

14.4 Model 163

Heated front seats

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Diagnosis – Function Test

Preparation for Test:

1. Review 20, 21, 22, 23,
2. Fuses OK,
3. Battery voltage 11 – 14 V,
4. Convenience feature (CF) functional, see GF72.29-P-2002GH

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 seat Seat heating stage I	Start engine. Press front of left front seat heater switch (S51/1)	1 LED in switch will illuminate. Seat bottom cushion and backrest will warm up.	23 ⇒ 1.0, 4.0, 5.0, 6.0, 6.1
⇒ 2.0 Left front seat Seat heating stage II	Start engine. Press rear of left front seat heater switch (S51/1)	2 LED'S in switch will illuminate. Seat cushion and backrest cushion will warm up noticeably more than stage I.	23 ⇒ 2.0, 5.1, 6.0, 6.1
⇒ 3.0 Right front seat Seat heating stage I	Start engine. Press front of right front seat heater switch (S51/2)	1 LED in switch will illuminate. Seat bottom cushion and backrest will warm up.	23 ⇒ 7.0, 10.0, 11.0, 13.0, 13.1
⇒ 4.0 Right front seat Seat heating stage II	Start engine. Press rear of right front seat heater switch (S51/2)	2 LED'S in switch will illuminate. Seat cushion and backrest cushion will warm up noticeably more than stage I.	23 ⇒ 9.0, 10.0, 12.0, 13.0, 13.1

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Preparation for Test:

1. Review 10, 21, 22, 31

Electrical wiring diagrams:

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

Test Functions

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Entire front seat (left and right) heater system does not function.	Convenience relay (F1k14)	
Left front seat Heating stage I does not function.	Seat heater relay (stage 1) (K59) Left front seat heater switch (S51/1) LF seat cushion heater element (R13/1) LF backrest heater element (R13/2)	23 ⇒ 1.0, 23 ⇒ 3.0, 23 ⇒ 5.0
Left front seat Heating stage II does not function.	Seat heater relay (stage 2) (K59/1) Left front seat heater switch (S51/1)	23 ⇒ 2.0, 23 ⇒ 3.0
Left front seat, heating stage II , LF seat cushion heater element (R13/1) does not function	LF seat cushion heater element (R13/1)	23 ⇒ 5.0
Left front seat, heating stage II , LF backrest heater element (R13/2) does not function	LF backrest heater element (R13/2)	23 ⇒ 5.1

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Test Functions

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Right front seat Heating stage I does not function.	Seat heater relay (stage 1) (K59) Right front seat heater switch (S51/2) RF seat cushion heater element (R13/3) RF backrest heater element (R13/4)	23 ⇒ 7.0, 23 ⇒ 9.0, 23 ⇒ 11.0
Right front seat Heating stage II does not function.	Seat heater relay (stage 2) (K59/1) Right front seat heater switch (S52/1)	23 ⇒ 8.0, 23 ⇒ 9.0
Right front seat, heating stage II , RF seat cushion heater element (R13/3) does not function	RF seat cushion heater element (R13/3)	23 ⇒ 12.0, 13.0
Left front seat, heating stage II , RF backrest heater element (R13/4) does not function	RF backrest heater element (R13/4)	23 ⇒ 12.0, 13.0

¹⁾ Observe Preparation for Test, see 22.

Electrical Test Program – Component Location

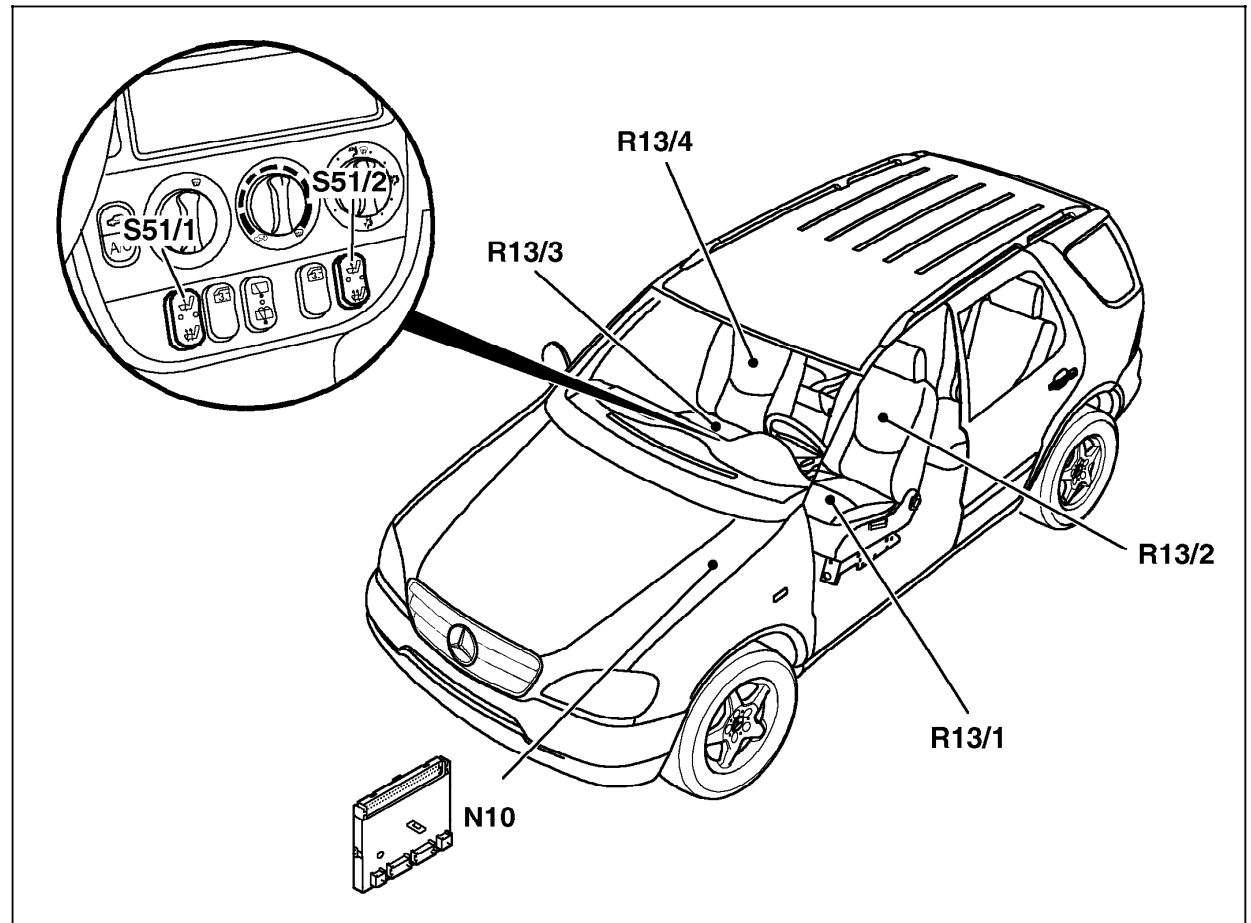


Figure 1

- N10 All-Activity Module
- R13/1 LF seat cushion heater element
- R13/2 LF backrest heater element
- R13/3 RF seat cushion heater element
- R13/4 RF backrest heater element
- S51/1 Left front seat heater switch
- S51/2 Right front seat heater switch

P91.30-0280-06

Electrical Test Program – Preparation for Test

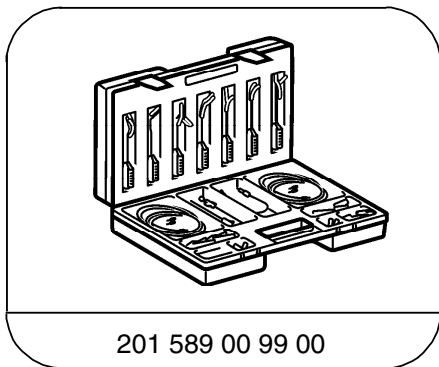
Preparation for Test:

1. Review 20, 22, 23
2. Review components location: see GF91.30-P-3002-02GH
3. Review connector layout, see 23/9,
3. Fuses OK,
4. Battery voltage 11 – 14 V,
5. Convenience feature (CF) functional, see GF72.29-P-2002GH

Electrical wiring diagrams:

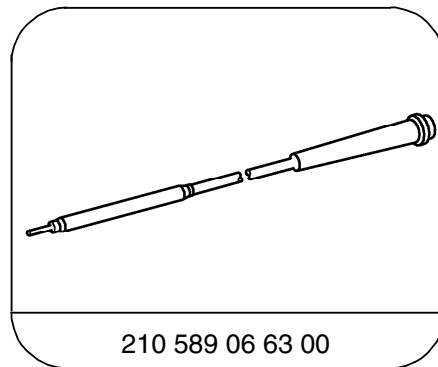
Electrical Troubleshooting Manual, Model 163,
(available in Work Shop Information System [WIS] only)

Special Tools



201 589 00 99 00

Electrical connecting set



210 589 06 63 00

Adapter cable



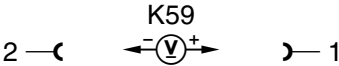
Test equipment; See MBUSA Standard Service Equipment Program

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

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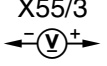

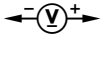
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		Left front seat Seat heater relay (stage 1) (K59) Function		Replace seat heater relay (stage 1) (K59) with relay of same type i.e. with right seat heater relay (K59). Start engine. HHT activation: Stage 1 F1 F2	ON Relay (K59) is activated. OFF	If the values are OK: K59 If the values are not OK: ⇒ 1.1
1.1		Left front seat Seat heater relay (stage 1) (K59) Activation		Remove relay (K59) from its socket. Start engine. HHT activation: Stage 1 F1	ON 11 – 14 V	Wiring, ⇒ 1.2


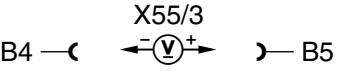
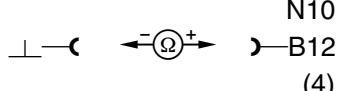
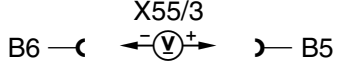
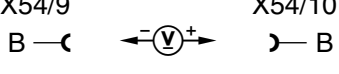
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Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.2		Left front seat Seat heater relay (stage 1) (K59) Activation	B3 —(—  —) B5 X55/3	Disconnect X55/3 connector. Start engine. HHT activation: Stage 1 F1	0Ω 11 – 14 V	Wiring.
2.0		Left front seat Seat heater relay (stage 2) (K59/1) Function		Replace seat heater relay (stage 2) (K59/1) with relay of same type i.e. with right seat heater relay (K59/1). Start engine. HHT activation: Stage 2 F3 F4	0Ω Relay (K59/1) is activated. 0FF	If the values are OK: K59/1 If the values are not OK: ⇒ 2.1
2.1		Left front seat Seat heater relay (stage 2) (K59/1) Activation	2 —(—  —) 1 K59/1	Remove relay (K59/1) from its socket. Start engine. HHT activation: Stage 2 F3	0Ω 11 – 14 V	Wiring, ⇒ 2.2









Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
2.2		Left front seat Seat heater relay (stage 2) (K59/1) Activation		Disconnect X55/3 connector. Start engine. HHT activation: Stage 2 F3	0Ω 11 – 14 V	Wiring.
3.0		Left front seat heater switch (S51/1) Function		Disconnect connect 4 at N10 Press switch (S51/1): Heating stage 1 Heating stage 2	$< 1 \Omega$ approx. 470 Ω	Wiring, S51/1
4.0		Left front seat heater Voltage supply		Disconnect connect X55/3 Ignition: ON	11 – 14 V	Wiring, Convenience relay (F1k14)
5.0		LF/RF seat cushion/backrest heater element (R13/1, R13/2) (stage 1) Voltage supply		Disconnect connect X54/9 and X54/10 Start engine. HHT activation Stage 1 F1	0Ω 11 – 14 V	Wiring.


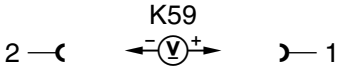
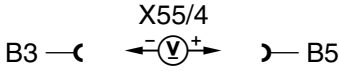
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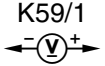
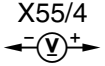
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.1		LF/RF seat cushion heater element (R13/1, R13/2) (stage 2) Voltage supply	X54/9 B —  — A	Disconnect connect X54/9 Start engine. HHT activation: Stage 2 F3	 11 – 14 V	Wiring.
6.0		LF seat cushion heater element (R13/1) Resistance	X54/9 A —  — B	Disconnect connector X54/9	5 – 10 Ω	Wiring, R13/1
6.1		LF backrest heater element (R13/2) Resistance	X54/10 A —  — B	Disconnect connector X54/10	5 – 10 Ω	Wiring, R13/2
7.0		Right front seat Seat heater relay (stage 1) (K59) Function		Replace seat heater relay (stage 1) (K59) with relay of same type i.e. with left seat heater relay (K59). Start engine. HHT activation: Stage 1 F1 F2	 Relay (K59) is activated. 	If the values are OK: K59 If the values are not OK: ⇒ 7.1


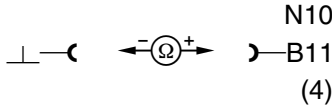
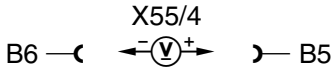
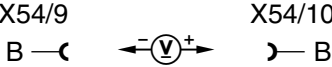
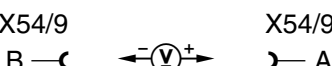
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.1		Right front seat Seat heater relay (stage 1) (K59) Activation		Remove relay (K59) from its socket. Start engine. HHT activation: Stage 1 FI	∞ 11 – 14 V	Wiring, ⇒ 7.2
7.2		Right front seat Seat heater relay (stage 1) (K59) Activation		Disconnect X55/4 connector. Start engine. HHT activation: Stage 1 FI	∞ 11 – 14 V	Wiring.




Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0		Right front seat Seat heater relay (stage 2) (K59/1) Function		Replace seat heater relay (stage 2) (K59/1) with relay of same type i.e. with left seat heater relay (K59/1). Start engine. HHT activation: Stage 2 F3 F4	ON Relay (K59/1) is activated. OFF	If the values are OK: K59/1 If the values are not OK: ⇒ 8.1
8.1		Right front seat Seat heater relay (stage 2) (K59/1) Activation	2 —()— 1	Remove relay (K59/1) from its socket. Start engine. HHT activation: Stage 2 F3	ON 11 – 14 V	Wiring, ⇒ 8.2
8.2		Right front seat Seat heater relay (stage 2) (K59/1) Activation	B4 —()— B5	Disconnect X55/4 connector. Start engine. HHT activation: Stage 2 F3	ON 11 – 14 V	Wiring.

Electrical Test Program – Test

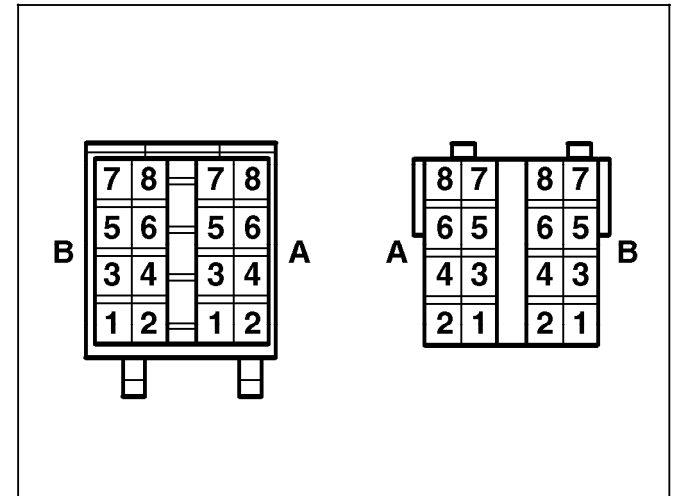
⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		Right front seat heater switch (S51/2) Function		Disconnect connect 4 at N10 Press switch (S51/2): Heating stage 1 Heating stage 2	< 1 Ω approx. 470 Ω	Wiring, S51/2
10.0		Right front seat heater Voltage supply		Disconnect connect X55/4 Ignition: ON	11 – 14 V	Wiring, Convenience relay (F1k14)
11.0		RF/RF seat cushion/backrest heater element (R13/3, R13/4) (stage 1) Voltage supply		Disconnect connect X54/9 and X54/10 Start engine. HHT activation Stage 1 F1	∞ 11 – 14 V	Wiring.
12.0		RF/RF seat cushion/backrest heater element (R13/3, R13/4) (stage 2) Voltage supply		Start engine. HHT activation: Stage 2 F3	∞ 11 – 14 V	Wiring.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.0		RF seat cushion heater element (R13/3) Resistance	X54/9 A —  — B	Disconnect connector X54/9	5 – 10 Ω	Wiring, R13/3
13.1		RF backrest heater element (R13/4) Resistance	X54/10 A —  — B	Disconnect connector X54/10	5 – 10 Ω	Wiring, R13/4

Electrical Test Program – Test

Connector Layout - Left front seat connector block (X55/3), Right front seat connector block (X55/4)



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