

12.7b Mirror, Steering column adjustment, Mirror dimming
Models 202 (mirror dimming only),
Models 208, 210 as of M.Y. 1998

	Page	Function description
Diagnosis		
Function Test	11/1	The desired adjustment of the outside rearview mirrors is sent as a CAN message from the lower control field control module (N72) to the corresponding front driver/passenger-side door control module (N69/1, N69/2). The front driver/passenger-side door control module (N69/1, N69/2) in turn actuates the corresponding outside rearview mirror via a direct line as necessary.
Diagnostic Trouble Code (DTC) Memory	12/1	
Recalling Actual Values with HHT	13/1	
Complaint Related Diagnostic Chart	14/1	
Electrical Test Program		
Component Locations	20/1	The voltage coded memory signal from the left front door ESA switch group (S91/2) is recorded by the front driver-side door control module (N69/1). The front driver-side door control module (N69/1), in turn directly actuates the left outside rearview mirror (M21/6) and at the same time sends a parallel CAN message to the passenger-side door control module (N69/2). The passenger-side door control module (N69/2) in turn directly actuates the right outside rearview mirror (M21/7). With engaged reverse gear, a signal is sent from the backup lamp switch (S16/2) to the lower control field control module (N72). The lower control field control module (N72), in turn sends the CAN message: "Reverse gear engaged" to the passenger-side door control module (N69/2), and as a result, the control module actuates the right outside rearview mirror (M21/7) to the memorized "park-position".
Connection of Components	21/1	
Preparation for Test	22/1	
Test	23/1	
Hand-Held Tester (HHT)		
Version Coding	31/1	



For electric mirror etc. on model 202, please see section 12.3
 This section covers mirror dimming for M.Y. 1998 only.



The "park-position" function is only possible when the outside rearview mirror-left/right switch "right mirror" is selected.
 The "park-position" function may be cancelled using the HHT.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis - Function Test

Preliminary testing



1. Review diagnostic document: AD88.79-P-2000A

Ignition switch: **Position 1**

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy ¹⁾
	Ignition key position "1"		
⇒ 1.0 Driver-side outside rearview mirror adjustment	Set outside rearview mirror-left/right (N72s8) to driver-side mirror (left) and adjust mirror.	Adjust mirror: – up – down – forward – backward	13
⇒ 2.0 Front passenger-side outside rearview mirror adjustment	Set outside rearview mirror-left/right (N72s8) to passenger-side (right) and adjust mirror.	Adjust mirror: – up – down – forward – backward	13
⇒ 3.0 Electrically adjustable steering column adjustment (Models 208, 210 only)	Press steering column up/down switch or steering column in/out switch (S91s11, S91s12)	Adjust steering column: – up – down – forward – backward	13
⇒ 4.0 Front passenger-side outside rearview mirror adjustment "Park-position" function (Models 208, 210 only)	Set outside rearview mirror-left/right (N72s8) to passenger-side (right) and engage reverse gear via selector lever	Passenger-side rearview mirror adjusts to "park-position".	Check version coding, using the HHT, 13

¹⁾ Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Function Test

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy ¹⁾
⇒ 5.0 Interior rearview mirror dimming	Cover the light sensor on the backside of the interior rearview mirror. Shine a flashlight beam at the light sensor in the mirror glass surface. Switch on interior lamps. Engage reverse gear via selector lever.	Mirror glass surface visibly darkens. Mirror glass surface becomes lighter. Mirror glass surface becomes lighter.	23 ⇒ 5.0
⇒ 6.0 Driver-side outside rearview dimming	Cover the light sensor on the backside of the interior rearview mirror. Shine a flashlight beam at the light sensor in the mirror glass surface. Switch on interior lamps. Engage reverse gear via selector lever.	Driver-side mirror glass surface visibly darkens as well. Driver-side mirror glass surface becomes lighter as well. Driver-side mirror glass surface becomes lighter as well.	23 ⇒ 5.0, 8.0
⇒ 7.0 Non-USA vehicles only, continue to next test step	—	—	—
⇒ 8.0 Outside rearview mirror heating	Start engine. After approx. 1 minute, touch mirror glass surface with palm of hand.	The mirror glass on both outside mirrors warm up. Switch ON and Switch OFF temperatures: > 15°C: Outside mirror heating : ON > 16°C: Outside mirror heating : OFF	See WIS documents: AD88.79-P-6000-13A, AD88.79-P-6000-14A

¹⁾ Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

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

Preliminary work:

Function test 11

Preparation for Test:

1. Review sections: C/1, 12, 13, 20, 21, 31,
2. Review connecting of test equipment, see section 0,
3. Voltage supply to all control modules and CAN bus ok, see DM, B&A, Vol. 2, section 7.1, 23,
4. All fuses are ok,
5. Ignition: **ON**
6. All CAN data line connections must be connected.



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

DTCs for the system being checked may be located in other control modules, therefore it is important to check the DTC memory on all control modules that are relevant to the system being checked.

While performing the DTC readout, it is possible that DTCs may appear that are not relevant to the system being checked, meaning that all stored DTCs in that particular control module are being displayed.

Non-relevant DTCs are described in each system as necessary.

Abbreviations:

TSG 1 Front driver-side door control module (N69/1)

TSG 2 Front passenger-side door control module (N69/2)

UBF Lower control field control module (N72)

ESV-L Left seat adjustment

ESV-R Right seat adjustment

The noted abbreviations (**TSG 1, TSG 2, ESV-L, ESV-R**) are located in the header above each of the following DTC memory charts and advise of which control module the DTC is stored in.

Note regarding Diagnostic Trouble Codes (DTC's):

Current diagnostic trouble codes are highlighted in black on the display.

Additional detailed fault information based on fault type is displayed with nearly all diagnostic codes (DTC's) such as:

> Ω	Resistance too great
< Ω	Resistance too low
ΓΓ-	Short circuit to ground (GND)
ΓΓ+	Short circuit to positive (POS)
-//-	Open circuit

With some DTCs additional information such as fault frequency can be readout.

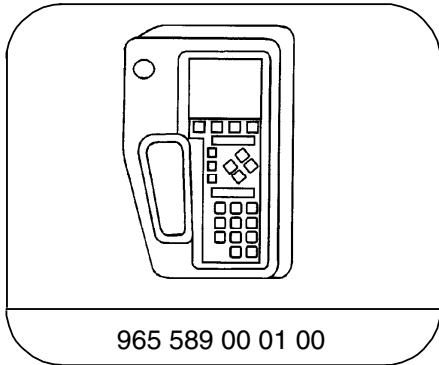
Fault frequency

Faults are noted by frequency of occurrence, i.e.: 4 periodic faults, 4 occurrences.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

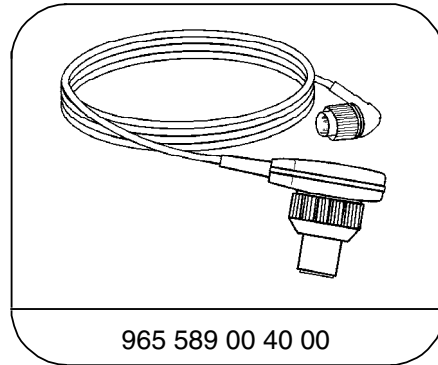
Diagnosis – Diagnostic Trouble Code (DTC) Memory (MSC)

Special Tools



965 589 00 01 00

Hand-Held-Tester




965 589 00 40 00

Test cable

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998


Diagnosis – Diagnostic Trouble Code (DTC) Memory TSG 1

DTC 	Possible cause	Test step/Remedy ¹⁾
B1000	Front driver-side door control module (N69/1)	Replace N69/1
B1001	Switch illumination, circuit 58d, wiring Γ1 (short circuit)	Wiring.
B1010	Low voltage	DM, B&A, Vol. 2, section 7.1, 23
B1011	Excess Voltage	DM, B&A, Vol. 2, section 7.1, 23
B1114	Steering column up/down switch (S91/2s11) or Steering column in/out switch (S91/2s12) stuck/binding, or wiring Γ1 short circuit	13
B1407	Faulty signal from mirror position memory (M21/6n1) (up/down) to left outside rearview mirror (M21/6)	13
B1407	Faulty signal from mirror position memory (M21/6n1) (right/left) to left outside rearview mirror (M21/6)	13
B1521	Wiring or motor Mirror-Horizontal adjustment motor (M21/6m2) Γ1 (short circuit)	See WIS document: AD88.79-P-6000-06A
B1521	Wiring or motor Mirror-Vertical adjustment motor (M21/6m1) Γ1 (short circuit)	See WIS document: AD88.79-P-6000-03A
B1521	Wiring or motors Mirror-adjustment motor (M21/6m1, M21/6m2) Γ1 (short circuit)	See WIS document: AD88.79-P-6000-03A See WIS document: AD88.79-P-6000-06A
B1521	Mirror heater (M21/6r1) Γ1 (short circuit) Front driver-side door control module (N69/1)	See WIS document: AD88.79-P-6000-13A

¹⁾ Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998


Diagnosis – Diagnostic Trouble Code (DTC) Memory TSG 2

DTC 	Possible cause	Test step/Remedy ¹⁾
B1000	Front passenger-side door control module (N69/2)	Replace N69/2
B1001	Switch illumination, circuit 58d, wiring Γ1 (short circuit)	Wiring.
B1010	Low voltage	DM, B&A, Vol. 2, section 7.1, 23
B1011	Excess Voltage	DM, B&A, Vol. 2, section 7.1, 23
B1114	Steering column up/down switch (S91/2s11) or Steering column in/out switch (S91/2s12) stuck/binding, or wiring Γ1 (short circuit)	13
B1407	Faulty signal from mirror position memory (M21/7n1) (up/down) to right outside rearview mirror (M21/7)	13
B1407	Faulty signal from mirror position memory (M21/7n1) (right/left) to right outside rearview mirror (M21/7)	13
B1521	Wiring or motor Mirror-Horizontal adjustment motor (M21/7m2) Γ1 (short circuit)	See WIS document: AD88.79-P-6000-12A
B1521	Wiring or motor Mirror-Vertical adjustment motor (M21/7m1) Γ1 (short circuit)	See WIS document: AD88.79-P-6000-09A
B1521	Wiring or motors Mirror-adjustment motor (M21/7m1, M21/7m2) Γ1 (short circuit)	See WIS document: AD88.79-P-6000-09A See WIS document: AD88.79-P-6000-12A
B1521	Mirror heater (M21/7r1) Γ1 (short circuit) Front passenger-side door control module (N69/2)	See WIS document: AD88.79-P-6000-14A

1) Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998


Diagnosis – Diagnostic Trouble Code (DTC) Memory ESV-L

DTC 	Possible cause	Test step/Remedy ¹⁾
B1000	Left front ESA control module (with memory) (N32/1)	Replace N32/1
B1205 (model 210 up to 6/98)	ESC motor (M20), voltage supply, Γ1- (short to grnd)	13
B1206 (model 210 up to 6/98)	Tilt adjustment motor (M20m2) (up/down), Γ1- (short to grnd), -//- (open circuit)	13
B1207 (model 210 up to 6/98)	Tilt adjustment motor (M20m2) (up/down), Γ1+ (short circuit to positive)	13
B1208 (model 210 up to 6/98)	Telescopic adjustment motor (M20m1) (in/out), Γ1- (short to grnd), -//- (open circuit)	13
B1209 (model 210 up to 6/98)	Telescopic adjustment motor (M20m1) (in/out), Γ1+ (short circuit to positive)	13

¹⁾ Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998


Diagnosis – Diagnostic Trouble Code (DTC) Memory ESV-L (continued)

DTC 	Possible cause	Test step/Remedy ¹⁾
B1410 - 006 (model 210 up to 6/98)	Steering wheel Hall sensor for: Tilt adjustment motor (up/down) (M20m2)	13
B1410 - 008 (model 210 up to 6/98)	Steering wheel Hall sensor for: Telescopic adjustment motor (in/out)(M20m1)	13

¹⁾ Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Diagnostic Trouble Code (DTC) Memory ESV-R

DTC 	Possible cause	Test step/Remedy ¹⁾
B1000	Right front ESA control module (with memory) (N32/2)	Replace N32/2

1) Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Recalling Actual Values using HHT

The following tests and activations are possible **via the Hand-Held Tester**.

Preparation for recalling actual values:

1. Connect the Hand-Held Tester (HHT) to X11/4, according to diagram, see section 0,
2. Voltage supply to control modules and CAN data lines ok, see DM, B&A, Vol. 2, section 7.1, 23,
3. Review section: C/1, 12, 13, 20, 21, 22, 31,
4. Battery voltage >11 V,
5. Ignition: **ON**
6. All CAN data lines must be connected,
7. Fuses ok.



Actual values for the system being checked may be located in other control modules, therefore it is important to check the DTC memory on all control modules that are relevant to the system being checked.

When calling up actual values, all actual values will appear for that particular control module.



Erasing the Mirror, steering column adjustment, heated mirrors (MSC) DTC memory, will also erase the DTC memory for the Combination Control Module (N10-1) and Convenience Feature (CF).

Abbreviations:

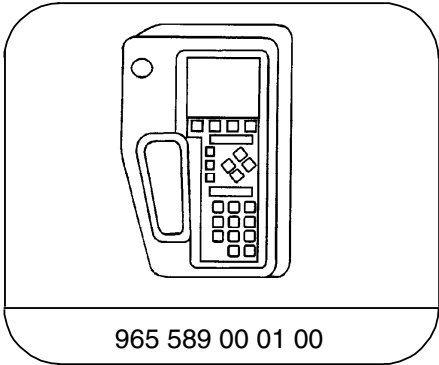
ESV L Left seat adjustment
UBF Lower control field control module (N72)
TSG 1 Front driver-side door control module (N69/1)
TSG 2 Front passenger-side door control module (N69/2)

The above noted abbreviations are in the second column of the following actual values tables in **bold type** to advise of hints (regarding in which of the control modules the actual values or activations are stored).

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

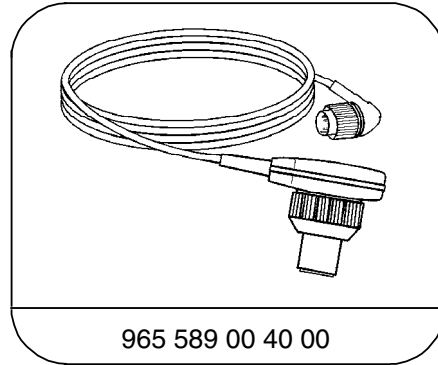
Electrical Test Program – Test Actual Values

Special Tools



965 589 00 01 00

Hand-Held-Tester







965 589 00 40 00

Test cable





12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Actual Values with Memory

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	T56 1 T56 2 Outside Mirror	Low voltage		> 10V <10 V	✓ F	See DM, B&A, Vol. 2, section 7.1, 23
2.0	T56 1 T56 2 Outside Mirror	Excessive voltage		< 15.5 V > 15.5 V	✓ F	See DM, B&A, Vol. 2, section 7.1, 23
3.0	UBF Outside Mirror	Outside rearview mirror- vertical horizontal adj. (N72s6, N72s7) Left outside mirror		Set outside rearview mirror-left/right (N72s8) to driver-side mirror (left) and adjust mirror: Up adjustment: Down adjustment: Left adjustment: Right adjustment:	UP DOWN LEFT RIGHT	Lower control field control module (N72).





12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Actual Values with Memory

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	UBF Outside Mirror	Outside rearview mirror- vertical horizontal adj. (N72s6, N72s7) Right outside mirror		Set outside rearview mirror-left/right (N72s8) to passenger-side mirror (right) and adjust mirror: Up adjustment: UP Down adjustment: DOWN Left adjustment: LEFT Right adjustment: RIGHT		Lower control field control module (N72).
5.0	UBF Outside Mirror	Outside rearview mirror- left/right (N72s8)		Set outside rearview mirror-left/right (N72s8) to: Left mirror LEFT Right mirror RIGHT		Lower control field control module (N72).
6.0	UBF Outside Mirror	Right outside rearview mirror "Park-position"		Engage reverse gear using selector lever: Reverse gear engaged: YES Reverse gear not engaged: NO		Wiring, Starter lock-out/back-up lamp switch (S16/1), Back-up lamp switch (S16/2), Starter lock-out/back-up lamp switch (transmission range recognition) (S16/3).




12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Actual Values with Memory

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0	TSG 1 TSG 2 Outside Mirror	Left/right outside mirror adjustments (M21/6m1, M21/6m2 M21/7m1, M21/7m2)		Press outside rearview mirror-vertical/horizontal adjustment (N72s6, N72s7) to: Up adjustment: Down adjustment: Left adjustment: Right adjustment:	UP DOWN LEFT RIGHT	Wiring, Front driver-side door control module (N69/1), Passenger-side door control module (N69/2).
8.0	TSG 1 TSG 2 Outside Mirror	Vertical/horizontal adjustment motor(M21/6m1, M21/7m1) (left/right) Potentiometer		Press outside rearview mirror-vertical/horizontal adjustment (N72s6, N72s7) to: Up adjustment, Down adjustment, Left adjustment, Right adjustment.	Values change as adjustments are made.	Wiring, Vertical adjustment motor (M21/6m1), Vertical adjustment motor (M21/7m1).
9.0	TSG 1 TSG 2 Outside Mirror	Vertical/horizontal adjustment motor(M21/6m2, M21/7m2) (left/right) Potentiometer		Press outside rearview mirror-vertical/horizontal adjustment (N72s6, N72s7) to: Up adjustment, Down adjustment, Left adjustment, Right adjustment.	Values change as adjustments are made.	Wiring, Vertical adjustment motor (M21/6m2), Vertical adjustment motor (M21/7m2).




12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Actual Values with Memory

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
10.0	TSG Steer Col. Adj.	Steering column up/down switch (S91/2s11) (Model 210 only)		Press steering column up/down switch (S91/2s11) to: Up adjustment: Down adjustment:	UP DOWN	Wiring, S91/2s11
11.0	TSG Steer Col. Adj.	Steering column in/out switch (S91/2s12) (Model 210 only)		Press steering column in/out switch (S91/2s12) to: In adjustment: Out adjustment:	IN OUT	Wiring, S91/2s12

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Actual Values with Memory

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
12.0	ESV L	Telescopic adjustment motor (M20m1) (in/out) Potentiometer (Model 210 only)		Press steering column in/out switch (S91/2s12) to: Out adjustment: In adjustment:	Raising values, steering column extends. Falling values, steering column retracts.	Wiring, (M20m1).
13.0	ESV L	Tilt adjustment motor (M20m2) (up/down) Potentiometer (Model 210 only)		Press steering column up/down switch (S91/2s11) to: Up adjustment: Down adjustment:	Raising values, steering column raises. Falling values, steering column drops.	Wiring, (M20m2).

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Complaint Related Diagnostic Chart

Diagnosis - Function Test

Prior to testing:

1. Review section: C/1, 12, 13, 20, 21, 22, 31

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Complete mirror adjustment does not function	Lower control field control module (N72)	DM, B&A, Vol. 2, section 7.1, 23
Steering column adjustment does not function	Steering column up/down, in/out switch (S92/2s11, S92/2s12) ESC motor (M20)	13 13
Left outside rearview mirror adjustment does not function	Outside rearview mirror-vertical/horizontal/left/right adjustment switches (N72s6, s7, s8) Left outside rearview mirror (M21/6) motor	13 23 ⇒ 1.0, 2.0
Left outside rearview mirror vertical adjustment reversed	Front driver-side door control module (N69/1) coded incorrectly	31
Right outside rearview mirror adjustment does not function	Outside rearview mirror-vertical/horizontal/left/right adjustment switches (N72s6, s7, s8) Right outside rearview mirror (M21/7) motor	13 23 ⇒ 3.0, 4.0
Left outside rearview mirror heating does not function	Left outside rearview mirror, voltage supply	See WIS document: AD88.79-P-6000-13A
Right outside rearview mirror heating does not function	Right outside rearview mirror, voltage supply	See WIS document: AD88.79-P-6000-14A

¹⁾ Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy ¹⁾
Steering column adjustment does not function	Steering column adjustment switch	13
Memory for mirror and steering column adjustment does not function	Left outside rearview mirror potentiometer Right outside rearview mirror potentiometer ESC motor (M20) potentiometer	13
Automatic dimming for interior rearview mirror does not function	Voltage supply for automatic dimming feature	23 ⇒ 5.0
Automatic dimming for leftoutside rearview mirror does not function (driver-side)	Voltage supply for automatic dimming feature	23 ⇒ 8.0

¹⁾ Observe Preparation for Test, see 22.

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Component Locations

Model 210 shown

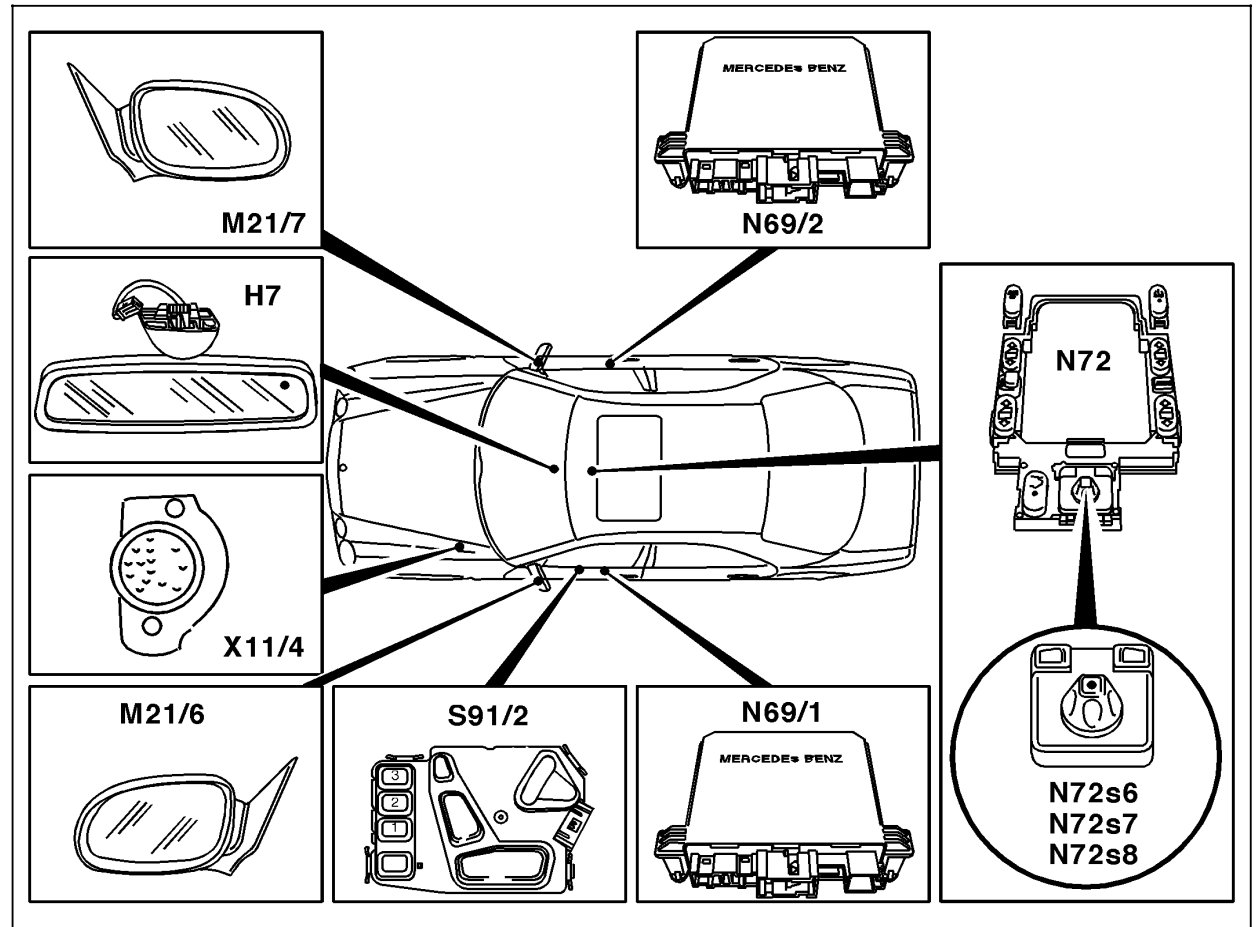


Figure 1

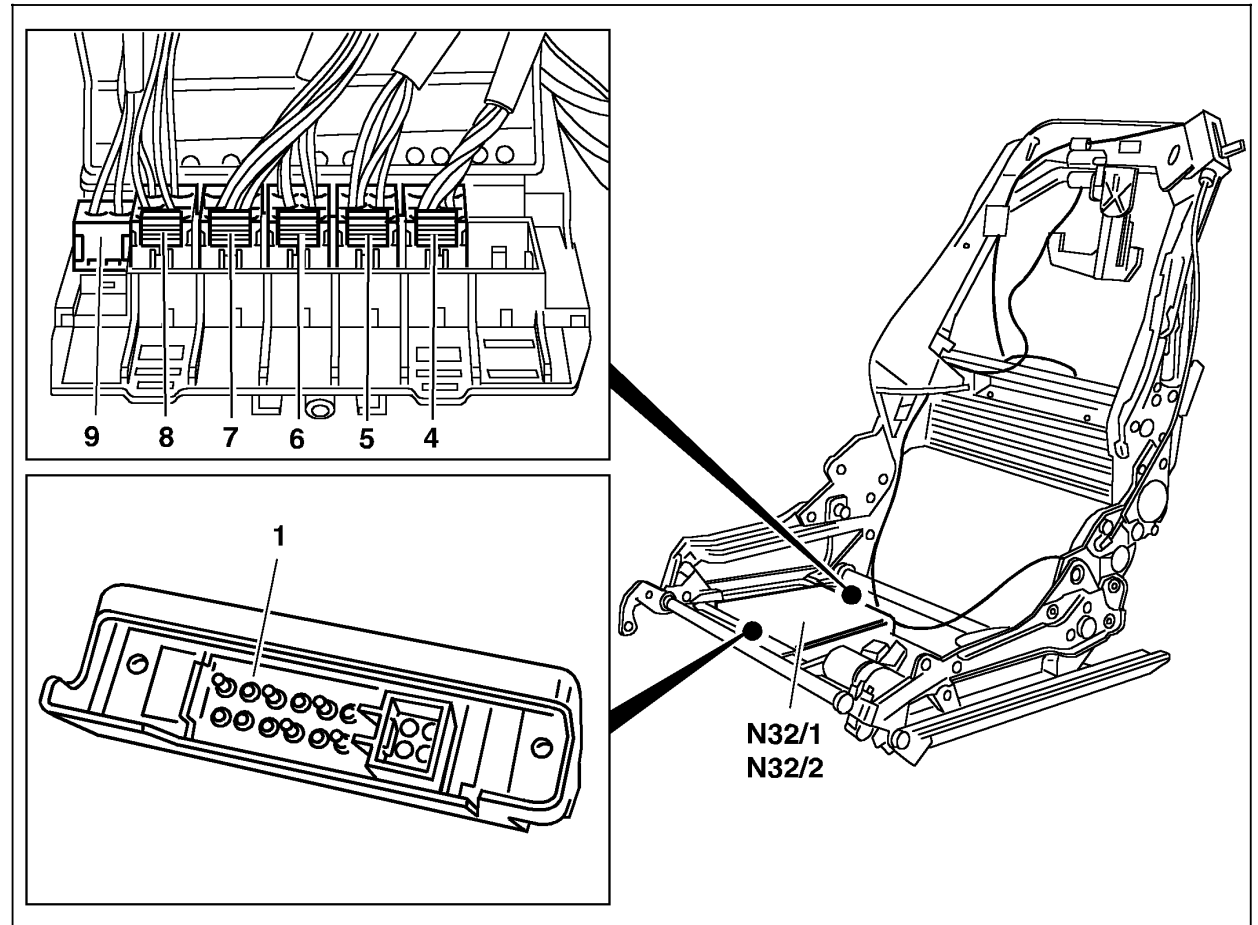
- H7 Electronic mirror dimming
- M21/6 Left outside rearview mirror
- M21/7 Right outside rearview mirror
- N69/1 Front driver-side door control module
- N69/2 Passenger-side door control module
- N72 Lower control field control module
- N72s6 Outside rearview mirror-vertical adjustment
- N72s7 Outside rearview mirror-horizontal adjustment
- N72s8 Outside rearview mirror-left/right
- S91/2 Left front door ESA switch group (with memory)
- X11/4 Data link connector (DTC readout)

P88.79-0237-06

Electrical Test Program – Component Locations

Figure 2

- N32/1 Left front ESA control module (with memory)
- N32/2 Right front ESA control module (with memeory)
- 1 For switch of: left/right front door ESA switch group (with memory) (S91/2, S92/2)
- 4 For seat height (rear) motor (M27m2, M28m2)
- 5 For seat fore/aft motor (M27m1, M28m1)
- 6 For seat height (front) motor (M27m3, M28m3)
- 7 For seat lumbar motor (M27m5, M28m5) and head restraint motor (M27m4, M28m4) adjustment
- 8 For microswitch: Left/right front seatback release microswitch (S91/3, S92/3) and Hibernation microswitch (S91/1s2, S92/1s2) (as of 06/98) (Model 208 only)
- 9 For microswitch: Left/right Inclination microswitch (S91/1s1, S92/1s1) (Model 208 only)



P91.29-0263-06

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Connection of Components

Electric Steering Column Adjustment (ESC) Model 210 only

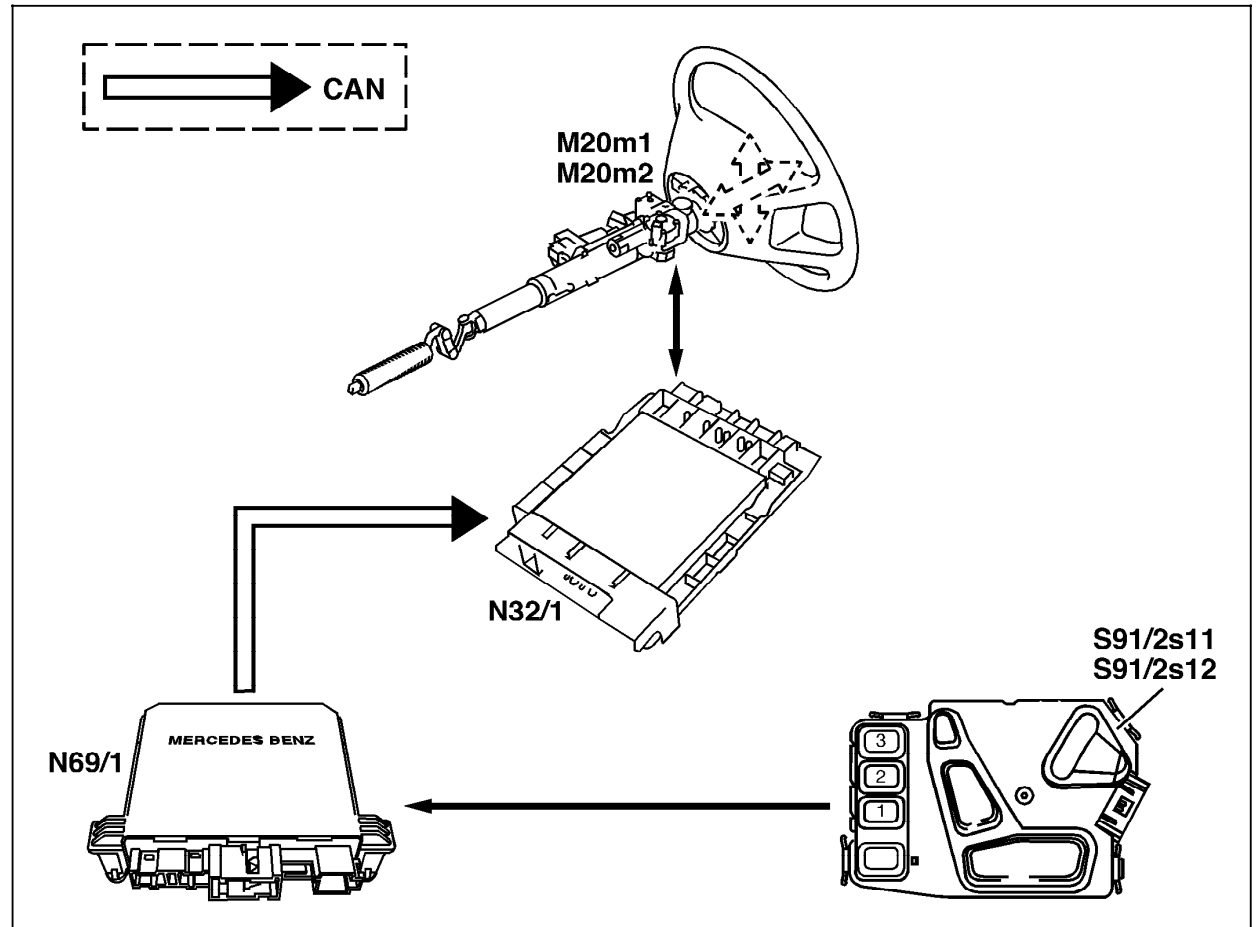


Figure 1

CAN	Control-Area-Network
M20m1	Telescopic adjustment motor (in/out)
M20m2	Tilt adjustment motor (up/down)
N32/1	Left front ESA control module (with memory)
N69/1	Combination control module
S91/2s11	Steering column up/down switch
S91/2s12	Steering column in/out switch

P46.15-0210-06

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Connection of Components

Mirror Memory
Model 208 shown

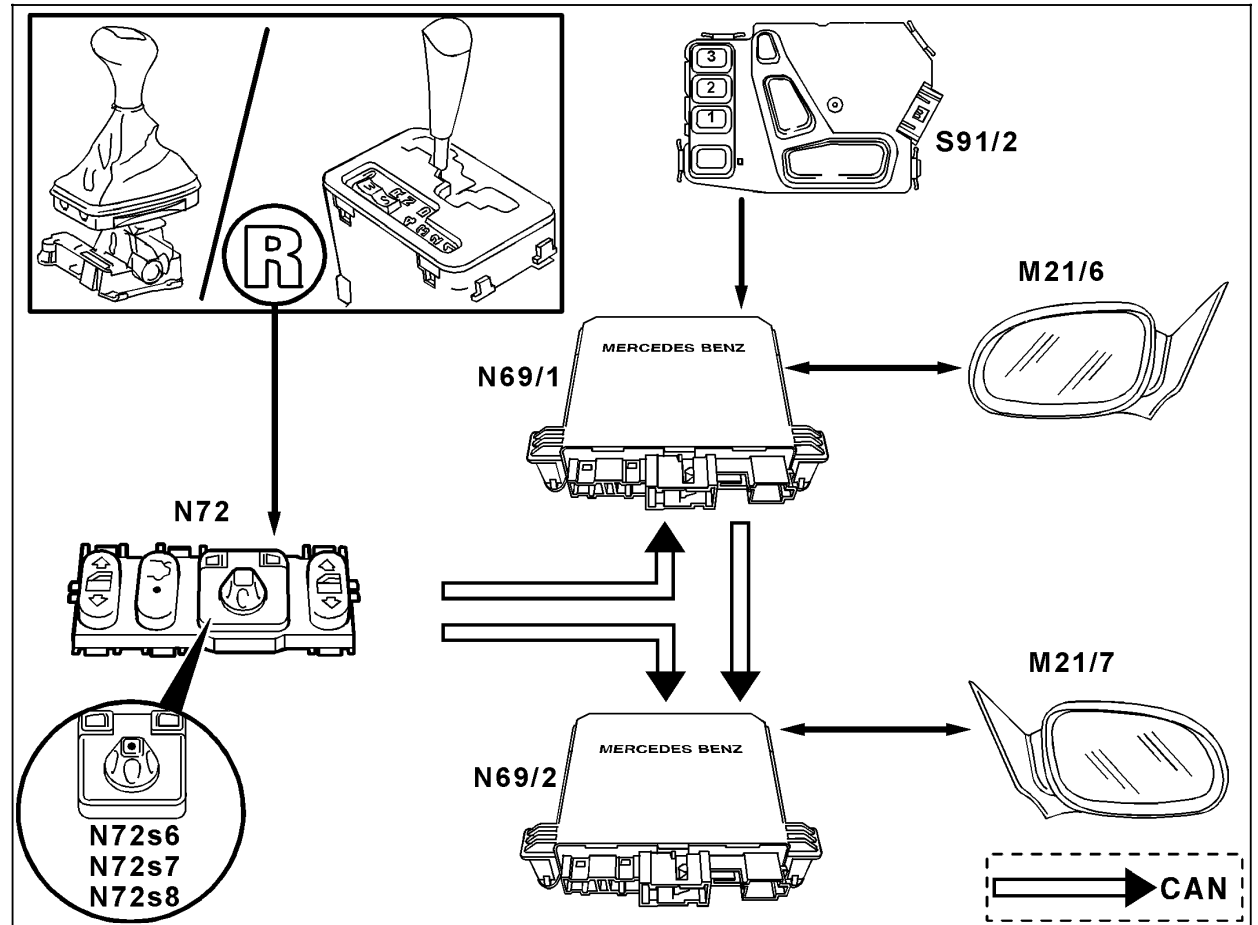


Figure 2

- CAN Control-Area-Network
- M21/6 Left outside rearview mirror
- M21/7 Right outside rearview mirror
- N69/1 Front driver-side door control module
- N69/2 Passenger-side door control module
- N72 Lower control field control module
- N72s6 Outside rearview mirror-vertical adjustment
- N72s7 Outside rearview mirror-horizontal adjustment
- N72s8 Outside rearview mirror-left/right
- R Reverse gear engagement recognition
- S91/2 Left front door ESA switch group (with memory)

P88.79-0244-06

Electrical Test Program – Connection of Components

Interior/outside Mirror Dimming (driverside)
Model 210 shown

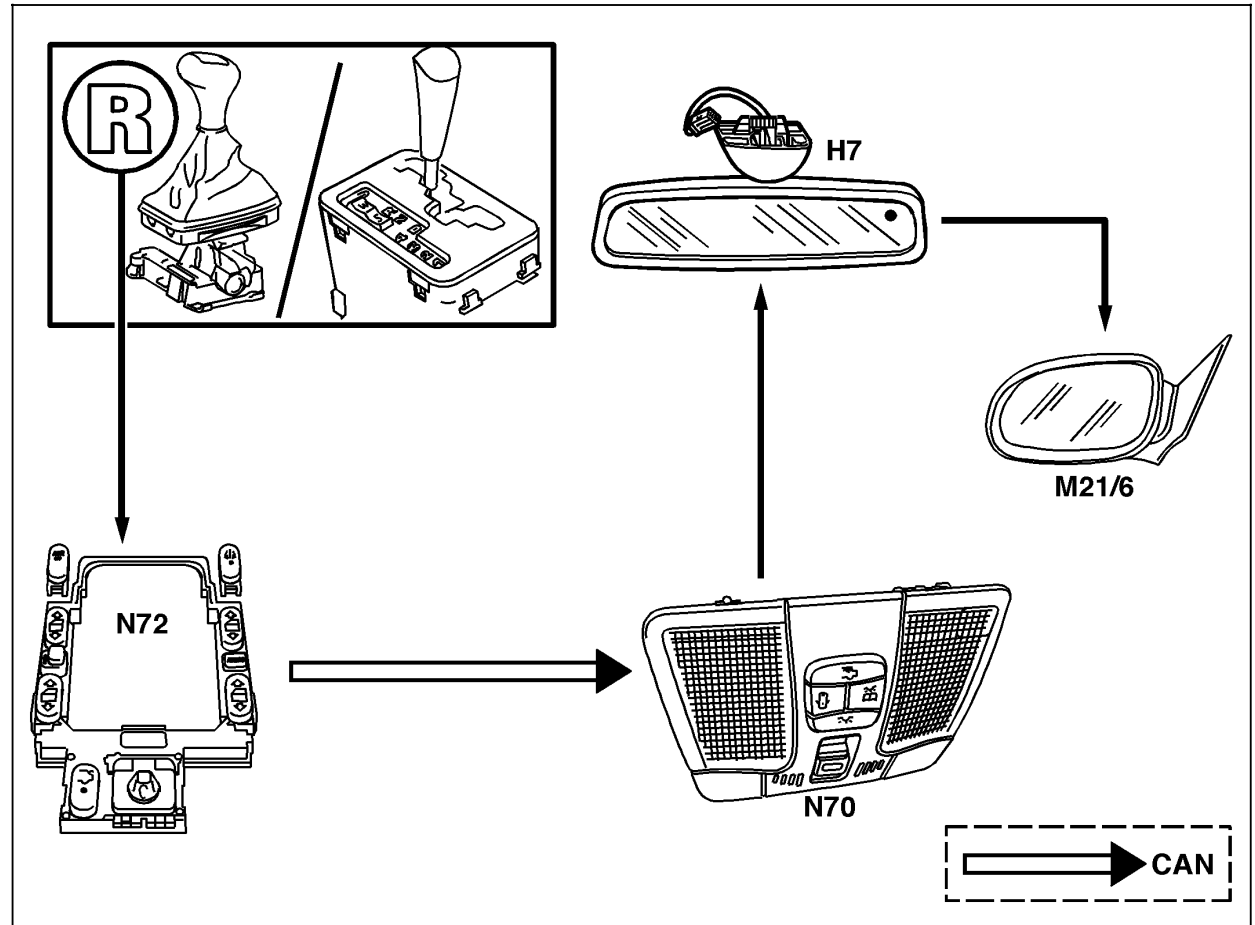


Figure 3

- CAN Control-Area-Network
- H7 Electronic mirror dimming
- M21/6 Left outside rearview mirror
- N70 Roof control panel control module
- N72 Lower control field control module
- R Reverse gear engagement recognition

P68.49-0202-06

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Connection of Components

Mirror Heating

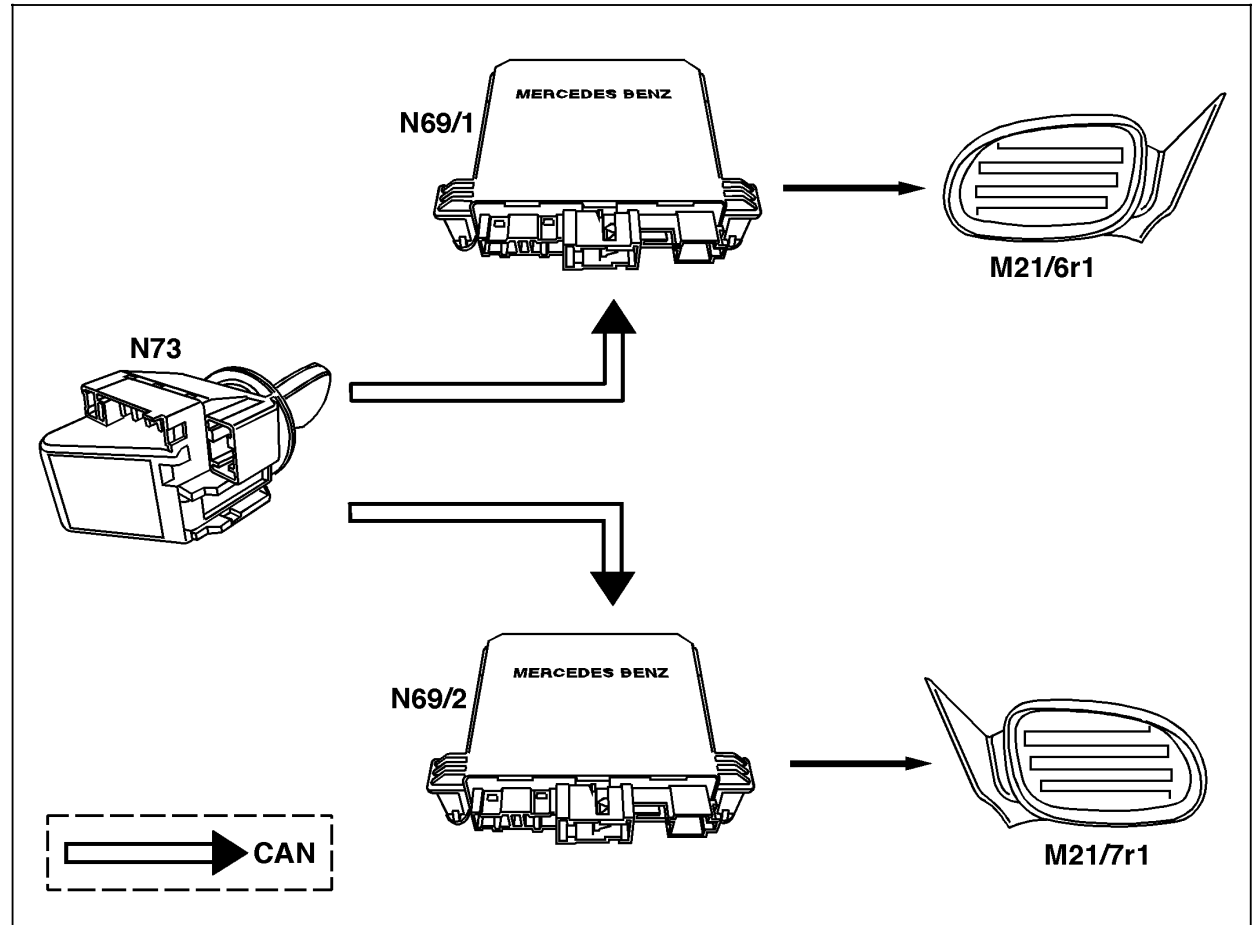


Figure 4

- CAN Control-Area-Network
- M21/6r1 Mirror heater
- M21/7r2 Mirror heater
- N69/1 Front driver-side door control module
- N69/2 Passenger-side door control module
- N73 Electronic ignition lock control module

P88.70-0236-06

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Preparation for Test

Preliminary work:

Diagnosis - Diagnostic Trouble Code (DTC) Memory 12

Preparation for Test:

1. Review section: 0, C/1, 12, 13, 20, 21, 22, 31,
2. Review ETM diagrams:
PE46.15-P-2000B, PE68.49-P-2000D,
PE68.49-P-2000C, PE88.79-P-2000I,
PE88.79-P-2000J, PE88.79-P-2000F
3. All fuses OK,
4. Battery voltage > 11 V,
3. Disconnect battery ground cable prior to connecting or disconnecting any electrical connector to any control module (to prevent the storing of erroneous diagnostic trouble codes),
4. Voltage supply to control modules and data lines ok, see DM, B&A, Vol. 2, section 7.1, 23

Electrical wiring diagrams:

Electrical Troubleshooting Manual, Model 202, group 88,
Electrical Troubleshooting Manual, Model 208, group 88,
Electrical Troubleshooting Manual, Model 210, groups 46, 88



For test measuring purposes, the CAN connection to the following control modules must be connected:

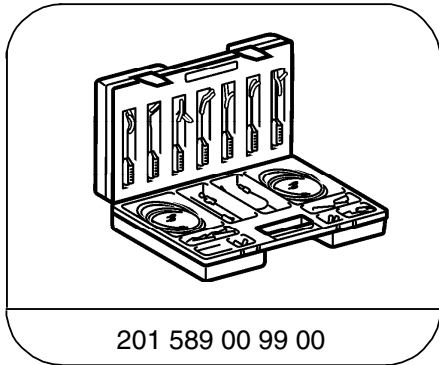
PSE control module (A37)

Signal pickup-and activation module (SAM) (N10/1)

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Preparation for Test

Special Tools



Electrical connecting set


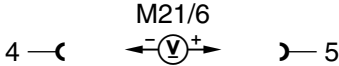
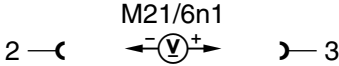
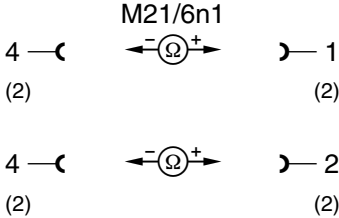
Conventional tools, test equipment

Description	Brand, model, etc.
Multimeter ¹⁾	Fluke models 23, 83, 85, 87

¹⁾ Available through the MBUSA Standard Equipment Program.


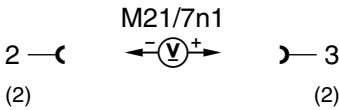
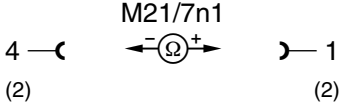
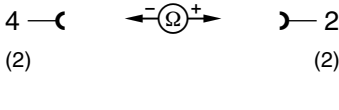
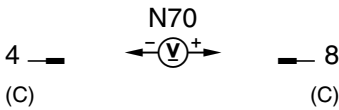
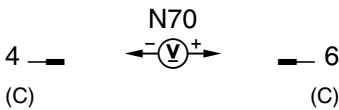
12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		Activation of: Vertical adjustment motor (M21/6m1) via front driver- side door control module (N69/1)		Outside rearview mirror- left/right (N72s8) set to left outside rearview mirror. Ignition: ON Press (N72s8) to: Up adjustment: Down adjustment:	11 – 14 V –11 to –14 V	Wiring, Version coding of N69/1, See WIS document: AD88.79-P-6000-03A N69/1
2.0		Mirror position memory (M21/6n1) Voltage supply to potentiometer		Ignition: ON	4 – 5 V	Wiring, N69/1
3.0		Mirror position memory (M21/6n1) Potentiometer		Ignition: OFF Carefully push mirror glass in all directions using the palm of hand.	Values change within the range of: 0.7 – 1.5k Ω 0.3 – 1.3k Ω	Wiring, M21/6m1 Wiring, M21/6m2


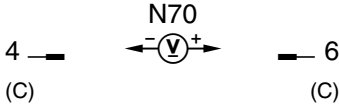
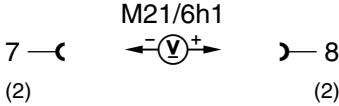
12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0		Mirror position memory (M21/7n1) Voltage supply to potentiometer		Ignition: ON	4 – 5 V	Wiring, N69/2
5.0		Mirror position memory (M21/7n1) Potentiometer	 	Ignition: OFF Carefully push mirror glass in all directions using the palm of hand.	Values change within the range of: 0.7 – 1.5k Ω 0.3 – 1.3k Ω	Wiring, M21/7m1 Wiring, M21/7m2
6.0		Dimming interior rearview mirror Voltage supply from roof control panel control module (N70)		Ignition: ON	11 – 14 V	N70
7.0		Interior illumination "ON" signal to dimming interior rearview mirror (H7) via roof control panel control module (N70)		Ignition: ON Interior illumination switched on.	11 – 14 V	N70

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Electrical Test Program – Test


⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0		Reverse gear engaged signal to dimming rearview mirror (H7) via roof control panel control module (N70)		Ignition: ON Reverse gear engaged.	11 – 14 V	N70
9.0		Left outside rearview mirror (dimming) Activation of front driver-side door control module (N69/1)		Ignition: ON Interior illumination: OFF Cover light sensor on backside of interior rearview mirror, using tape. Shine light beam from flashlight at glass surface of interior rearview mirror.	0 – 1, 5 V	Wiring, ⇒ 6.0, Electronic mirror dimming (H7), N69/1, N70

12.7 Mirror, Steering Column Adjustment, Heated Mirrors (MSC) Models 202, 208, 210 as of M.Y. 1998

Version Coding

Version coding must be undertaken when new control modules (N32/1, N32/2, N69/1, N69/2) are connected to battery current for the first time.

Coding

-  ECE
- Rest of the world

Coding Accessories

- Electrical Seat Adjustment (ESA): YES/NO

Left/right front ESA control module (with memory) (N32/1, N32/2)

Model 210 Version Coding

- Seat adjustment motors AEG (Hammerstein) with head restraint preset
- Seat adjustment motors AEG (Hammerstein) without head restraint preset
- Seat adjustment motors Bosch (Brose) with head restraint preset
- Seat adjustment motors Bosch (Brose) without head restraint preset
- Steering column adjustment: active/inactive

Model 208 Version Coding

- Seat adjustment motors AEG (Hammerstein) with head restraint preset
- Seat adjustment motors AEG (Hammerstein) without head restraint preset



The control modules (N32/1, N32/2, N69/1, N69/2) may be version coded as many times as necessary.