

12.1 Model 129

	Page
Diagnosis	
Complaint Related Diagnostic Chart	11/1
Electrical Test Program	
Component Locations	21/1
Preparation for Test	22/1
Test	23/1

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Electric mirrors and steering column adjustment does not function	Electric mirror/steering column adjustment control module (N32/9), voltage supply	23 ⇒ 1.0
Driver's side outside rearview mirror adjustment does not function	Electric mirror/steering column adjustment control module (N32/9) Outside mirror control switch (S50) Electrically adjustable and heated driver's side outside rearview mirror (M21/1)	23 ⇒ 1.0 23 ⇒ 2.0 23 ⇒ 3.0
Passenger side outside rearview mirror adjustment does not function	Electric mirror/steering column adjustment control module (N32/9) Outside mirror control switch (S50) Electrically adjustable and heated passenger side outside rearview mirror (M21/2)	23 ⇒ 1.0 23 ⇒ 2.0 23 ⇒ 4.0
Inside rearview mirror adjustment does not function	Electric mirror/steering column adjustment control module (N32/9) Outside mirror control switch (S50) Electrically adjustable inside rearview mirror (M21/3)	23 ⇒ 1.0 23 ⇒ 2.0 23 ⇒ 5.0
Driver's side outside rearview mirror heating does not function	Driver's side outside rearview mirror, voltage supply	23 ⇒ 17.0
Passenger side outside rearview mirror heating does not function	Passenger side outside rearview mirror, voltage supply	23 ⇒ 18.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Electric steering column adjustment does not function	Electric mirror/steering column adjustment control module (N32/9) Adjustable steering column switch (S59) Adjustable steering column motor (M20)	23 ⇒ 1.0 23 ⇒ 6.0 23 ⇒ 7.0, 8.0
Electric mirror and steering column adjustment memory does not function	Left front power seat control module (N32/1) and wiring Electrically adjustable and heated driver's side outside rearview mirror (M21/1), potentiometer Electrically adjustable and heated passenger side outside rearview mirror (M21/2), potentiometer Electrically adjustable inside rearview mirror (M21/3), potentiometer Adjustable steering column motor (M20), potentiometer	23 ⇒ 9.0 23 ⇒ 10.0 23 ⇒ 11.0 23 ⇒ 12.0 23 ⇒ 13.0
Automatic dimming inside rearview mirror does not function	Automatic dimming inside rearview (H7), voltage supply Backup lamp switch (S16/2) Dome lamp (E15) Automatic dimming inside rearview (H7)	23 ⇒ 14.0 23 ⇒ 15.0 23 ⇒ 16.0

¹⁾ Observe Preparation for Test, see 22.

Electrical Test Program – Component Locations

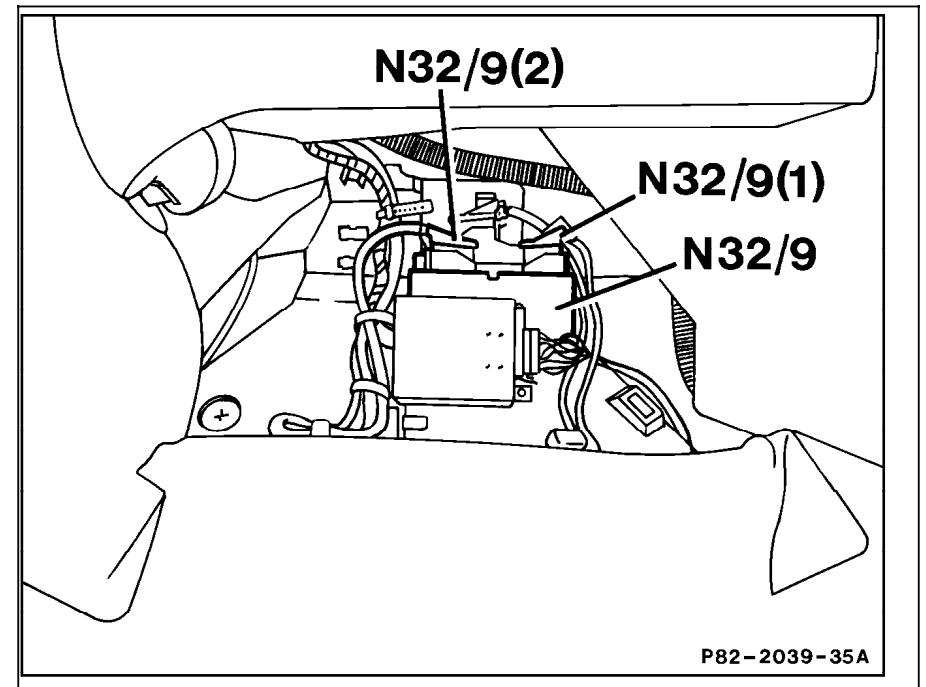


Figure 1

- N32/9 Electric mirror/steering column adjustment control module
- (1) Connector 1
- (2) Connector 2

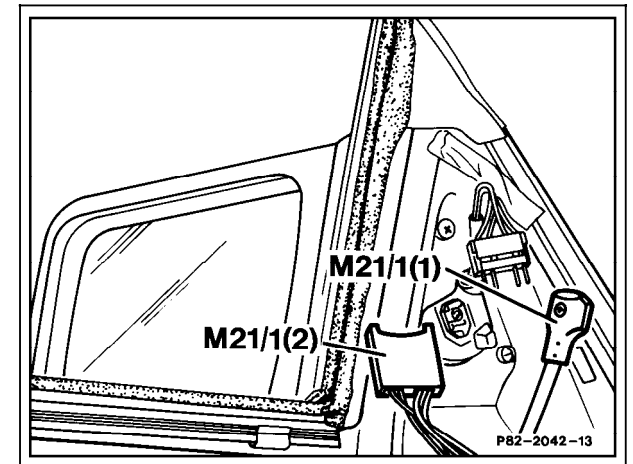
P82-2039-35A

P82-2039-35A

Electrical Test Program – Component Locations

Figure 2

- M21/1 Electrically adjustable and heated driver's side outside rearview mirror
(1) Connector 1
(2) Connector 2



P82-2042-13

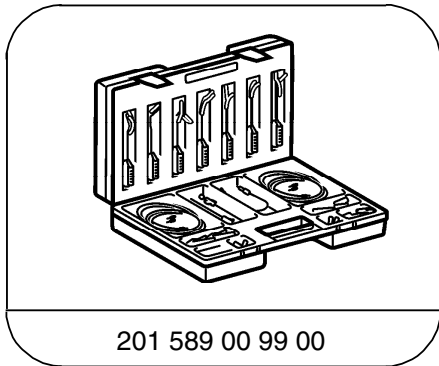
Electrical Test Program – Preparation for Test

1. Battery voltage 11–14 V.
2. Fuse F1-4, F1-8 okay.
3. During voltage measurements, the ignition key must be in position “1” or the door should be open.

Electrical wiring diagrams:

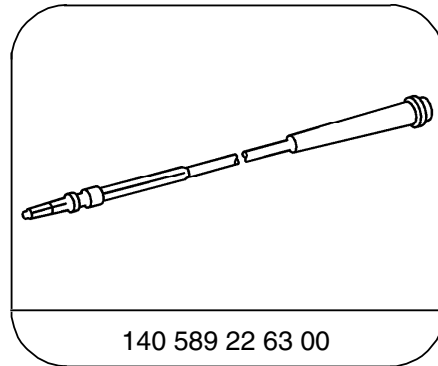
Electrical Troubleshooting Manual, Model 129

Special Tools



201 589 00 99 00

Electrical connecting set



140 589 22 63 00

Adapter cable

Equipment

Digital multimeter ¹⁾

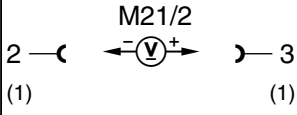
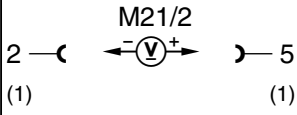
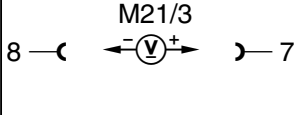
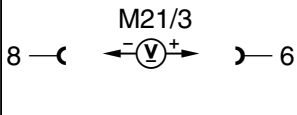
Fluke model 23 with 80i-410 current probe
Sun DMM-5

¹⁾ Available through the MBUSA Standard Equipment Program.

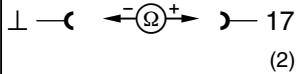
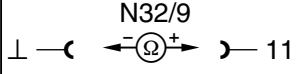
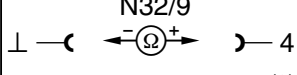
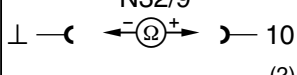

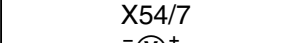
Electrical Test Program – Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 1.0	Electric mirror/steering column adjustment control module (N32/9) Voltage supply	<p>N32/9 15 —()— ◀ —(V)— ▶ —()— 16 (2) (2)</p>	Disconnect connector (2) from control module (N32/9)	11–14 V	Wiring
⇒ 2.0	Outside mirror control switch (S50) Resistance	see Table I (23)	Disconnect connector (1) from control module (N32/9)	see Table I	Wiring Outside mirror control switch (S50)
⇒ 3.0	Electrically adjustable and heated driver’s side outside rearview mirror (M21/1) Voltage supply	<p>M21/1 2 —()— ◀ —(V)— ▶ —()— 3 (1) (1)</p> <p>M21/1 2 —()— ◀ —(V)— ▶ —()— 5 (1) (1)</p>	Disconnect connector (1) from control module (M21/1) Mirror control switch (S50) in left position Move switch (S50): forward back Move switch (S50): left right	11–14 V -11 to -14 V 11–14 V -11 to -14 V	Wiring Electric mirror/steering column adjustment control module (N32/9)

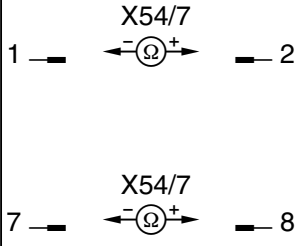
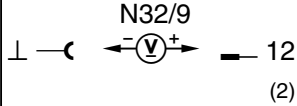
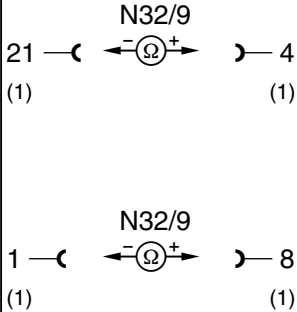
Electrical Test Program – Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 4.0	Electrically adjustable and heated passenger side outside rearview mirror (M21/2) Voltage supply		Disconnect connector (1) from control module (M21/2) Mirror control switch (S50) in right position Move switch (S50): forward back	11–14 V -11 to -14 V	Wiring Electric mirror/steering column adjustment control module (N32/9)
			Move switch (S50): right left	11–14 V -11 to -14 V	
⇒ 5.0	Electrically adjustable inside rearview mirror (M21/3) Voltage supply		Remove inside mirror (M21/3) and disconnect connector Mirror control switch (S50) in center position Move switch (S50): right left	11–14 V -11 to -14 V	Wiring Electric mirror/steering column adjustment control module (N32/9)
			Move switch (S50): forward back	11–14 V -11 to -14 V	

Electrical Test Program – Test






Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 6.0	Adjustable steering column switch (S59) Resistance	<p>N32/9 </p> <p>N32/9 </p> <p>N32/9 </p> <p>N32/9 </p>	<p>Disconnect connector (2) from control module (N32/9)</p> <p>Move mirror control switch (S59) forward</p> <p>Move switch (S59) back</p> <p>Move switch (S59) left</p> <p>Move switch (S59) right</p>	<p>< 1 Ω</p> <p>< 1 Ω</p> <p>< 1 Ω</p> <p>< 1 Ω</p>	Wiring Adjustable steering column switch (S59)
⇒ 7.0	Adjustable steering column motor (M20) Voltage supply	<p>X54/7 </p> <p>X54/7 </p>	<p>Disconnect connector (X54/7)</p> <p>Move steering column switch (S59): right left</p> <p>Move switch (S50): forward back</p>	<p>11–14 V -11 to -14 V</p> <p>11–14 V -11 to -14 V</p>	Wiring Electric mirror/steering column adjustment control module (N32/9)

Electrical Test Program – Test


Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 8.0	Adjustable steering column motor (M20) Voltage supply		Disconnect connector (X54/7)	0.1–15 Ω 0.1–15 Ω	Wiring Adjustable steering column motor (M20)
⇒ 9.0	Serial Data Exchange ¹⁾ from Left front power seat control module (N32/1) to Electric mirror/steering column adjustment control module (N32/9)		Disconnect connector (2) from control module (N32/9) Press one of the memory position buttons on left front power seat switch group (S91)	0–1 V 4–7 V	Wiring Left front power seat control module (N32/1)
⇒ 10.0	Electrically adjustable and heated driver's side outside rearview mirror (M21/1) Potentiometer resistance		Disconnect connector (1) from control module (N32/9) Manually move mirror glass in all directions	approx. 1000 Ω value changes from 300–1200 Ω	Wiring Electrically adjustable and heated driver's side outside rearview mirror (M21/1)

1) Serial Data Exchange=data cable over which digital data is transmitted in sequence.

Electrical Test Program – Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 11.0	Electrically adjustable and heated passenger side outside rearview mirror (M21/2) Potentiometer resistance	N32/9 14 —(←  →)— 19 (1) (1)	Disconnect connector (1) from control module (N32/9)	approx. 1000 Ω	Wiring Electrically adjustable and heated passenger side outside rearview mirror (M21/2)
		N32/9 9 —(←  →)— 16 (1) (1)	Manually move mirror glass in all directions	value changes from 300–1200 Ω	
⇒ 12.0	Electrically adjustable inside rearview mirror (M21/3) Potentiometer resistance	N32/9 6 —(←  →)— 7 (2) (2)	Disconnect connector (2) from control module (N32/9)	approx. 1200 Ω	Wiring Electrically adjustable inside rearview mirror (M21/3)
		N32/9 18 —(←  →)— 19 (2) (2)	Manually move mirror glass in all directions	value changes from 300–1200 Ω	
⇒ 13.0	Adjustable steering column motor (M20) Potentiometer resistance	N32/9 6 —(←  →)— 12 (2) (2)	Disconnect connector (2) from control module (N32/9)	1100±220 Ω	Wiring Adjustable steering column motor (M20) ⇒ 13.1

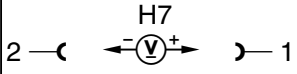
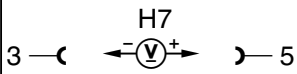
Electrical Test Program – Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 13.1	Potentiometer resistance		<p>Connect connector (2) to control module (N32/9) Adjust steering column through complete range: up/back/down/forward</p> <p>Disconnect connector (2) from control module (N32/9)</p> <p>Connect connector (2) to control module (N32/9) Adjust steering column to full rear stop</p> <p>Disconnect connector (2) from control module (N32/9)</p>	<p>record value</p> <p>600±300 Ω difference from recorded value</p>	<p>Wiring Adjustable steering column motor (M20) ⇒ 13.2</p>

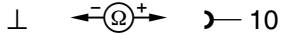


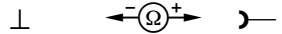
Electrical Test Program – Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 13.2	Potentiometer resistance	<p style="text-align: center;">N32/9</p> <p>6 —(← ⊖ Ω ⊕ →)— 20 (2) (2)</p>	<p>Disconnect connector (2) from control module (N32/9)</p> <p>Connect connector (2) to control module (N32/9) Adjust steering column to full up stop</p>	<p>record value</p> <p>600±300 Ω difference from recorded value</p>	<p>Wiring</p> <p>Adjustable steering column motor (M20)</p>
⇒ 14.0	<p>Automatic dimming inside rearview mirror (H7)</p> <p>Voltage supply</p>	<p style="text-align: center;">H7</p> <p>2 —(← ⊖ V ⊕ →)— 5</p>	<p>Disconnect connector from mirror (H7)</p> <p>Ignition: ON</p>	11–14 V	<p>Wiring</p> <p>⇒ 14.1</p>

Electrical Test Program – Test

Test step DTC	Scope of test	Test connection	Test condition	Nominal value	Possible cause/remedy
⇒ 14.1	Function		Ignition: ON Cover forward light sensor (daylight) Shine a flashlight onto rear sensor (headlamp) Cover forward light sensor (daylight) and turn on dome lamp or engage transmission range “R”	mirror reflection adjusts mirror reflection adjusts mirror reflection adjusts to normal position	Automatic dimming inside rearview mirror (H7)
⇒ 15.0	Backup lamp switch (S16/2) Voltage supply	 <p>2 —(←(V)→)— 1</p>	Disconnect connector from mirror (H7) Ignition: ON Transmission range “R” engaged	0–1 V 11–14 V	Wiring Backup lamp switch (S16/2) Exterior lamp failure monitoring module (N7)
⇒ 16.0	Dome lamp (E15) Voltage supply	 <p>3 —(←(V)→)— 5</p>	Disconnect connector from mirror (H7) Ignition: ON Dome lamp: ON	0–5 V 11–14 V	Wiring Dome lamp (E15)

Electrical Test Program – Test

Switch (S50) setting	Move switch	1) 			
Center (inside mirror)	to the: left	< 1 Ω	< 1 Ω	< 1 Ω	> 20 k Ω
	right	< 1 Ω	< 1 Ω	< 1 Ω	< 1 Ω
	forward	< 1 Ω	> 20 k Ω	< 1 Ω	> 20 k Ω
	back	< 1 Ω	> 20 k Ω	< 1 Ω	< 1 Ω
Left (Driver side mirror)	to the: left	< 1 Ω	< 1 Ω	> 20 k Ω	> 20 k Ω
	right	< 1 Ω	< 1 Ω	> 20 k Ω	< 1 Ω
	forward	< 1 Ω	> 20 k Ω	> 20 k Ω	> 20 k Ω
	back	< 1 Ω	> 20 k Ω	> 20 k Ω	< 1 Ω
Right (Passenger side)	to the: left	> 20 k Ω	< 1 Ω	< 1 Ω	> 20 k Ω
	right	> 20 k Ω	< 1 Ω	< 1 Ω	< 1 Ω
	forward	> 20 k Ω	> 20 k Ω	< 1 Ω	> 20 k Ω
	back	> 20 k Ω	> 20 k Ω	< 1 Ω	< 1 Ω

1) Disconnect connector (1) from control module (N32/9)