seat height, rear switch (S22s4) downward:	Seat back height raises up. Seat back height lowers.	23 ⇒5.0, 23 ⇒6.0, 23 ⇒7.0
⇒ 3.0 Left front power seat Raise/lower front seat height	Press seat height, front switch (S22s2) upward: Press seat height, front switch (S22s2) down:	Seat height, front raises up. Seat height, front lowers.	23 ⇒8.0, 23 ⇒9.0, 23 ⇒10.0
⇒ 4.0 Left front power seat Seat backrest tilt	Press backrest switch (S22s5) backward: Press backrest switch (S22s5) forward:	Seat backrest tilts to rear. Seat backrest tilts forward.	23 ⇒11.0, 23 ⇒12.0, 23 ⇒13.0
⇒ 5.0 Right front power seat Forward/Backward	Press seat fore/aft switch (S23s3) forward: Press seat fore/aft switch (S23s3) backward:	Seat moves forward. Seat moves backward.	23 ⇒15.0, 23 ⇒16.0, 23 ⇒17.0
⇒ 6.0 Right front power seat Raise/lower rear seat height	Press seat height, rear switch (S23s4) upward: Push seat height, rear switch (S23s4) downward:	Seat back height raises up. Seat back height lowers.	23 ⇒18.0, 23 ⇒19.0, 23 ⇒20.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Function Test

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy ¹⁾
⇒ 7.0 Right front power seat Raise/lower front seat height	Press seat height, front switch (S23s2) upward: Press seat height, front switch (S23s2) down:	Seat height, front raises up. seat height, front lowers.	23 ⇒21.0, 23 ⇒22.0, 23 ⇒23.0
⇒ 8.0 Right front power seat Seat backrest tilt	Press backrest switch (S23s5) backward: Press backrest switch (S23s5) forward:	Seat backrest tilts to rear. Seat backrest tilts forward.	23 ⇒24.0, 23 ⇒25.0, 23 ⇒26.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Entire left/right front power seat adjustment does not function.	Wiring.	Check wiring as necessary, see wiring diagram.
Entire left front power seat adjustment does not function.	Wiring, Left front ESA switch (S22)	23 ⇒ 1.0
Entire right front power right seat adjustment does not function.	Wiring, Right front ESA switch (S23)	23 ⇒ 14.0
Left front power seat fore/aft adjustment does not function.	Seat fore/aft switch (S22s3) Fore/aft motor (M25m1)	23 ⇒ 2.0, 23 ⇒ 3.0, 23 ⇒ 4.0
Left front power seat rear height adjustment does not function.	Seat height, rear switch (S22s4) Fore/aft motor (M25m2)	23 ⇒ 5.0, 23 ⇒ 6.0, 23 ⇒ 7.0
Left front power seat front height adjustment does not function.	Seat height, front switch (S22s2) Front raise/lower motor (M25m3)	23 ⇒ 8.0, 23 ⇒ 9.0, 23 ⇒ 10.0
Left front power seat backrest adjustment does not function.	Backrest switch (S22s5) Backrest fore/aft motor (M25m5)	23 ⇒ 11.0, 23 ⇒ 12.0, 23 ⇒ 13.0
Right front power seat fore/aft adjustment does not function.	Seat fore/aft switch (S23s3) Fore/aft motor (M26m1)	23 ⇒ 15.0, 23 ⇒ 16.0, 23 ⇒ 17.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Right front power seat rear height adjustment does not function.	Seat height, rear switch (S23s4) Fore/aft motor (M26m2)	23 ⇒ 18.0, 23 ⇒ 19.0, 23 ⇒ 20.0
Right front power seat front height adjustment does not function.	Seat height, front switch (S23s2) Front raise/lower motor (M25m3)	23 ⇒ 21.0, 23 ⇒ 22.0, 23 ⇒ 23.0
Right front power seat backrest adjustment does not function.	Backrest switch (S23s5) Backrest fore/aft motor (M25m5)	23 ⇒ 24.0, 23 ⇒ 25.0, 23 ⇒ 26.0

¹⁾ Observe Preparation for Test, see 22.

Electrical Test Program – Preparation for Test

CAUTION!

Injury hazard from pinching and crushing, in extreme cases extremities can even be severed when caught in the mechanism.

CAUTION!

When working on components activated via hand, electrically via motors, hydraulically, pneumatically via linkages, it is possible that severe injury can result in the severing, pinching, or crushing of body parts.

Do not allow any body parts to be in the general area of the moving components.

Protective measures:

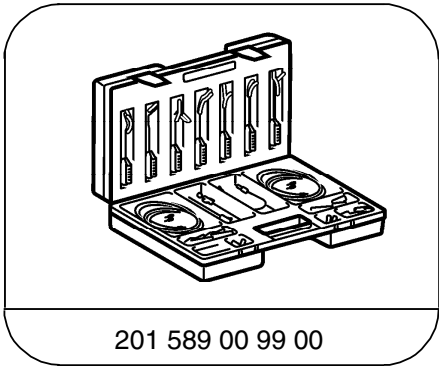
- Supervise work.
- Do not reach into the moving mechanism at any time during any tests.
- Keep away from the moving mechanism of components which are being activated via the HHT and or directly via circuit 30.
- Ensure that all test cables are of sufficient length.

Electrical wiring diagrams:

Electrical Troubleshooting Manual, Model 163,
(available in Work Shop Information System [WIS] only)

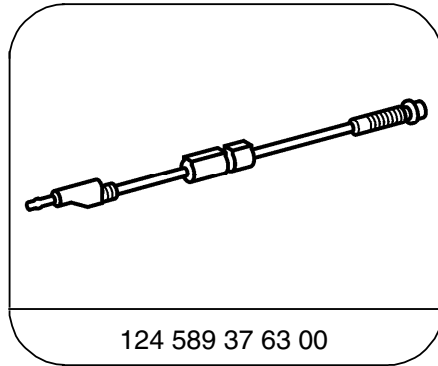
Electrical Test Program – Preparation for Test

Special Tools



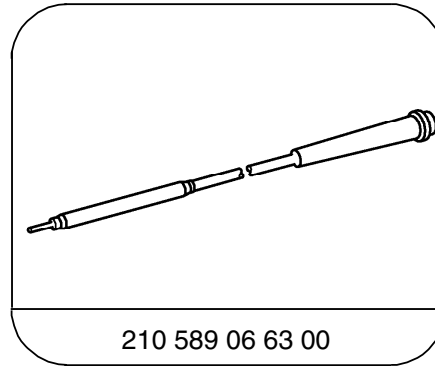
201 589 00 99 00

Electrical connecting set



124 589 37 63 00

Fused cable



210 589 06 63 00


Adapter cable


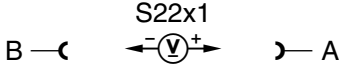
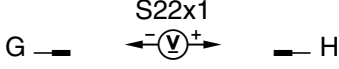
Test equipment; See MBUSA Standard Service Equipment Program

Description	Brand, model, etc.
Digital multimeter	Fluke models 23, 77 III, 83, 85, 87


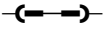
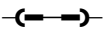




Electrical Test Program – Test

Preparation for Test:


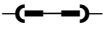
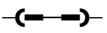





1.  **CAUTION!** See 22/1
2. Fuses OK.
3. Battery voltage 11 – 14 V

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		Left front ESA switch (S22) Voltage supply		Transmitter key in ignition lock. Do not disconnect S22x1 connector.	11 – 14 V	Wiring, S22
2.0		Left front power seat fore/aft motor (M25m1) Voltage supply		Transmitter key in ignition lock. Do not disconnect S22x1 connector. Press seat fore/aft switch (S22s3) forward: Press seat fore/aft switch (S22s3) backward:	11 – 14 V – 11 to – 14 V	Wiring, Seat fore/aft switch (S22s3).


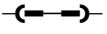
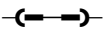





Electrical Test – Program Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.0		Left front power seat fore/aft motor (M25m1) Activation	M25m1 1 —  0 — 	Ignition: OFF Disconnect connector at motor.  CAUTION! See notes on 22/1  For battery connection, use safety cable 124 589 37 63 00	Seat motor runs.	M25m1
4.0		Fore/aft motor (M25m1) Resistance	1 —  M25m1 — 0	Disconnect connector at motor.	1 – 30 Ω	M25m1
5.0		Rear raise/lower motor (M25m2) Voltage supply	C —  S22x1 — D	Transmitter key in ignition lock. Do not disconnect S22x1 connector. Press seat height, rear switch (S22s4) upward: Press seat height, rear switch (S22s4) down:	11 – 14 V – 11 to – 14 V	Wiring, Seat height, rear switch (S22s4).


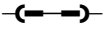
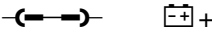




Electrical Test – Program Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0		Rear raise/lower motor (M25m2) Activation	M25m1 1 —  0 —  	Ignition: OFF Disconnect connector at motor.  CAUTION! See notes on 22/1  For battery connection, use safety cable 124 589 37 63 00	Seat motor runs.	M25m2
7.0		Rear raise/lower motor (M25m2) Resistance	1 —  M25m2 — 0	Disconnect connector at motor.	1 – 30 Ω	M25m2
8.0		Front raise/lower motor (M25m3) Voltage supply	E —  S22x1 — F	Transmitter key in ignition lock. Do not disconnect S22x1 connector. Press seat height, front switch (S22s2) upward: Press seat height, front switch (S22s2) down:	11 – 14 V – 11 to – 14 V	Wiring, Seat height, front switch (S22s2).


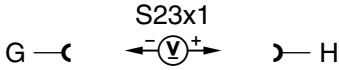
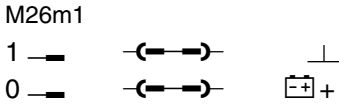


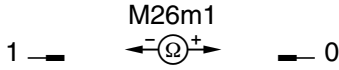
Electrical Test – Program Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		Front raise/lower motor (M25m3) Activation	M25m3 1 —  — ⊥ 0 —  —  +	Ignition: OFF Disconnect connector at motor.  CAUTION! See notes on 22/1  For battery connection, use safety cable 124 589 37 63 00	Seat motor runs.	M25m3
10.0		Front raise/lower motor (M25m3) Resistance	1 —  — 0 M25m3	Disconnect connector at motor.	1 – 30 Ω	M25m3
11.0		Backrest fore/aft motor (M25m5) Voltage supply	A —  — B S22x1	Transmitter key in ignition lock. Do not disconnect S22x1 connector. Press backrest switch (S22s5) forward: Press backrest switch (S22s5) backward:	11 – 14 V – 11 to – 14 V	Wiring, Backrest switch (S22s5).


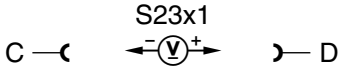
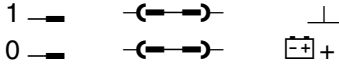

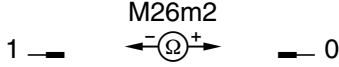
Electrical Test – Program Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
12.0		Backrest fore/aft motor (M25m5) Activation	X54/20 1 —  2 — 	Ignition: OFF Disconnect backrest motor connector X54/20  CAUTION! See notes on 22/1  For battery connection, use safety cable 124 589 37 63 00	Backrest motor runs.	Wiring, M25m5
13.0		Backrest fore/aft motor (M25m5) Resistance	1 —  (1)	Disconnect connector at motor.	1 – 30 Ω	M25m5.
14.0		Right front ESA switch (S23) Voltage supply	B — 	Transmitter key in ignition lock. Do not disconnect S22x1 connector.	11 – 14	Wiring, S23



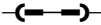

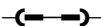




Electrical Test – Program Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
15.0		Right front power seat fore/aft motor (M26m1) Voltage supply		Transmitter key in ignition lock. Do not disconnect connector S23x1 Press seat fore/aft switch (S23s3) forward: Press seat fore/aft switch (S23s3) backward:	11 – 14 V – 11 to – 14 V	Wiring, Seat fore/aft switch (S23s3).
16.0		Right front power seat fore/aft motor (M26m1) Activation		Ignition: OFF Disconnect connector at motor.  CAUTION! See notes on 22/1  For battery connection, use safety cable 124 589 37 63 00	Seat motor runs.	M26m1
17.0		Right front power seat fore/aft motor (M26m1) Resistance		Disconnect connector at motor.	1 – 30 Ω	M26m1


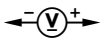
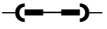

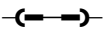



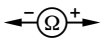
Electrical Test – Program Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
18.0		Rear raise/lower motor (M26m2) Voltage supply		Transmitter key in ignition lock. Do not disconnect S23x1 connector. Press seat height, rear switch (S23s4) downward: Press seat height, rear switch (S23s4) upward:	11 – 14 V – 11 to – 14 V	Wiring, Seat height, rear switch (S23s4).
19.0		Rear raise/lower motor (M26m2) Activation		Ignition: OFF Disconnect connector at motor. ⚠ CAUTION! See notes on 22/1  For battery connection, use safety cable 124 589 37 63 00	Seat motor runs.	M26m2
20.0		Rear raise/lower motor (M26m2) Resistance		Disconnect connector at motor.	1 – 30 Ω	M26m2

Electrical Test – Program Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
21.0		Front raise/lower motor (M26m3) Voltage supply	S23x1 E —  — F	Transmitter key in ignition lock. Do not disconnect S23x1 connector. Press seat height, front switch (S23s2) upward: Press seat height, front switch (S23s2) downward:	11 – 14 V – 11 to – 14 V	Wiring, S23s2
22.0		Front raise/lower motor (M26m3) Activation	M26m3 1 —  —  0 —  — 	Ignition: OFF Disconnect connector at motor.  CAUTION! See notes on 22/1  For battery connection, use safety cable 124 589 37 63 00	Seat motor runs.	M26m3
23.0		Front raise/lower motor (M26m3) Resistance	M26m3 1 —  — 0	Disconnect connector at motor.	1 – 30 Ω	M26m3

Electrical Test – Program Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
24.0		Backrest fore/aft motor (M26m5) Voltage supply	<p>S23x1</p> <p>A —  — B</p>	<p>Transmitter key in ignition lock. Do not disconnect S23x1 connector. Press backrest switch (S23s5) forward: Press backrest switch (s23s5) backward:</p>	<p>11 – 14 V 11 – 14 V – 11 to – 14 V</p>	Wiring, S23s5
25.0		Backrest fore/aft motor (M26m5) Activation	<p>X54/20</p> <p>1 —  — </p> <p>2 —  — </p>	<p>Ignition: OFF Disconnect backrest motor connector X54/20</p> <p> CAUTION! See notes on 22/1  For battery connection, use safety cable 124 589 37 63 00</p>	Seat motor runs.	Wiring, M26m5
26.0		Backrest fore/aft motor (M26m5) Resistance	<p>M26m5</p> <p>1 —  — 0</p>	Disconnect connector at motor.	1 – 30 Ω	M26m5