

**12.8 Mirror Adjustment, Heated Mirror Model 163**

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### Diagnosis – Function Test



#### Preparation for Test:

1. Review 21, 22, 23 entirely.
2. Battery voltage 11 – 14 V,
3. Fuses are OK.
4. Convenience feature is functional.

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 1.0 Left outside rearview mirror <b>Vertical adjustment</b>	Turn outside rearview mirror-left/ right (S21s8) to left position.  Press outside rearview mirror-vertical adjustment switch (S21s6):  Forward: Backward:	Left outside rearview mirror: Adjusts UP Adjusts DOWN	23 ⇒ 3.0 23 ⇒ 5.0
⇒ 2.0 Left outside rearview mirror <b>Horizontal adjustment</b>	Turn outside rearview mirror-left/ right (S21s8) to left position.  Press outside rearview mirror-horizontal adjustment switch(S21s7):  Left: Right:	Left outside rearview mirror: adjusts to left adjusts to right	23 ⇒ 4.0 23 ⇒ 6.0
⇒ 3.0 Right outside rearview mirror <b>Vertical adjustment</b>	Turn outside rearview mirror-left/ right (S21s8) to right position.  Press outside rearview mirror-vertical adjustment switch(S21s6):  Forward: Backward:	Left outside rearview mirror: Adjusts UP Adjusts DOWN	23 ⇒ 7.0 23 ⇒ 9.0

1) Observe Preparation for Test, see 22.

### Diagnosis – Function Test

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 4.0 Right outside rearview mirror <b>Horizontal adjustment</b>	Turn outside rearview mirror-left/ right (S21s8) to right position.  Press outside rearview mirror-horizontal adjustment switch(S21s7):  Left: Right:	Left outside rearview mirror: adjusts to left adjusts to right	23 ⇒ 8.0 23 ⇒ 10.0
⇒ 5.0 Left outside rearview mirror <b>Mirror Heating</b>	Ignition: <b>ON</b> If outside air temperature is > 15° C (59° F): Spray mirror with "Electronic Freeze Mist" (aerosal can) for 10 seconds to coat mirror glass with frost.	Left outside rearview mirror glass warms up after approx. 1 minute.   ON/OFF temperature switching thresholds: < 15° C (59° F): Mirror heating <b>ON</b> > 25° C (77° F): Mirror heating <b>OFF</b>	23 ⇒ 11.0
⇒ 6.0 Right outside rearview mirror <b>Mirror Heating</b>	Ignition: <b>ON</b> If outside air temperature is > 15° C (59° F): Spray mirror with "Electronic Freeze Mist" (aerosal can) for 10 seconds to coat mirror glass with frost.	Right outside rearview mirror glass warms up after approx. 1 minute.   ON/OFF temperature switching thresholds: < 15° C (59° F): Mirror heating <b>ON</b> > 25° C (77° F): Mirror heating <b>OFF</b>	23 ⇒ 12.0

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

### Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
Complete left and right outside rearview mirror adjustment does not function	Center console switch group (S21), Voltage supply Outside rearview mirror-left/right switch (S21s8)	23 ⇒ 1.0 23 ⇒ 2.0
Left outside rearview mirror Vertical adjustment does not function	Outside rearview mirror-vertical adjustment switch (S21s6) Mirror adjustment motor (up/down) (M21/1m1)	23 ⇒ 3.0 23 ⇒ 5.0
Left outside rearview mirror Horizontal adjustment does not function	Outside rearview mirror-horizontal adjustment switch (S21s7) Mirror adjustment motor (in/out) (M21/1m2)	23 ⇒ 4.0 23 ⇒ 6.0
Right outside rearview mirror Vertical adjustment does not function	Outside rearview mirror-vertical adjustment switch (S21s6) Mirror adjustment motor (up/down) (M21/2m1)	23 ⇒ 7.0 23 ⇒ 9.0
Right outside rearview mirror Horizontal adjustment does not function	Outside rearview mirror-horizontal adjustment switch (S21s7) Mirror adjustment motor (in/out) (M21/2m2)	23 ⇒ 8.0 23 ⇒ 10.0
Mirror heating for left outside rearview mirror does not function	Mirror heater (M21/1r1)	23 ⇒ 11.0
Mirror heating for right outside rearview mirror does not function	Mirror heater (M21/2r1)	23 ⇒ 12.0

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

## Electrical Test Program – Component Locations

Model 163 shown

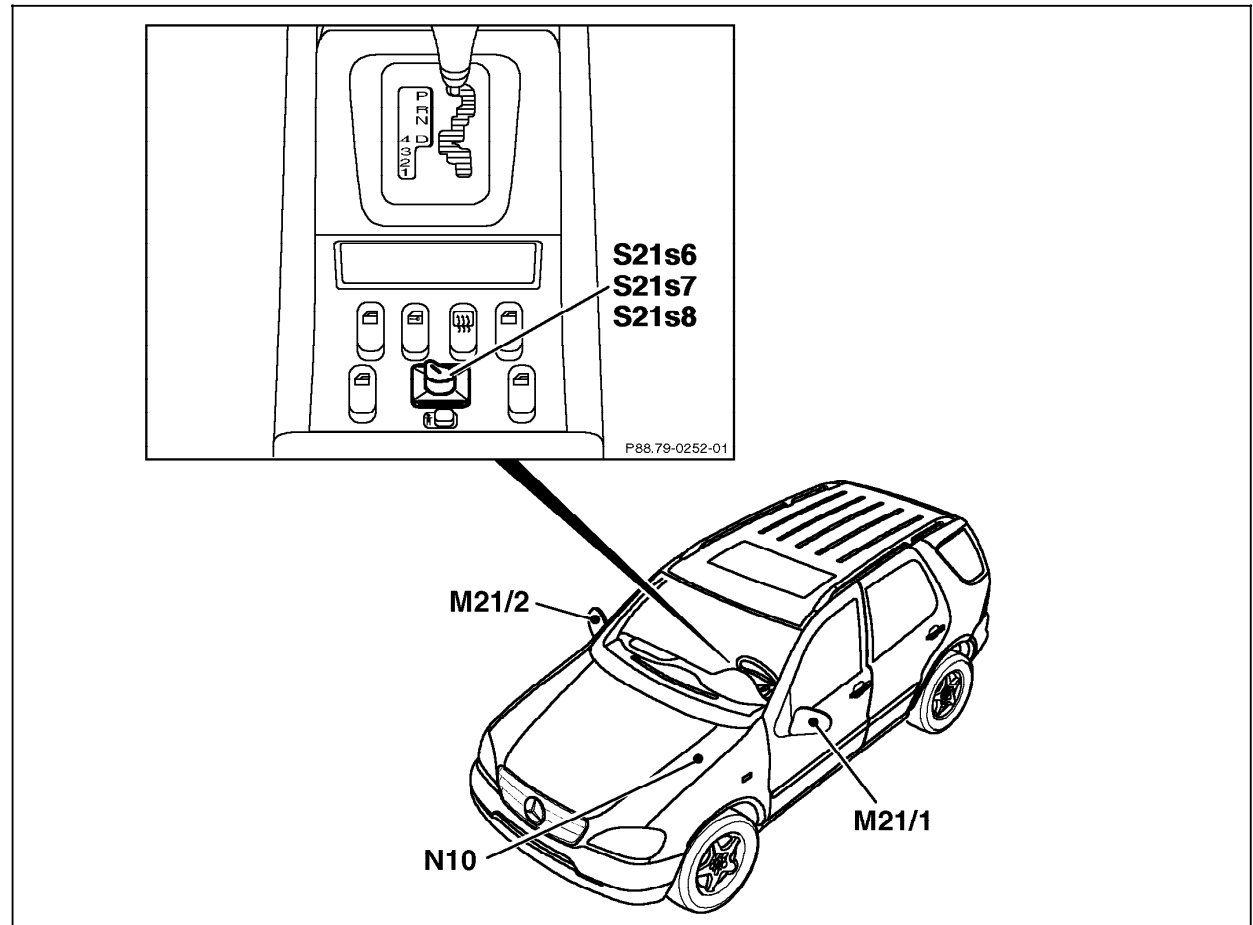


Figure 1

- M21/1 Electrically adjustable and heated driver-side outside rearview mirror
- M21/2 Electrically adjustable and heated front passenger outside rearview mirror
- N10 All Activity Module (AAM)
- S21s6 Outside rearview mirror-vertical adjustment
- S21s7 Outside rearview mirror-horizontal adjustment
- S21s8 Outside rearview mirror-left/right
- S50/1 Outside rearview mirror switch  
(with fold-in/out feature) (not USA)

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### Electrical Test Program – Preparation for Test

Preliminary work:

Diagnosis - Diagnostic Trouble Code (DTC) Memory ..... 12

#### Preparation for Test:

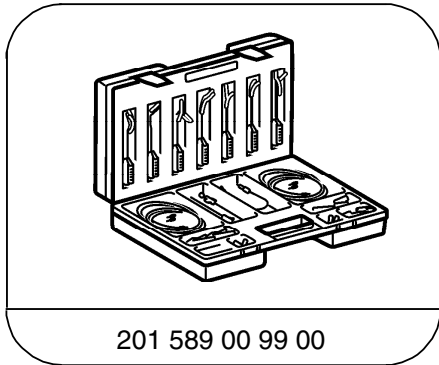
1. Review 20, 22 and last page of 23
2. Review section 5.5 (CF), 21 in WIS, for connector layout for center console switch group (S21).
3. Fuses OK.
4. Battery voltage 11 – 14 V
5. Convenience feature (CF) is functional, if not see GF72.29-P-2002GH

Electrical wiring diagrams:

Electrical Troubleshooting Manual, Model 163, (via WIS only)

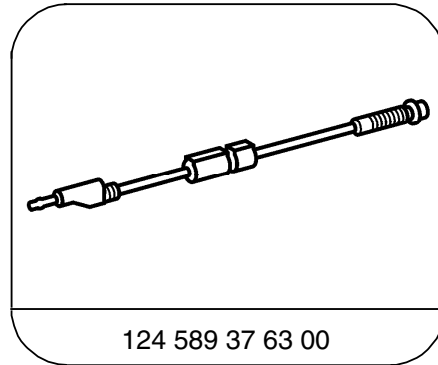
Electrical Test Program – Preparation for Test

Special Tools



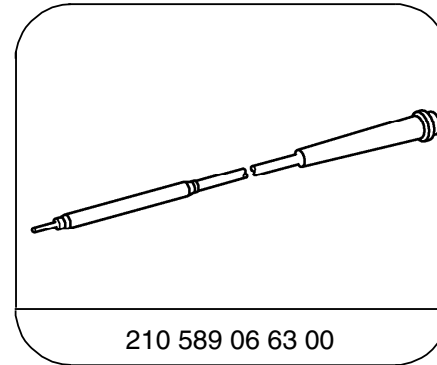
201 589 00 99 00

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


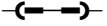
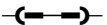


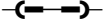
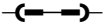







Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.0		<p><b>Outside rearview mirror-vertical adjustment switch (S21s6)</b> Function</p>	<p style="text-align: center;">X35/1 B5 —( — ◀ — (V) —▶ — ( — C4</p>	<p>Ignition: <b>OFF</b> Disconnect left front door separation point (X35/1) connector. S21s8 set to <b>left</b> mirror.</p> <p>Press S21s6 forward:</p> <p>Press s21s6 backward:</p>	<p>– 11 to – 14 V</p> <p>11 – 14 V</p>	<p>Wiring, S21s6 S21s8</p>
4.0		<p><b>Outside rearview mirror-horizontal adjustment switch (S21s7)</b> Function</p>	<p style="text-align: center;">X35/1 B5 —( — ◀ — (V) —▶ — ( — B6</p>	<p>Ignition: <b>OFF</b> Disconnect left front door separation point (X35/1) connector. S21s8 set to <b>left</b> mirror.</p> <p>Press S21s7 to the left:</p> <p>Press S21s7 to the right:</p>	<p>– 11 to – 14 V</p> <p>11 – 14 V</p>	<p>Wiring, S21s7 S21s8</p>


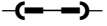
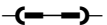



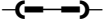
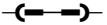



Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0		<b>Mirror adjustment motor (up/down) (M21/1m1)</b> Activation	X35/1 B5 —  — ⊥ C4 —  —  +	Ignition: <b>OFF</b> Disconnect left front door separation point (X35/1) connector.   <b>Use bridges with 124 589 37 63 00 safety cable only.</b>	Motor runs.	Wiring, M21/1m1
6.0		<b>Mirror adjustment motor (in/out) (M21/1m2)</b> Activation	X35/1 B5 —  — ⊥ B6 —  —  +	Ignition: <b>OFF</b> Disconnect left front door separation point (X35/1) connector.   <b>Use bridges with 124 589 37 63 00 safety cable only.</b>	Motor runs.	Wiring, M21/1m2


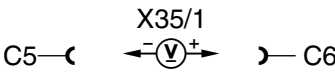
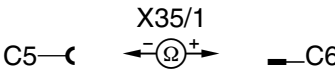
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0		<p><b>Outside rearview mirror-vertical adjustment switch (S21s6)</b> Function</p>	<p>X35/1 B5—( ←(V)→ )— B6</p>	<p>Ignition: <b>OFF</b> Disconnect right front door separation point (X35/2) connector. Set S21s8 to <b>right</b> mirror.</p> <p>Press S21s6 forward:</p> <p>Press S21s6 backward:</p>	<p>– 11 to – 14 V 11 – 14 V</p>	<p>Wiring, S21s6 S21s8</p>
8.0		<p><b>Outside rearview mirror-horizontal adjustment switch (S21s7)</b> Function</p>	<p>X35/2 B5—( ←(V)→ )— C4</p>	<p>Ignition: <b>OFF</b> Disconnect right front door separation point (X35/2) connector. Set S21s8 to <b>right</b> mirror.</p> <p>Press S21s7 to left:</p> <p>Press S21s6 to right:</p>	<p>– 11 to – 14 V 11 – 14 V</p>	<p>Wiring, S21s7 S21s8</p>


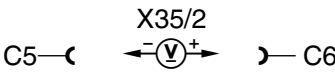
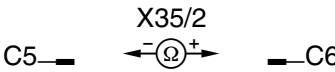
Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		<b>Right mirror adjustment motor (up/down) (M21/2m1)</b> Activation	X35/2 B5—  — B6—  —  ⊥  +	Ignition: <b>OFF</b> Disconnect right front door separation point (X35/2) connector.   <b>Use bridges with 124 589 37 63 00 safety cable only.</b>	Motor runs.	Wiring, M21/2m1
10.0		<b>Right mirror adjustment motor (in/out) (M21/2m2)</b> Activation	X35/2 B5—  — C4—  —  ⊥  +	Ignition: <b>OFF</b> Disconnect right front door separation point (X35/2) connector.   <b>Use bridges with 124 589 37 63 00 safety cable only.</b>	Motor runs.	Wiring, M21/2m2

Electrical Test Program – Test

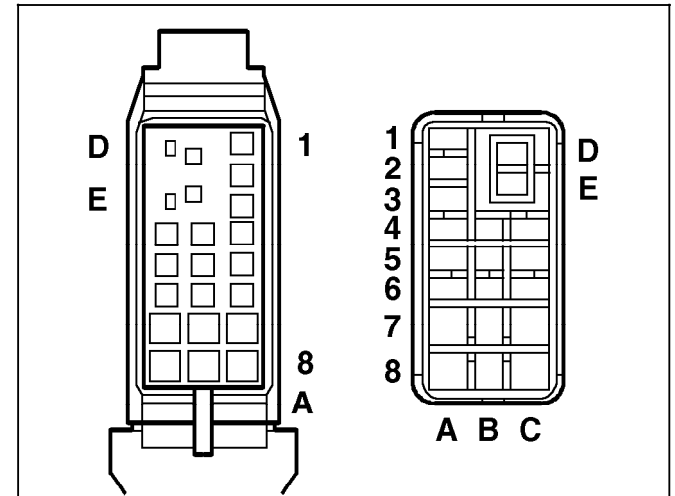
⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
11.0		<b>Left mirror heater (M21/1r1)</b> Voltage supply		Ignition: <b>ON</b> Disconnect left front door separation point (X35/1) connector.	11 – 14 V	Wiring, ⇒ 1.1
11.1		Left mirror heater (M21/1r1) Resistance		Ignition: <b>OFF</b> At outside temperatures >15° C (59° F): spray mirror glass with "electronic freeze mist" (aerosol can) to cool glass down, wait 1 minute, measure resistance.	<10 Ω	M21/1r1

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
12.0		<b>Right mirror heater (M21/2r1)</b> Voltage supply		Ignition: <b>ON</b> Disconnect right front door separation point (X35/2) connector.	11 – 14 V	Wiring, ⇒ 1.1
12.1		Right mirror heater (M21/2r1) Resistance		Ignition: <b>OFF</b> At outside temperatures >15° C (59° F): spray mirror glass with "electronic freeze mist" (aerosol can) to cool glass down, wait 1 minute, measure resistance.	<10 Ω	M21/2r1

### Electrical Test Program – Test

Connector Layout - Left front door separation point (X35/1), Right front door separation point (X35/2), Left rear door separation point (X35/3), Right rear door separation point (X35/4)



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