5.4 Convenience Feature (CF)
Models 202, 208, 210 as of M.Y. 1998

Notes regarding Convenience Feature:

Actuation of power windows via lower control field control module (N72)
The desired adjustment of the power window motor is sent from the lower control field control module (N72) via the CAN bus to the corresponding door control module. These in turn activate the power window motor itself.

Power window motor actuation via power window switch in the rear doors
The power window switches located in the rear doors, act directly on the rear driver/passenger-side door control modules (N69/3, N69/4). Except Model 208.4.

Child safety lock switch (N72s5)
With a deactivated child safety lock switch, the lower control field control module sends the message "Release rear power window motor" via the CAN bus. This message is recorded by the rear driver/passenger-side door control modules (N69/3, N69/4) and can be activated by pressing the left/right rear power window switches (S21/3, S21/4). Except Model 208.4.

Convenience Opening
Opening is accomplished when the front driver-side door control module (N69/1) first receives a valid "open" signal and then a continuous IR signal (button kept depressed) from the electronic ignition lock control module (N73). The same opening conditions apply for the front passenger side door control module (N69/2).

Convenience Closing
Closing is accomplished when the front driver-side door control module first receives a valid "close" signal and then a continuous IR signal (button kept depressed) from the electronic ignition lock control module (N73). The same closing conditions apply for the front passenger-side door.

Function Sequence
The activated (via IR tansmitter key) left/right front door IR receiver (A26/1, A26/2) located in the door, sends a signal to the corresponding left/right front door control module (N69/1, N69/2). As a result, the left/right front door control module sends a CAN message to the electronic ignition lock control module (N73). The electronic ignition lock control module in turn, checks the coded signal and if a valid code exists, sends a the CAN message "release granted" back to the left/right front door control module. Should a parallel meassage "Door closed" (along with the CAN message) be received by the left/right front door control module, from the PSE control module (A37), the left/right front door control module will act directly to its corresponding power window motor and at the same time send the received CAN message to the other left/right door control module, as well as to the roof control panel control module (N70): "open" and "close".
The sliding-pop-up roof and power window motors are activated directly from their corresponding control modules

The convenience feature function is only possible via the infrared signal and functions in this mode as long as the IR transmitter button is depressed.

Diagnosis – Function Test (Convenience Feature)

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 1.0 **Power windows**	**Ignition key position "1"**		
Open side windows	Press **back** of power window switch down to first detent.	Side window **opens**, as long as switch is depressed.	14 Complaint No.'s 4, 8, 12, 16
Open side windows (one-touch opening)	Press **back** of power window switch down past first detent.	Side window **opens** completely (switch does not have to be held depressed)**.**	14 Complaint No.'s 5, 9, 13, 17
Close side windows	Press **front** of power window switch down.	Side window **closes**, as long as switch is depressed.	14 Complaint No.'s 6, 10, 14, 18
Close side windows (one-touch closing)	Press **front** of power window switch down past first detent.	Side window **closes** completely (switch does not have to be held depressed)**.**	14 Complaint No.'s 7, 11, 15, 19

[1] Observe Preparation for Test, see 22.

Diagnosis – Function Test (Convenience Feature)

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 2.0 **Convenience closing** Side windows and sliding/pop-up roof	Using IR transmitter or electronic vehicle key [2], **lock** front doors or trunk lid and hold in this position. (Windows synchronized, 22).	Open sliding/pop-up roof or open side windows **close**.	14 Complaint No. 2
⇒ 3.0 **Convenience opening** Side windows and sliding/pop-up roof	Using IR transmitter or electronic vehicle key [2], **unlock** vehicle and hold in this position.	Closed sliding/pop-up roof or open side windows **open**.	14 Complaint No. 1

[1] Observe Preparation for Test, see 22.

[2] (only USA), M.Y. 1998

Diagnosis – Function Test (Convenience Feature)

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 4.0 **Sliding/pop-up roof**	**Ignition key in position "1"**		
Open sliding roof	Push sliding/pop-up roof switch toward rear.	Sliding roof opens.	14 Complaint No. 23, 24
Open sliding roof (Model 210 Wagon only)	Push sliding/pop-up roof switch toward rear and **hold in this position.** Push sliding/pop-up roof switch toward rear second time.	Sliding roof opens. Sliding roof now opens completely.	Check coding in electronic ignition lock control module (N73).
Close sliding roof	Push sliding/pop-up roof switch toward front.	Sliding roof closes.	14 Complaint No. 25
Open pop-up roof	Push sliding/pop-up roof switch up.	Pop-up roof opens.	14 Complaint No. 26
Close pop-up roof	Pull sliding/pop-up roof switch down.	Pop-up roof closes.	14 Complaint No. 27

[1] Observe Preparation for Test, see 22.

Diagnosis – Function Test (Convenience Feature)

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 1.0 **Power windows**	**Ignition key in position "1"**		
Open left rear window	Press **back** of power window switch **(N72s3)** down to first detent.	Side window **opens**, as long as switch is depressed.	14 Complaint No. 15
Open right rear window	Press **back** of power window switch **(N72s4)** down to first detent.	Side window **opens**, as long as switch is depressed.	14 Complaint No. 20
Close left rear window	Press **front** of power window switch **(N72s3)** down to first detent. Press **front** of power window switch **(N72s3)** down past first detent.	Side window **closes**, as long as switch is depressed. Side window **closes**, as long as switch is depressed. Window does not have one touch closing.	14 Complaint No. 15
Close right rear window	Press of **front** power window switch **(N72s4)** down to first detent. Press of **front** power window switch **(N72s4)** down past first detent.	Side window **closes**, as long as switch is depressed. Side window **closes**, as long as switch is depressed. Window does not have one touch closing.	14 Complaint No. 20

[1] Observe Preparation for Test, see 22.

Diagnosis – Function Test (Convenience Feature)

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 1.0 **Power windows**	**Ignition key in position "1"**		
Open left rear window (one-touch opening)	Press **back** of power window switch **(N72s3)** down past first detent.	Side window **opens** completely (switch does not have to be held depressed)**.**	14 Complaint No. 15
Open right rear window (one-touch opening)	Press **back** of power window switch **(N72s3)** down past first detent.	Side window **opens** completely (switch does not have to be held depressed)**.**	14 Complaint No. 20
Open left front window	Press **back** of power window switch in center console **(S21/1)** down to first detent.	Side window **opens**, as long as switch is depressed.	14 Complaint No. 5
Open right front window	Press **back** of power window switch in center console **(S21/2)** down to first detent.	Side window **opens**, as long as switch is depressed.	14 Complaint No. 10
Close left front window	Press **front** of power window switch in center console **(S21/1)** down to first detent. Press **front** of power window switch in center console **(S21/1)** down past first detent.	Side window **closes** , as long as switch is depressed. Window does not have one touch closing. Side window **closes** , as long as switch is depressed. Window does not have one touch closing.	14 Complaint No. 5

[1] Observe Preparation for Test, see 22.

Diagnosis – Function Test (Convenience Feature)

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 1.0 **Power windows**	**Ignition key in position "1"**		
Close right front window	Press **front** of power window switch in center console **(S21/2)** down to first detent. Press **front** of power window switch in center console **(S21/2)** down past first detent.	Side window **closes** , as long as switch is depressed. Window does not have one touch closing. Side window **closes** , as long as switch is depressed. Window does not have one touch closing.	14 Complaint No. 10
Open left front window (one-touch opening)	Press **back** of power window switch in center console **(S21/2)** down past first detent.	Side window **opens** completely (switch does not have to be held depressed)**.**	14 Complaint No. 5
Open right front window (one-touch opening)	Press **back** of power window switch in center console **(S21/2)** down past first detent.	Side window **opens** completely (switch does not have to be held depressed)**.**	14 Complaint No. 10

[1] Observe Preparation for Test, see 22.

Diagnosis – Function Test (Convenience Feature)

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 2.0 **Central locking of all power windows**	Ignition **ON** Soft top must be very nearly open or closed. Press soft top switch **(S84)** down twice within 0.5s and keep depressed.	Before the soft top starts moving, the side windows are first completely opened. The rear side windows will open first.	14 Complaint No. 4
⇒ 3.0 **Convenience opening/closing of all power windows**	Ignition **OFF** Side windows: **OPEN** Convienence closing: Using IR transmitter, **lock** vehicle and hold in this position. Convienence opening: Using IR transmitter, **unlock** vehicle and hold in this position (longer than 5s).	The Operation of the soft top is inhibited if the power window switches or the soft top switch are pressed. All open side windows will close. All side windows will open.	14 Complaint No. 4

[1] Observe Preparation for Test, see 22.

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

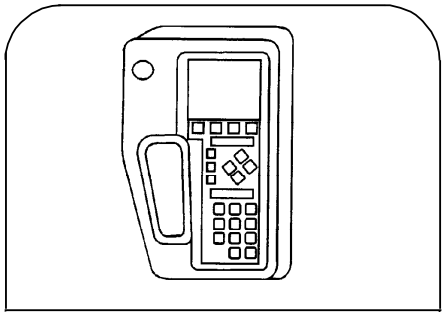
Preparation for Test:

1. Fuses ok,
2. Ignition: **ON**
3. Connect the Hand-Held Tester (HHT) to X11/4, according to diagram, see section 0.
4. Voltage supply to control modules and CAN data lines ok. See DM, B&A, Vol. 2, section 7.1, 23
5. All CAN data lines must be connected properly.

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

DTC's for one particular system may be stored in other control modules, therefore readout the DTC's from all other relevant control modules as well. When reading out DTC's, all stored DTCs will appear, which means that some of the DTCs that appear, will not be relevant to the system being checked. Non-relevant DTCs will be described in the particular system.

Special Tools



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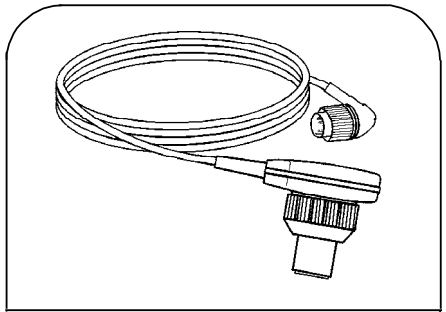
Hand-Held-Tester



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Test cable

Note regarding DTCs

Only those DTCs as noted in 12, are relevant for the convenience feature system.
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
⌜⌝+ short circuit to positive (POS)
⌜⌝– short circuit to ground (GND)
–//– open circuit

With some fault codes, additional information as well as fault frequency can be read out.

Fault frequency

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

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

DTC 	Possible cause	Test step/Remedy [1]
B1000	Roof control panel control module (N70) defective.	N70
B1001	Switch illumination, circuit 58d ⌐¬ (short circuit)	Wiring.
B1004	Lower control field control module (N72) does not belong to this model	Check vehicle coding, N72
B1010	Low voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1011	Excessive voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1013	Voltage supply, circuit 15R is missing from circuit 15	See DM, B&A, Vol. 2, section 7.1, 23
B1118	Sliding/pop-up roof switch (N70s1) signal time > 25 seconds or wiring ⌐¬ (short circuit)	Wiring, N70
B1520 001	Relay for sliding/pop-up roof (M12/1) does not switch over	N70
B1520 002	Relay signal time for sliding/pop-up roof (M12/1) is > 25 seconds	N70

[1] Observe Preparation for Test, see 22.

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

DTC	Possible cause	Test step/Remedy [1]
B1520 003	Voltage supply for Hall sensors for sliding/pop-up roof motor (M12/1m1)	23 ⇒ 19.0
B1520 004	Hall sensors for sliding/pop-up roof motor (M12/1m1) have wrong direction of rotation	M12/1
B1520 005	Hall sensor 1 for sliding/pop-up roof motor (M12/1b1) defective	23 ⇒ 19.0 M12/1
B1520 006	Hall sensor 2 for sliding/pop-up roof motor (M12/1b2) defective	23 ⇒ 19.0 M12/1
B1000	Lower control field control module (N72) defective.	N72
B1004	Lower control field control module (N72) incorrect	Check vehicle coding, N72
B1010	Low voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1011	Excessive voltage	See DM, B&A, Vol. 2, section 7.1, 23

[1] Observe Preparation for Test, see 22.

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

DTC	Possible cause	Test step/Remedy [1]
B1120	Left front power window switch (N72s1) signal time > 25 seconds or wiring ⌜⌝ (short circuit) All except Model 208.4. On model 208.4, switch (S21/1) is installed in place of switch N72s1. S21/1 is connected to the Roll bar/power soft top control module (N52). Read DTC's out of Roll bar/power soft top control module.	N72 N52
B1121	Right front power window switch (N72s1) signal time > 25 seconds or wiring ⌜⌝ (short circuit) On model 208.4, switch (S21/1) is installed in place of switch N72s1. S21/1 is connected to the Roll bar/power soft top control module (N52). Read DTC's out of Roll bar/power soft top control module.	N72 N52
B1122	Left rear power window switch (N72s3) signal time > 25 seconds or wiring ⌜⌝ (short circuit)	N72
B1123	Right rear power window switch (N72s4) signal time > 25 seconds or wiring ⌜⌝ (short circuit)	N72
B1000	Front driver-side door control module (N69/1) defective.	N69/1

1) Observe Preparation for Test, see 22.

2) (only USA)

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

DTC	Possible cause	Test step/Remedy [1]
B1010	Low voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1011	Excessive voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1100	Left front door lock switch (S86/1s1) [2] (CF) unlock signal time > 25 seconds or wiring ⌐¬ (short circuit)	23 ⇒ 22.0, 23.0
B1101	Left front door lock switch (S86/1s2) [2] (CF) lock signal time > 25 seconds or wiring ⌐¬ (short circuit)	23 ⇒ 22.0, 23.0
B1520 001	Relay for left front power window motor (M10/3) does not switch over	N69/1
B1520 002	Relay signal time for left front power window motor (M10/3) is > 25 seconds	N69/1
B1520 003	Voltage supply for Hall sensors for left front power window motor (M10/3) or wiring ⌐¬ (short circuit)	23 ⇒ 6.0 23 ⇒ 7.0

[1] Observe Preparation for Test, see 22.

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

DTC	Possible cause	Test step/Remedy [1]
B1520 004	Hall sensors for left front power window motor (M10/3) have wrong direction of rotation	M10/3
B1520 005	Hall sensor 1 for left front power window motor (M10/3) defective	Wiring, M10/3
B1520 006	Hall sensor 2 for left front power window motor (M10/3) defective	Wiring, M10/3
B1520 007	Left front power window motor (M10/3) current draw	Check M10/3 for possible binding, M10/3
B1000	Front passenger-side door control module (N69/2) defective.	N69/2
B1010	Low voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1011	Excessive voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1100	Right front door lock switch (S87/1s1) [2](CF) unlock signal time > 25 seconds or wiring ⌐¬ (short circuit)	23 ⇒ 22.0, 23.0

1) Observe Preparation for Test, see 22.

2) (only USA)

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

DTC	Possible cause	Test step/Remedy [1]
B1101	Right front door lock switch (S87/1s2) [2](CF) lock signal time > 25 seconds or wiring ⌐¬ (short circuit)	23 ⇒ 22.0, 23.0
B1520 001	Relay for right front power window motor (M10/4) does not switch over	N69/2
B1520 002	Relay signal time for right front power window motor (M10/4) is > 25 seconds	N69/2
B1520 003	Voltage supply for Hall sensors for right front power window motor (M10/4) or wiring ⌐¬ (short circuit)	23 ⇒ 11.0 23 ⇒ 12.0
B1520 004	Hall sensors for right front power window motor (M10/4) have wrong direction of rotation	M10/4
B1520 005	Hall sensor 1 for right front power window motor (M10/4) defective	Wiring, M10/4
B1520 006	Hall sensor 2 for right front power window motor (M10/4) defective	Wiring, M10/4

[1] Observe Preparation for Test, see 22.

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

DTC	Possible cause	Test step/Remedy [1]
B1520 007	Right front power window motor (M10/4) current draw	Check M10/3 for possible binding, M10/4
B1000	Rear driver-side door control module (N69/3) defective.	N69/3
B1010	Low voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1011	Excessive voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1155	Left rear power window switch (S21/3) signal time > 25 seconds or wiring ⌜⌝– (short circuit to ground)	23 ⇒ 15.0
B1407 006	Short circuit between rear driver-side door control module (N69/3) and left rear power window switch (S21/3), Illumination for left rear power window switch (S21/3), End stage for rear driver-side door control module (N69/3).	Wiring. S21/3 N69/3
B1520 001	Relay for left rear power window motor (N69/3m1) does not switch over	N69/3
B1520 002	Relay signal time for left rear power window motor (N69/3m1) is > 25 seconds	N69/3

[1] Observe Preparation for Test, see 22.

[2] (only USA)

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

DTC	Possible cause	Test step/Remedy [1]
B1520 003	Voltage supply for Hall sensors for left rear power window motor (N69/3m1) or wiring ⌜⌝ (short circuit)	N69/3
B1520 004	Hall sensors for left rear power window motor (N69/3m1) have wrong direction of rotation	N69/3
B1520 005	Hall sensor 1 for left rear power window motor (N69/3m1) defective	N69/3
B1520 006	Hall sensor 2 for left rear power window motor (N69/3m1) defective	N69/3
B1000	Rear passenger-side door control module (N69/4) defective.	N69/4
B1010	Low voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1011	Excessive voltage	See DM, B&A, Vol. 2, section 7.1, 23
B1155	Right rear power window switch (S21/4) signal time > 25 seconds or wiring ⌜⌝– (short circuit to ground)	23 ⇒ 17.0

[1] Observe Preparation for Test, see 22.

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

DTC	Possible cause	Test step/Remedy [1]
B1407 006	Short circuit between rear passenger-side door control module (N69/4) and right rear power window switch (S21/4), Illumination for right rear power window switch (S21/4), End stage for rear passenger-side door control module (N69/4).	Wiring, S21/4 N69/4
B1520 001	Relay for right rear power window motor (N69/4m1) does not switch over	N69/4
B1520 002	Relay signal time for right rear power window motor (N69/4m1) is > 25 seconds	N69/4
B1520 003	Voltage supply for Hall sensors for right rear power window motor (N69/4m1) or wiring ⌐¬ (short circuit)	N69/4
B1520 004	Hall sensors for right rear power window motor (N69/4m1) have wrong direction of rotation	N69/4
B1520 005	Hall sensor 1 for right rear power window motor (N69/4m1) defective	N69/4
B1520 006	Hall sensor 2 for right rear power window motor (N69/4m1) defective	N69/4

1) Observe Preparation for Test, see 22.

2) (only USA)

Diagnosis – Recalling Actual values with HHT

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

Preparation for Test

1. Fuses ok,
2. Battery voltage > 11,
3. Connect the Hand-Held Tester (HHT) to X11/4, according to diagram, see section 0,
4. Voltage supply to the control modules and CAN data lines ok, see DM, B&A, section 7.1, 23,
5. All CAN data lines properly connected.

i

The actual values and activations of any system may be stored in numerous other control modules, therefore readout all actual values and activations from the control modules which are relevent to this system. When reading out the actual values, all stored in that control module will be shown.

⚠ **CAUTION!**

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

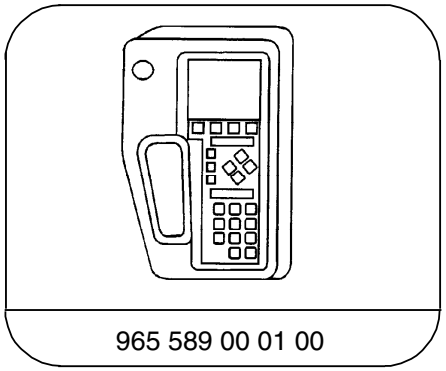
Abreviations:

OCP	Over-head control panel control module (N70)
EIS	Electronic ignition key
PW	Power window motor
PSE	PSE control module (A37), combined functions
DCM 1	Front driver-side door control module (N69/I)
DCM 2	Front passenger-side door control module (N69/2)
DCM 3	Rear driver-side door control module (N69/3)
DCM 4	Rear passenger-side door control module (N69/4)
LCP	Lower control panel control module (N72)
CL	Central locking

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).

Diagnosis – Recalling Actual Values with HHT

Special Tools



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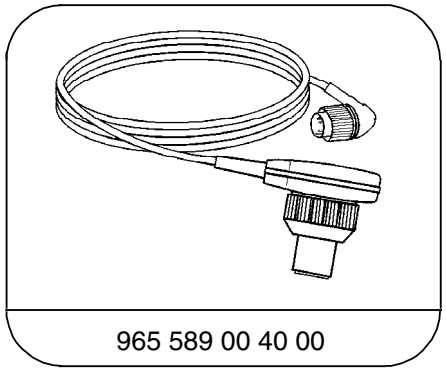
Hand-Held-Tester



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Test cable

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
1.0	DCM1 DCM2	**Front driver/passenger-side door control module (N69/1, N69/2)** Circuit 30			√ F	N69/1, N69/2
2.0	DCM1 DCM2 DCM3 DCM4	**Power window motor synchronized**			YES NO	Synchronize power window motor.
3.0	DCP	**Roof control panel control module (N70)** Circuit 30			√ F	N70
4.0	DAS Drive auth.	**Electronic ignition lock control module (N73)** Circuit 15R		Ignition switch: Position 1 ON OFF	 ON OFF	N73
5.0	DAS Drive auth.	**Circuit 15**		Ignition switch: Position 2 ON OFF	 ON OFF	N73
6.0	DCM1 CL	**IR signal from transmitter key via left front door IR receiver (A26/1)** to front driver-side door control module (N69/1)		Point the transmitter key at the left front door IR receiver (A26/1) and **unlock** vehicle.	√ F	23 ⇒ 2.0 Transmitter key defective.

[1] Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
7.0	DCMI CL	**Determining if transmitter key matches vehicle**		Point the transmitter key at the left front door IR receiver (A26/1) and **unlock** vehicle.	YES NO	23 ⇒ 2.0 Transmitter key does not belong to this vehicle.
8.0	DCMI CL	**IR convenience feature signal from transmitter key to front driver-side door control module (N69/1)**		Point the transmitter key at the left front door IR receiver (A26/1) and **unlock** vehicle, while keeping the button depressed.	YES NO	Check batteries in the transmitter key, 23 ⇒ 2.0, Transmitter key defective.
9.0	DCMI CL	**Ground signal from left front door lock switch (S86/1s1)** [2] (CF), unlock, to front driver-side door control module (N69/1)		Using the mechanical key [2], **unlock** vehicle and hold key in that position.	YES NO	23 ⇒ 22.0, 23.0
10.0	DCMI PW	**Activation of:** **Left front power window motor (M10/3)** via front driver-side door control module (N69/1)		With RCL or mechanical key [2], **unlock** vehicle and hold in that postion.	LOWER STOP	23 ⇒ 5.0, 6.0, 7.0

1) Observe Preparation for Test, see 22.

2) (only USA)

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
11.0	DCMI CL	**IR signal from transmitter key via left front door IR receiver (A26/1)** to front driver-side door control module (N69/1).		Point transmitter key at left front door IR receiver (A26/1) and **lock** vehicle	√ F	Check batteries in the transmitter key, 23 ⇒ 2.0 Transmitter key defective.
12.0	DCMI CL	**Determining if transmitter key matches vehicle**		Point the transmitter key at the left front door IR receiver (A26/1) and **lock** vehicle.	YES NO	23 ⇒ 2.0, Transmitter key does not belong to vehicle.
13.0	DCMI CL	**IR convienence signal from transmitter key to front driver-side door control module (N69/1).**		Point the transmitter key at the left front door IR receiver (A26/1) and **lock** vehicle.	YES NO	Check batteries in the transmitter key, Transmitter key defective.
14.0	DCMI CL	**Ground signal from left front door lock switch (S86/1s1)** [2] (CF), unlock, to front driver-side door control module (N69/1)		Using the mechanical key [2], **lock** vehicle and hold key in that position.	YES NO	23 ⇒ 22.0, 23.0

1) Observe Preparation for Test, see 22.

2) (only USA)

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
15.0	DCM1 PW	**Activation of:** **Left front power window motor (M10/3)** via front driver-side door control module (N69/1)		With RCL or mechanical key [2], **lock** vehicle and hold in that postion.	UP STOP F	23 ⇒ 5.0, 7.0
16.0	DCM2 CL	**IR signal from transmitter key via right front door IR receiver (A26/2)** to front passenger-side door control module (N69/2).		Point the transmitter key at the right front door IR receiver (A26/2) and **unlock** vehicle.	√ F	Check batteries in the transmitter key, 23 ⇒ 3.0, Transmitter key defective.
17.0	DCM2 CL	**Determining if transmitter key matches vehicle**		Point the transmitter key at the right front door IR receiver (A26/2) and **unlock** vehicle.	YES NO	23 ⇒ 3.0, Transmitter key does not belong to vehicle.
18.0	DCM CL	**IR convienence signal from transmitter key to front passenger-side door control module (N69/2).**		Point the transmitter key at the right front door IR receiver (A26/2) and **unlock** vehicle, keeping the button depressed.	YES NO	Check batteries in the transmitter key, Transmitter key defective.

[1] Observe Preparation for Test, see 22.

[2] (only USA)

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
19.0	DCM2 PW	**Activation of:** **Right front power window motor (M10/4)** via front passenger-side door control module (N69/2)		With RCL, **unlock** passenger-side door and hold in that postion.	DOWN STOP F	23 ⇒ 10.0, 12.0
20.0	DCM2 CL	**IR signal from transmitter key via right front door IR receiver (A26/2)** to front passenger-side door control module (N69/2).		Point the transmitter key at the right front door IR receiver (A26/2) and **lock** vehicle.	√ F	Check batteries in the transmitter key, 23 ⇒ 3.0, Transmitter key defective.
21.0	DCM2 CL	**Determining if transmitter key matches vehicle**		Point the transmitter key at the right front door IR receiver (A26/2) and **lock** vehicle.	YES NO	23 ⇒ 3.0, Transmitter key does not belong to vehicle.
22.0	DCM CL	**IR convienence signal from transmitter key to front passenger-side door control module (N69/2)**.		Point the transmitter key at the right front door IR receiver (A26/2) and **lock** vehicle.	YES NO	Check batteries in the transmitter key, Transmitter key defective.

[1] Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
23.0	DCM2 PW	**Activation of:** **Right front power window motor (M10/4)** via front passenger-side door control module (N69/2)		With RCL, **lock** passenger-side door and hold in that postion.	UP STOP F	23 ⇒ 10.0, 12.0
24.0	DCM3 PW	**Activation of:** **Left rear power window motor (N69/3m1)**		With transmitter key or mechanical key [2] **lock** driver-side door and hold in this position.	UP STOP F	Rear driver-side door control module (N69/3).
25.0	DCM3 PW	**Activation of:** **Left rear power window motor (N69/3m1)**		With transmitter key or mechanical key [2] **unlock** driver-side door and hold in this position.	DOWN STOP NO	Rear driver-side door control module (N69/3).
26.0	DCM4 PW	**Activation of:** **Right rear power window motor (N69/4m1)**		With transmitter key or mechanical key [2] **lock** driver-side door and hold in this position.	UP STOP F	Rear passenger-side door control module (N69/4).

1) Observe Preparation for Test, see 22.

2) (only USA)

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
27.0	DCM4 PW	**Activation of: Right rear power window motor (N69/4m1)**		With transmitter key or mechanical key [2] **unlock** driver-side door and hold in this position.	DOWN STOP F	Rear passenger-side door control module (N69/4).
28.0	LCP	**Left front power window switch (N72s1**) (center)		Ignition: **ON** Switch (N72s1): Press **back** of switch: Press **back** of switch past first detent and hold: Switch **not** pressed: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN 0 UP AUTO. UP	Lower control panel control module (N72).
29.0	UV5 PW	**Activation of: Left rear power window motor (M10/5)** Model 208.4 only		With transmitter key or mechanical key [2] **lock** driver-side door and hold in this position.	DOWN	CAN-data bus Lower control panel control module (N72). Roll bar/power soft top control module (N52).

[1] Observe Preparation for Test, see 22.

[2] (only USA)

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
30.0	LCP	**Right front power window switch (N72s2) (center)**		Ignition: **ON** Switch (N72s2): Press **back** of switch: Press **back** of switch past first detent and hold: Switch **not** pressed: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN 0 AUTO. UP	Lower control panel control module (N72).
31.0	UVS PW	Activation of: Right rear power window motor (M10/6) Model 208.4 only		With transmitter key or mechanical key [2] **lock** driver-side door and hold in this position.	DOWN	CAN-data bus Lower control panel control Roll bar/power soft top control module (N52).
32.0	UVS	**CAN-signal from LCP to Roll bar /soft top control module (N52)** for left rear window motor. Model 208.4 only		Ignition: **ON** Switch (N72s3): Press **back** of switch: Switch **not** pressed: Press **front** of switch:	 DOWN 0 UP	CAN data bus Lower control panel control module (N72)

[1] Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
33.0	UV5	**CAN-signal from LCP to Roll bar /soft top control module (N52)** for right rear window motor. Model 208.4 only		Ignition: **ON** Switch (N72s4): Press **back** of switch: Switch **not** pressed: Press **front** of switch:	 DOWN 0 UP	CAN-data bus Lower control panel control module (N72)
34.0	LCP	**Left rear power window switch (N72s3)**		Ignition: **ON** Switch (N72s3): Press **back** of switch: Press **back** of switchpast first detent and hold: Switch **not** pressed: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN 0 UP AUTO. UP	Lower control panel control module (N72).
35.0	LCP	**Right rear power window switch (N72s4)**		Ignition: **ON** Switch (N72s4): Press **back** of switch: Press **back** of switchpast first detent and hold: Switch **not** pressed: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN 0 UP AUTO. UP	Lower control panel control module (N72).

[1] Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
36.0	DCM3	**Left rear power window switch (S21/3)**		Ignition: **ON** Switch (S21/3): Press **back** of switch: Press **back** of switchpast first detent and hold: Switch **not** pressed: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN 0 UP AUTO. UP	23 ⇒ 15.0
37.0	DCM4	**Right rear power window switch (S21/4)**		Ignition: **ON** Switch (S21/4): Press **back** of switch: Press **back** of switchpast first detent and hold: Switch **not** pressed: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN 0 UP AUTO. UP	23 ⇒ 17.0

[1] Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
38.0	LCP	**Child safety lock switch (N72s5)**		Ignition: **ON** N72s5: Push switch to right (child symbol visible): Push switch to left (child symbol not visible):	 LOCKED UNLOCKED	Lower control panel control module (N72).
39.0	LCP	**Switch illumination Intensity circuit 58d** **Model 208.4 only: Switches N72s3, N72s4**		Ignition: **ON** Lights: **ON** Based on dimming of interior.	0 – 100%	N72
40.0	DCM3 DCM4	**Activation of: Illumination of rear door switches**		Ignition: **ON** Intensity set to max. Test button pressed on HHT: F2: F3:	Switch illumination. ON OFF	Left rear power window switch (S21/3), Right rear power window switch (S21/4), Rear driver-side door control module (N69/3), Rear passenger-side door control module (N69/4).

[1] Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
41.0	OCP	**Roof control panel control module (N70)** Circuit 30			√ F	N70
42.0	OCP	**Vehicle recognized**			YES NO	Check version codes in electronic ignition switch control module (N73), N70
43.0	OCP	**Sliding/pop-up roof (SR) switch (N70s1)**		Ignition: **ON** SR switch (N70s1): Press **back** of switch: Switch **not** pressed: Press **front** of switch: Push switch **up**: Pull switch **down**:	 SR OPENS 0 CLOSES POP-UP ROOF "UP" CLOSES	N70

[1] Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
44.0	OCP	**Sliding/pop-up roof Position test**		Ignition: **ON**	SLIDING ROOF CLOSED	⇒ 44.0
				Open pop-up roof	POP-UP ROOF OPEN	
				Open pop-up roof to end stop	POP-UP ROOF END POSITION	
				Open sliding roof	SLIDING ROOF OPEN	
				Open sliding roof to end position	SLIDING ROOF END POSITION	
45.0	OCP	**Sliding/pop-up roof synchronization**		Ignition: **ON** Sliding/pop-up roof synchronized	YES NO	Synchronize sliding/pop-up roof by raising pop-up roof completely and then keep switch pressed for more then 1 second. ⇒ 42.0

[1] Observe Preparation for Test, see 22.

Diagnosis – Recalling Actual Values with HHT

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/remedy [1]
46.0	OCP	**Sliding/pop-up roof Anti-flutter position** (Model 210 Wagon only)		Sliding/pop-up roof closed Press sliding/pop-up roof (SR) switch (N70s1) **back** until sliding/pop-up roof stops (SR will not fully open).	Anti-flutter position attained. YES NO	Version coding of electronic ignition switch control module (N73), Sliding/pop-up roof (M12/10 motor.
47.0	OCP	**Sliding/pop-up roof (M12/1)** motor Hall sensors (values count)		Ignition: **ON** Switch (N70s1): Pushed **backwards:** Pressed **forwards:** Push switch **upwards:** Pull switch **down:**	 Sliding roof opens, values increase. Sliding roof closes, values decrease.	Sliding/pop-up roof (M12/1) motor
48.0	PSE	**Door contact switch**		<10 V >10 V	YES NO	DM, B&A, Vol. 1, section 3.4, 23
49.0	PSE	**Door contact switch**		<15.5 V >15.5 V	YES NO	DM, B&A, Vol. 1, section 3.4, 23

[1] Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy [1]
No. 1 **Convenience Opening** Central **unlocking** of windows/sliding/pop-up roof with RCL or electronic vehicle key [2] does not function	Door switches (S17/3, S17/4, S17/5, S17/6) Left/right front door IR receivers (A26/1, A26/2) Front driver/passenger-side door control modules (N69/1, N69/2) Electronic ignition switch control module (N73) PSE control module (A37)	DM, B&A, Vol. 1, section 3.4, 23, 23 ⇒ 2.0 – 4.0
No. 2 **Convenience Closing** Central **locking** of windows/sliding/pop-up roof with RCL or electronic vehicle key [2] does not function	Door switches (S17/3, S17/4, S17/5, S17/6) Left/right front door IR receivers (A26/1, A26/2) Front driver/passenger-side door control modules (N69/1, N69/2) Electronic ignition switch control module (N73) PSE control module (A37)	DM, B&A, Vol. 1, section 3.4, 23, 23 ⇒ 2.0 – 4.0
No. 3 **Safety Opening**	Door switches (S17/3, S17/4, S17/5, S17/6) Left/right front door IR receivers (A26/1, A26/2) Front driver/passenger-side door control modules (N69/1, N69/2) Electronic ignition switch control module (N73) PSE control module (A37)	DM, B&A, Vol. 1, section 3.4, 23, 23 ⇒ 2.0 – 4.0
No. 4 **All windows do not function** **Model 208.4 only**	Roll Bar control module/power soft top control module (N52) CAN data bus to N52	N52 DM, B&A, Vol. 3, section 11.3, 23,

[1] Observe Preparation for Test, see 22.

[2] (only USA)

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy [1]
No. 5 **Model 208.4 only** **Left front** power window does not function.	Window not synchronized Left front power window switch (S21/1) in middle console Roll Bar control module/Soft top control module (N52) CAN data bus to N52 Front driver door control module (N69/1) Left front power window motor (M10/3)	23 ⇒ 5.0 23 ⇒ 6.0 23 ⇒ 8.0
No. 6 **Left front** power window **opening** does not function	Left front power window switch (N72s1) Left front power window motor (M10/3) Front driver-side door control module (N69/1)	13 ⇒ 28.0 23 ⇒ 5.0 23 ⇒ 5.0
No. 7 **Left front** power window one-touch **opening** does not function	Windows not synchronized. Left front power window switch (N72s1) Left front power window motor (M10/3) Front driver-side door control module (N69/1)	Synchronize window, 13 ⇒ 28.0 23 ⇒ 5.0, 6.0, 7.0 23 ⇒ 5.0
No. 8 **Left front** power window **closing** does not function.	Left front power window switch (N72s1) Left front power window motor (M10/3) Front driver-side door control module (N69/1)	13 ⇒ 28.0 23 ⇒ 5.0 23 ⇒ 5.0
No. 9 **Left front** power window one-touch **closing** does not function.	Window not synchronized Left front power window switch (N72s1) Left front power window motor (M10/3) Front driver-side door control module (N69/1)	Synchronize window, 13 ⇒ 28.0 23 ⇒ 5.0, 6.0, 7.0 23 ⇒ 5.0

[1] Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy [1]
No. 10 **Model 208.4 only** **Right front** power window does not function.	Window not synchronized Right front power window switch (S21/2) in middle console Roll Bar control module/power soft top control module (N52) CAN data bus to N52 Front passenger-side door control module (N69/2) Right front power window motor (M10/4)	 23 ⇒ 13.0 23 ⇒ 10.0 23 ⇒ 11.0
No. 11 **Right front** power window **opening** does not function.	Right front power window switch (N72s2) Right front power window motor (M10/4) Front passenger-side door control module (N69/2)	13 ⇒ 30.0 23 ⇒ 10.0 23 ⇒ 11.0
No. 12 **Right front** power window one-touch **opening** does not function.	Window not synchronized Right front power window switch (N72s2) Right front power window motor (M10/4) Front passenger-side door control module (N69/2)	Synchronize window, 13 ⇒ 30.0 23 ⇒ 10.0, 11.0, 12.0 23 ⇒ 11.0
No. 13 **Right front** power window **closing** does not function	Right front power window switch (N72s2) Right front power window motor (M10/4) Front passenger-side door control module (N69/2)	13 ⇒ 30.0 23 ⇒ 10.0 23 ⇒ 10.0
No. 14 **Right front** power window one-touch **closing** does not function.	Window not synchronized Right front power window switch (N72s2) Right front power window motor (M10/4) Front passenger-side door control module (N69/2)	Synchronize window, 13 ⇒ 30.0 23 ⇒ 10.0, 11.0, 12.0 23 ⇒ 10.0

[1] Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy [1]
No. 15 **Model 208.4 only** **Left rear** power window does not function.	Wiring Left rear power window switch (N72s3) Lower control field control module (N72) Roll Bar control module/power soft top control module (N52) CAN data bus to N52 Left rear power window motor (M10/5)	13 ⇒ 29.0 23 ⇒ 14.0 N52 DM, B&A, Vol. 3, section 11.3, 23,
No. 16 **Left rear** power window **opening** with switches (N72s3, S21/3) does not function.	Left rear power window switch (N72s3) Left rear power window switch (S21/3) Rear driver-side door control module (N69/3)	13 ⇒ 34.0 13 ⇒ 36.0 N69/3
No. 17 **Left rear** power window **opening** with switches (N72s3, S21/3) does not function (one-touch opening).	Window not synchronized, Left rear power window switch (N72s3) Left rear power window switch (S21/3) Rear driver-side door control module (N69/3)	Synchronize window, 13 ⇒ 34.0 13 ⇒ 36.0 N69/3
No. 18 **Left rear** power window **closing** with switches (N72s3, S21/3) does not function.	Left rear power window switch (N72s3) Left rear power window switch (S21/3) Rear driver-side door control module (N69/3)	13 ⇒ 34.0 13 ⇒ 36.0 N69/3
No. 19 **Left rear** power window **closing** with switches (N72s3, S21/3) does not function (one-touch closing).	Window not synchronized, Left rear power window switch (N72s3) Left rear power window switch (S21/3) Rear driver-side door control module (N69/3)	Synchronize window, 13 ⇒ 34.0 13 ⇒ 36.0 N69/3

[1] Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy [1]
No. 20 **Model 208.4 only** **Right rear** power window does not function	Wiring Right rear power window switch (N72s4) Lower control field control module (N72) Roll Bar control module/power soft top control module (N52) CAN data bus to N52 Right rear power window motor (M10/6)	13 ⇒ 33.0 23 ⇒ 16.0 DM, B&A, Vol. 3, section 11.3, 23,
No. 21 **Right rear** power window **opening** with switches (N72s4, S21/4) does not function.	Left rear power window switch (N72s4) Left rear power window switch (S21/4) Rear driver-side door control module (N69/4)	13 ⇒ 35.0 13 ⇒ 37.0 N69/4
No. 22 **Right rear** power window **opening** with switches (N72s4, S21/4) does not function (one-touch opening).	Window not synchronized, Left rear power window switch (N72s4) Left rear power window switch (S21/4) Rear driver-side door control module (N69/4)	Synchronize window, 13 ⇒ 35.0 13 ⇒ 37.0 N69/4
No. 23 **Right rear** power window **closing** with switches (N72s4, S21/4) does not function.	Left rear power window switch (N72s4) Left rear power window switch (S21/4) Rear driver-side door control module (N69/4)	13 ⇒ 35.0 13 ⇒ 37.0 N69/4

[1] Observe Preparation for Test, see 22.

Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy [1]
No. 24 **Right rear** power window **closing** with switches (N72s4, S21/4) does not function (one-touch closing).	Window not synchronized, Left rear power window switch (N72s4) Left rear power window switch (S21/4) Rear driver-side door control module (N69/4)	Synchronize window, 13 ⇒ 35.0 13 ⇒ 37.0 N69/4
No. 25 Child safety lock-out for left rear or right rear door does not function.	Child safety lock switch (N72s5)	13 ⇒ 38.0
No. 26 Window does not close completely. **Model 208.4 only** Front windows do not close completely	Faulty synchronization.	Using the HHT, (control module adaption, synchronization) desynchronize window, and then via window switch close window (to stop) and then hold window switch for more then 1 second.
No. 27 Window goes out of synchronization frequently.	Interrupted voltage supply (circuit 30) for door control module. Hall sensors Version coding in electronic ignition switch control module (N73) incorrect.	See HHT-control module adaption, Synchronization Procedure.

[1] Observe Preparation for Test, see 22.

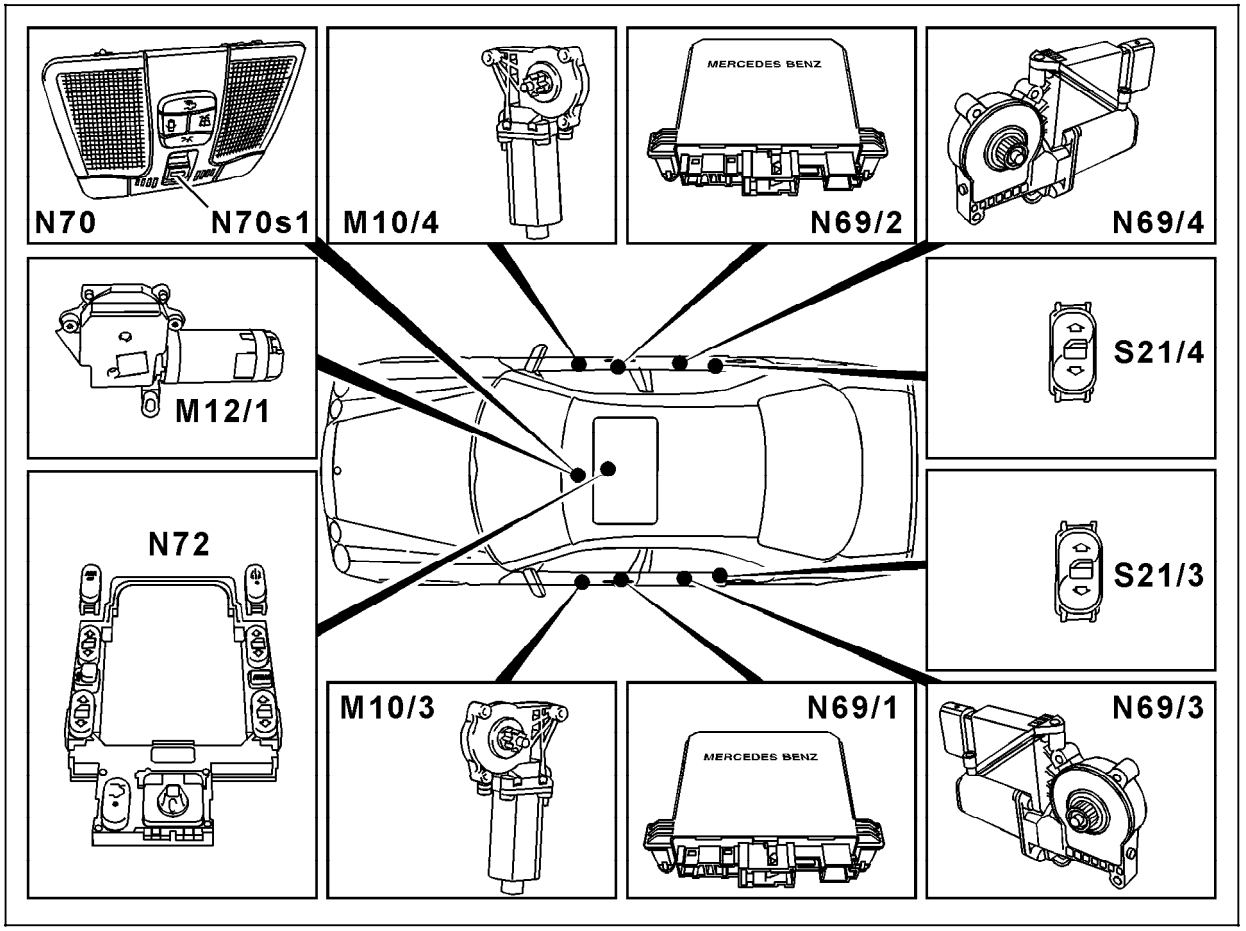
Diagnosis – Complaint Related Diagnostic Chart

Complaint/Problem	Possible cause	Test step/Remedy [1]
No. 28 Sliding/pop-up roof does not function.	Voltage supply for roof control panel control module (N70).	13 ⇒ 41.0
No. 29 Sliding roof **opening** does not function.	Sliding/pop-up roof (SR) switch (N70s1) Sliding/pop-up roof (M12/1) motor	13 ⇒ 43.0 13 ⇒ 44.0, 46.0, 47.0
No. 30 Sliding roof **closing** does not function.	Sliding/pop-up roof (SR) switch (N70s1) Sliding/pop-up roof (M12/1) motor	13 ⇒ 43.0 13 ⇒ 44.0, 47.0
No. 31 Pop-up roof **opening** does not function.	Sliding/pop-up roof (SR) switch (N70s1) Sliding/pop-up roof (M12/1) motor	13 ⇒ 43.0 13 ⇒ 44.0, 47.0
No. 32 Pop-up roof **closing** does not function.	Sliding/pop-up roof (SR) switch (N70s1) Sliding/pop-up roof (M12/1) motor	13 ⇒ 43.0 13 ⇒ 44.0, 47.0

[1] Observe Preparation for Test, see 22.

Electrical Test Program – Component Locations (CF)

Model 210 shown



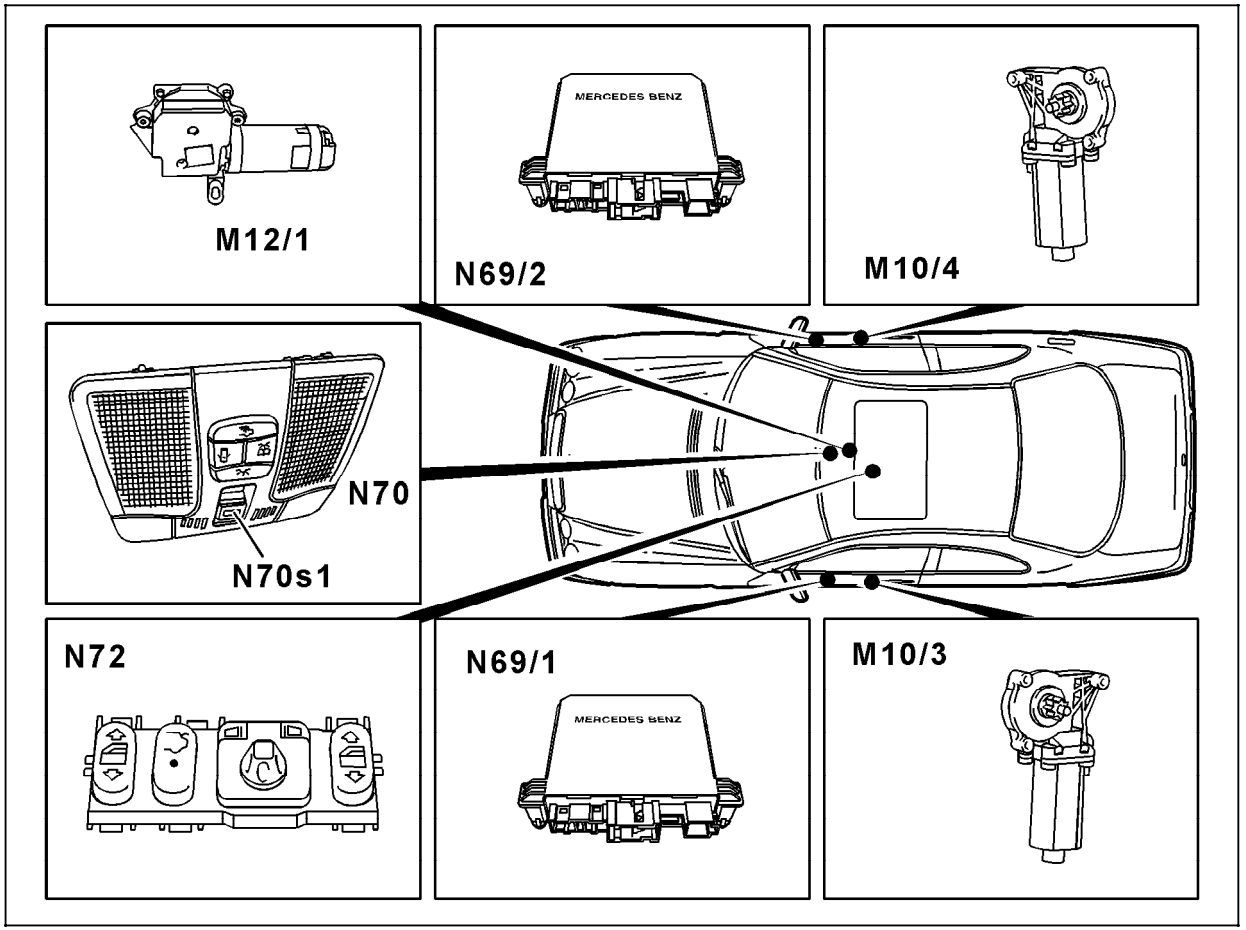
P72.29-0234-57

Figure 1

M10/3	Left front power window motor
M10/4	Right front power window motor
M12/1	Sliding/pop-up roof
N69/1	Front driver-side door control module
N69/2	Front passenger-side door control module
N69/3	Rear driver-side door control module
N69/4	Rear passenger-side door control module
N70	Roof control panel control module
N70s1	Sliding/pop-up roof (SR) switch
N72	Lower control field control module
S21/3	Left rear power window switch
S21/4	Right rear power window switch

Electrical Test Program – Component Locations (CF)

Model 208 shown



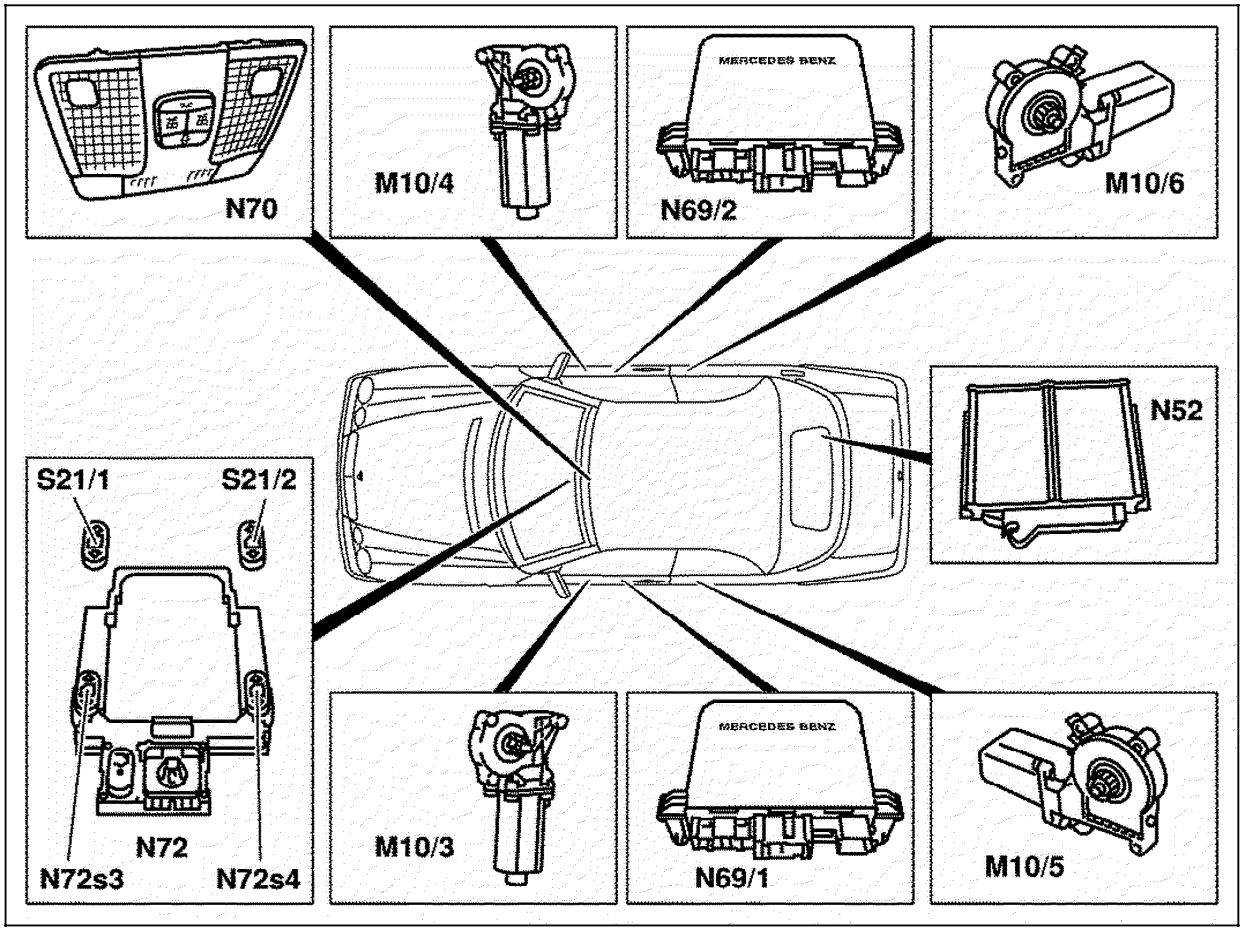
P72.29-0242-57

Figure 2

M10/3 Left front power window motor
M10/4 Right front power window motor
M12/1 Sliding/pop-up roof
N69/1 Front driver-side door control module
N69/2 Front passenger-side door control module
N70 Roof control panel control module
N70s1 Sliding/pop-up roof (SR) switch
N72 Lower control field control module

Electrical Test Program – Component Locations (CF)

Model 208.4 shown



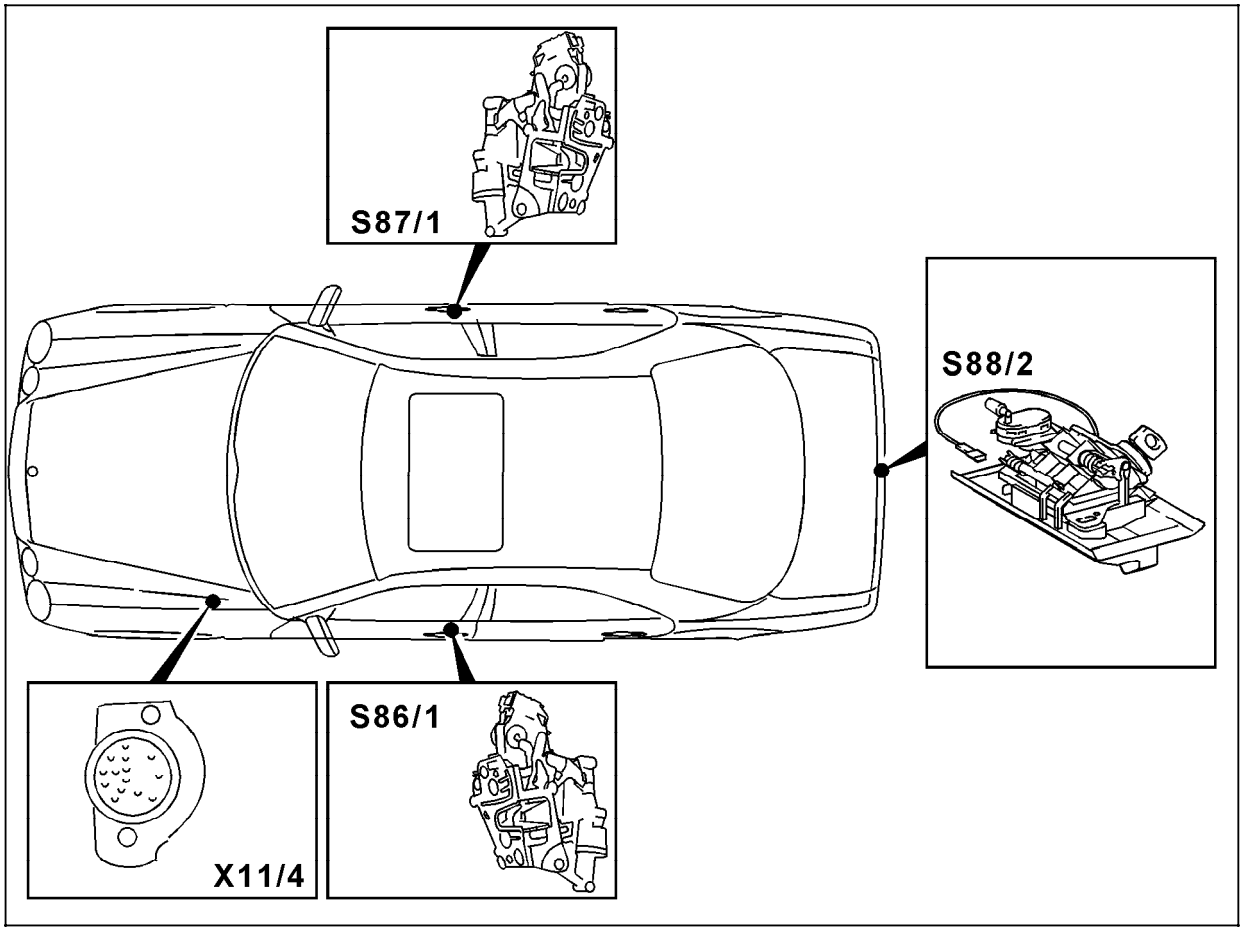
P72.29-2010-06

Figure 3

M10/3 Left front power window motor
M10/4 Right front power window motor
M10/5 Left rear power window motor
M10/6 Right rear power window motor
N52 Roll bar control module/soft top control module
N69/1 Front driver-side door control module
N69/2 Front passenger-side door control module
N70 Roof control panel control module
N72 Lower control field control module
N72s3 Left rear poer window switch
N72s4 Right rear power window switch
S21/1 Left front power window sitch in middle console
S21/2 Right front power window switch in middle console

Electrical Test Program – Component Locations (CF)

Model 210 shown



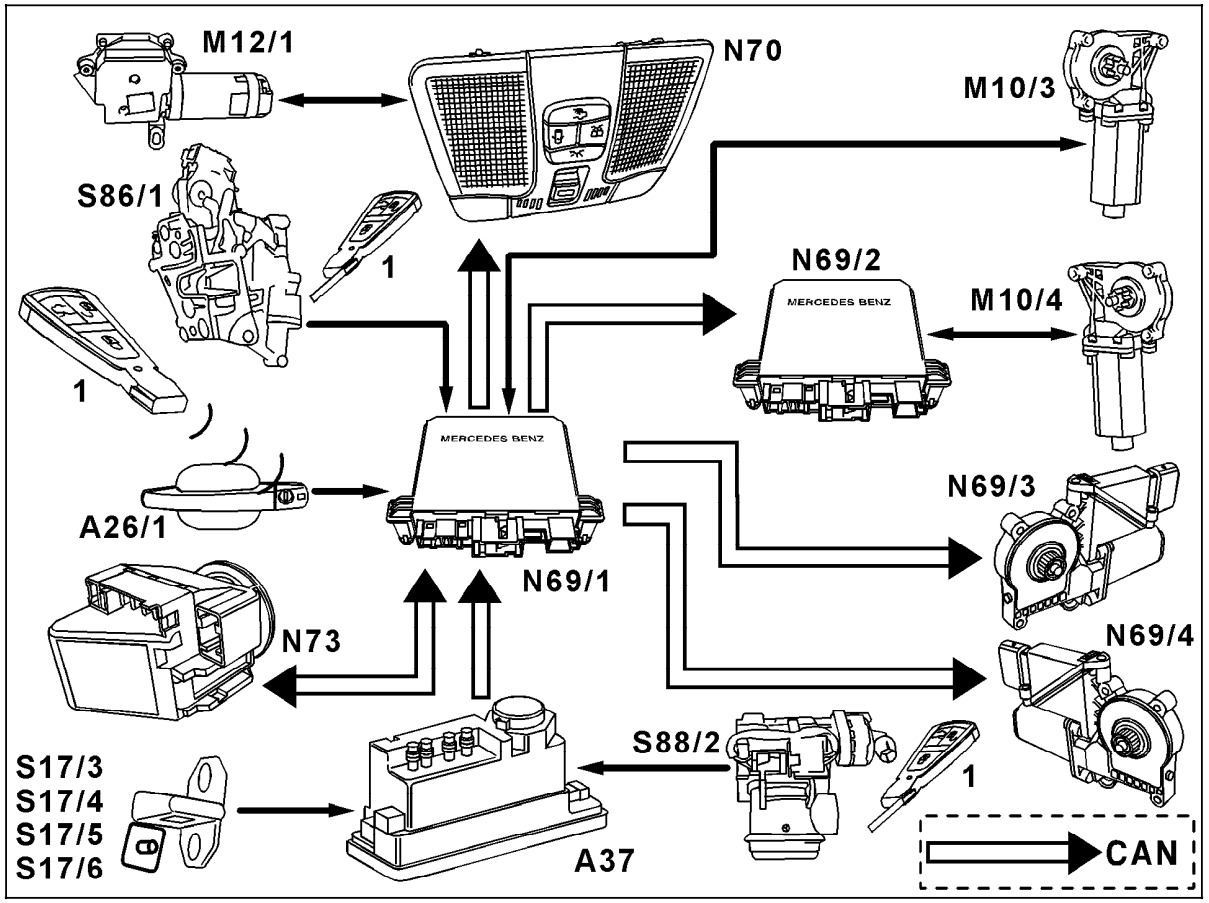
P72.29-0235-57

Figure 4

S86/1 Left front door lock switch (CF) (only USA J)
S87/1 Right front door lock switch (CF) (only J)
S88/2 Trunk lid lock switch (CF) (only USA J)
X11/4 Data link connector (DTC readout)

Electrical Test Program – Connection of Components (CF)

Driver-side (USA) (J)
(Models 202, 210 shown)



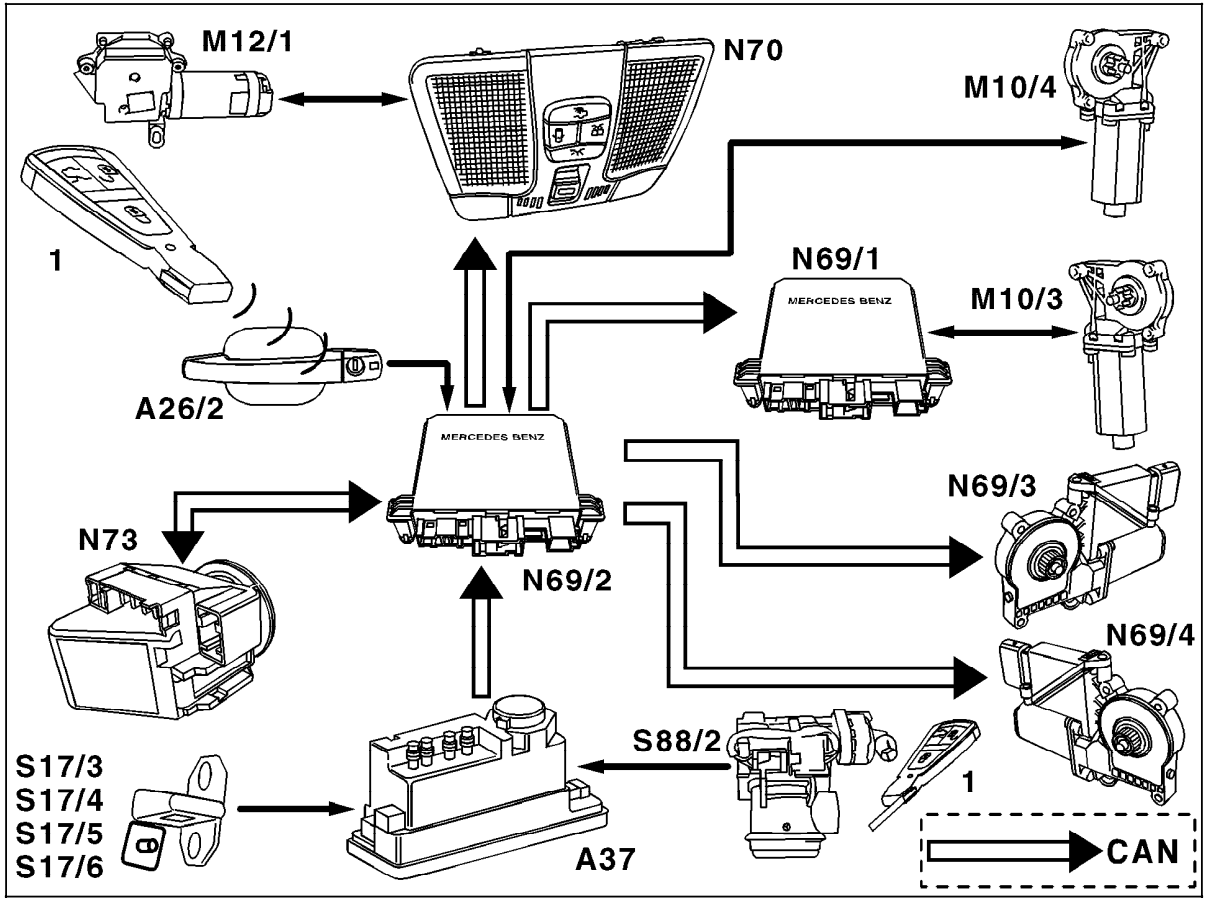
P82.40-0230-57

Figure 1

A26/1	Left front door IR receiver
A37	PSE control module
CAN	Control-Area-Network
M10/3	Left front power window motor
M10/4	Right front power window motor
M12/1	Sliding/pop-up roof
N69/1	Front driver-side door control module
N69/2	Front passenger-side door control module
N69/3	Rear driver-side door control module
N69/4	Rear passenger-side door control module
N70	Roof control panel control module
N73	Electronic ignition switch control module
S17/3	Left front door switch
S17/4	Right front door switch
S17/5	Left rear door switch
S17/6	Right rear door switch
S86/1	Left front door lock switch (CF)
S88/2	Trunk lid lock switch (CF)
1	Electronic vehicle key

Electrical Test Program – Connection of Components (CF)

Passenger-side/right hand drive (USA) (J)
(Models 202, 210 shown)



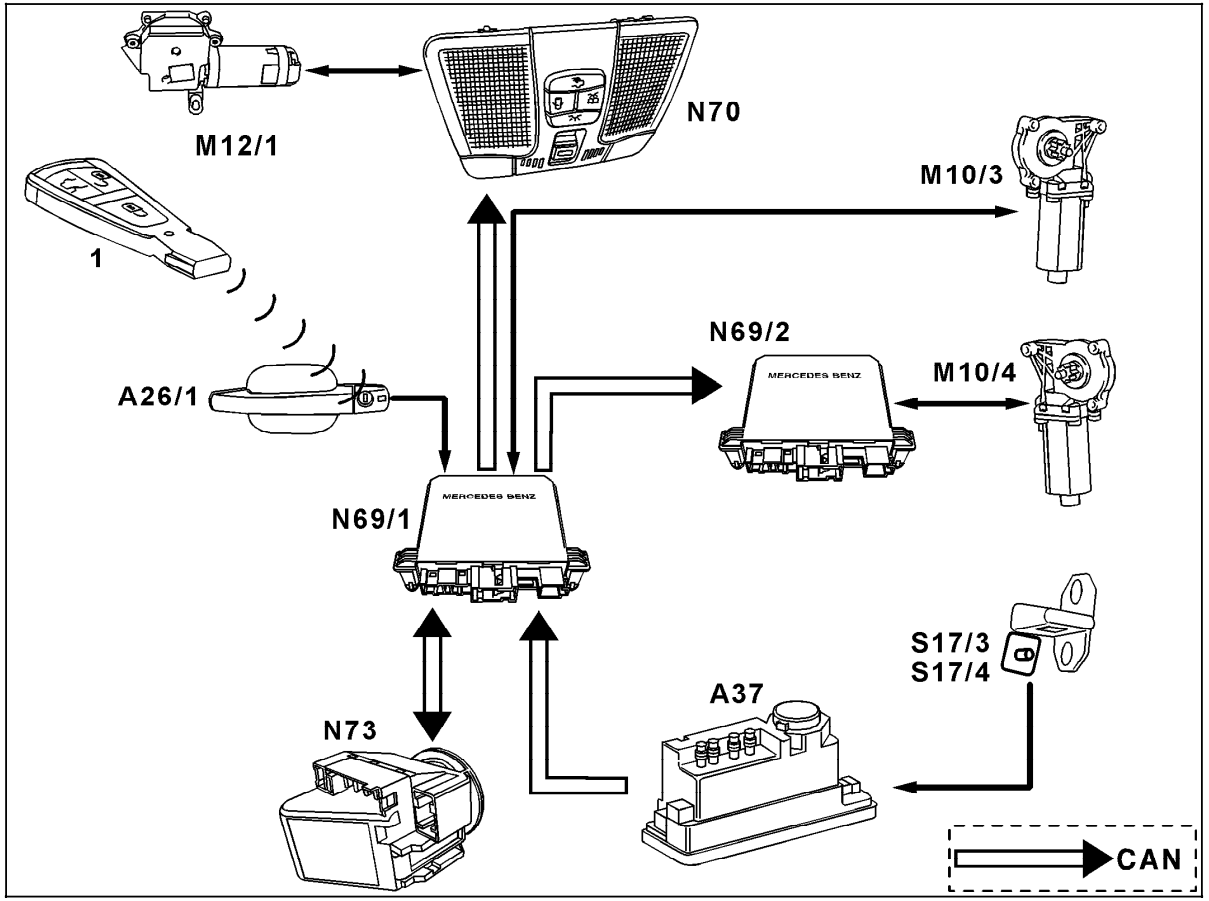
P82.40-0227-57

Figure 2

A26/2	Right front door IR receiver
A37	PSE control module
CAN	Control-Area-Network
M10/3	Left front power window motor
M10/4	Right front power window motor
M12/1	Sliding/pop-up roof
N69/1	Front driver-side door control module
N69/2	Front passenger-side door control module
N69/3	Rear driver-side door control module
N69/4	Rear passenger-side door control module
N70	Roof control panel control module
N73	Electronic ignition switch control module
S17/3	Left front door switch
S17/4	Rightfront door switch
S17/5	Left rear door switch
S17/6	Right rear door switch
S87/1	Right front door lock switch (CF)
S88/2	Trunk lid lock switch (CF)
1	Electronic vehicle key

Electrical Test Program – Connection of Components (CF)

Driver-side (USA) (J)
(Model 208 shown)



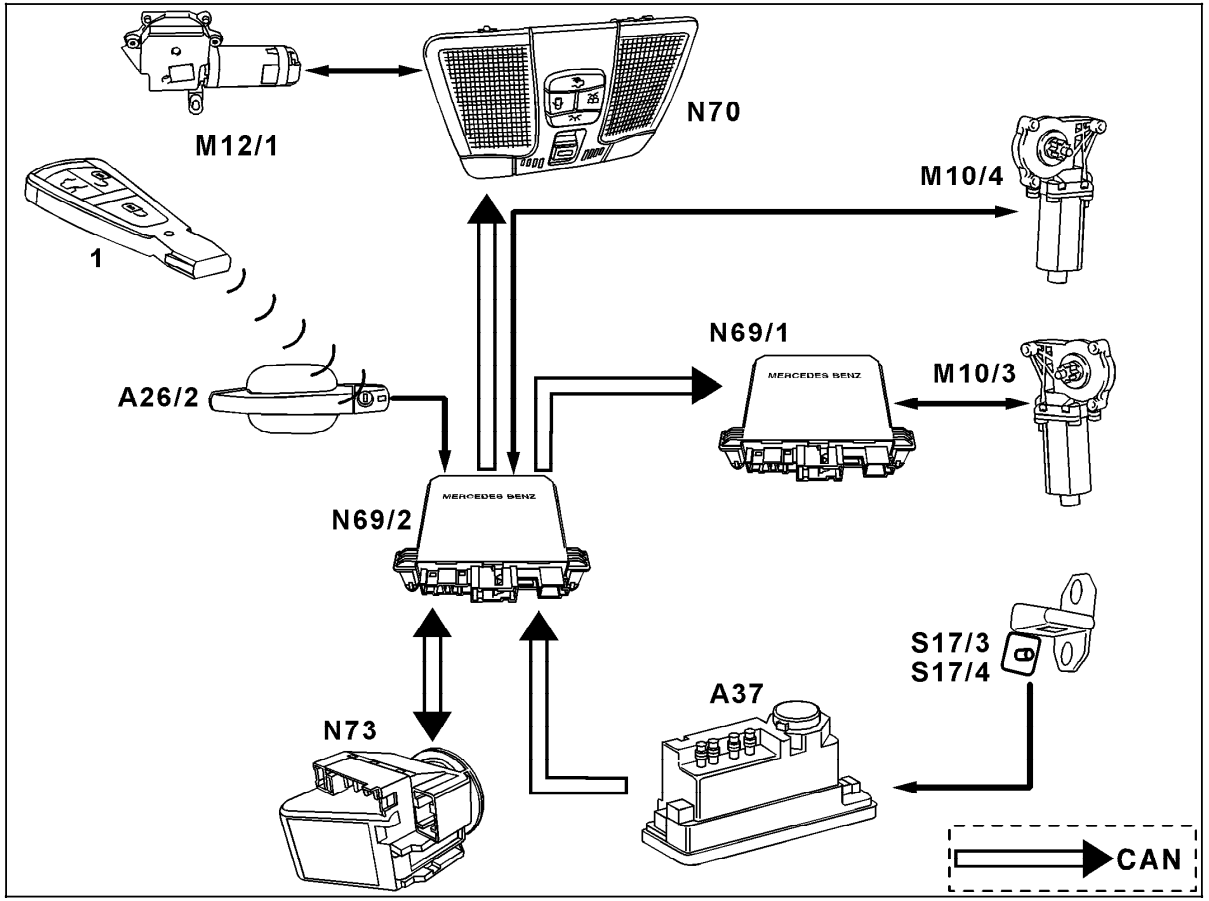
P82.40-0234-06

Figure 3

A26/1	Left front door IR receiver
A37	PSE control module
CAN	Control-Area-Network
M10/3	Left front power window motor
M10/4	Right front power window motor
M12/1	Sliding/pop-up roof
N69/1	Front driver-side door control module
N69/2	Front passenger-side door control module
N70	Roof control panel control module
N73	Electronic ignition switch control module
S17/3	Left front door switch
S17/4	Rightfront door switch
1	Electronic vehicle key

Electrical Test Program – Connection of Components (CF)

Passenger-side (USA) (J)
(Model 208 shown)



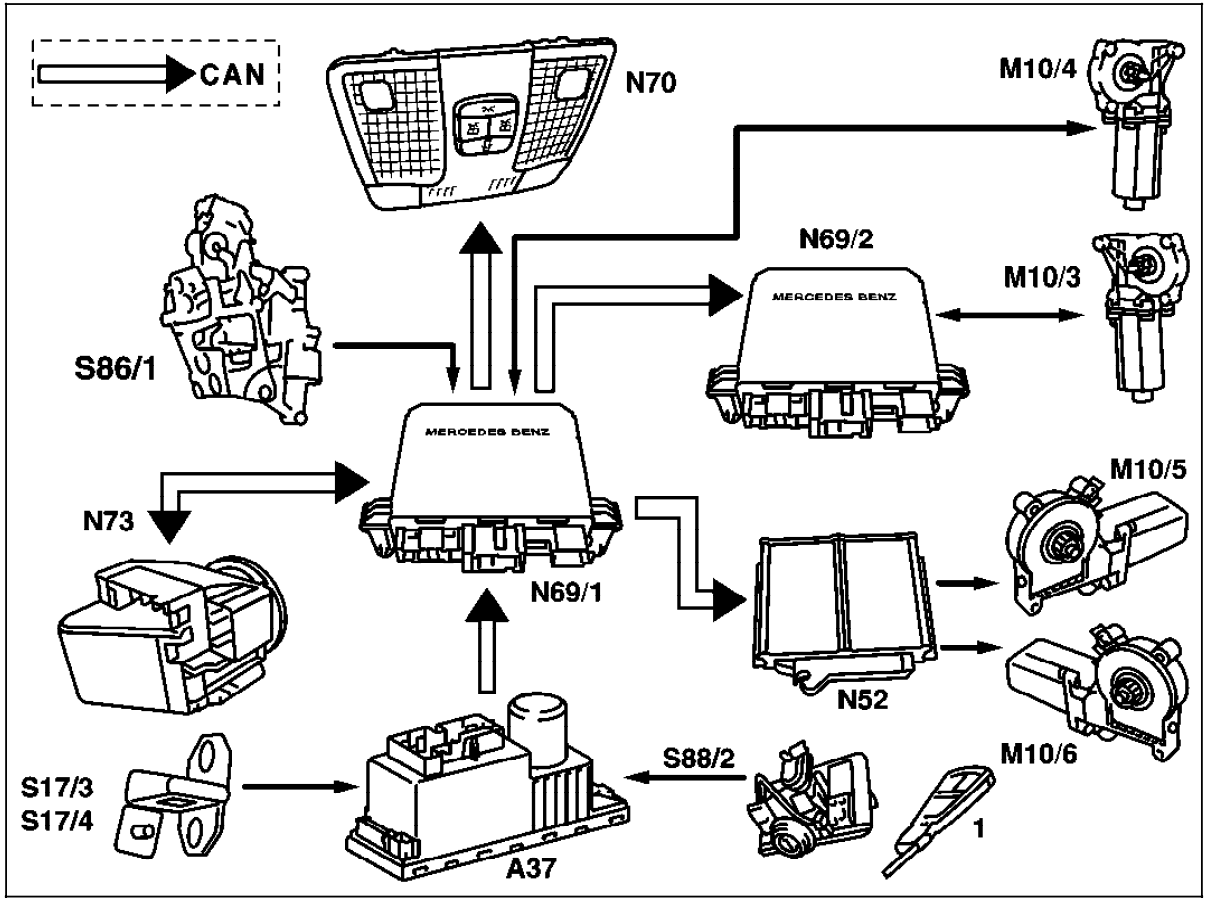
P82.40-0235-06

Figure 4

A26/2	Right front door IR receiver
A37	PSE control module
CAN	Control-Area-Network
M10/3	Left front power window motor
M10/4	Right front power window motor
M12/1	Sliding/pop-up roof
N69/1	Front driver-side door control module
N69/2	Front passenger-side door control module
N70	Roof control panel control module
N73	Electronic ignition switch control module
S17/3	Left front door switch
S17/4	Rightfront door switch
1	Electronic vehicle key

Electrical Test Program – Connection of Components (CF)

Driver-side (USA) (J)
(Model 208.4 shown)

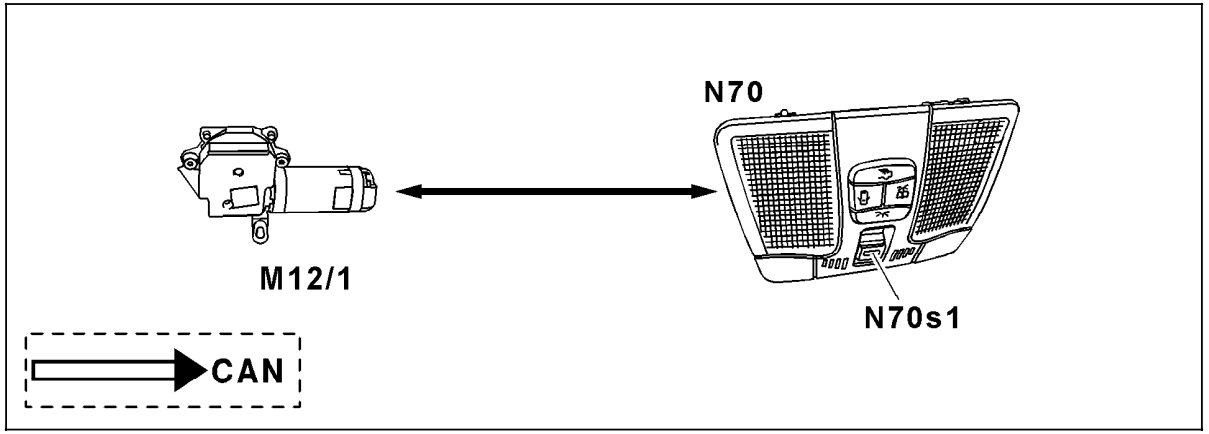


P72.29-2012-06

Figure 5

A37	PSE control module
CAN	Control-Area-Network
M10/3	Left front power window motor
M10/4	Right front power window motor
M10/5	Left rear power wondow motor
M10/6	Right rear power window motor
N52	Roll bar control module/soft top control module
N69/1	Front driver-side door control module
N69/2	Front passenger-side door control module
N70	Roof control panel control module
N73	Electronic ignition switch control module
S17/3	Left front door switch
S17/4	Rightfront door switch
S86/1	Left front door lock switch (CF)
S88/2	Trunk lid lock switch (CF)
1	Electronic vehicle key

Electrical Test Program – Connection of Components (CF)



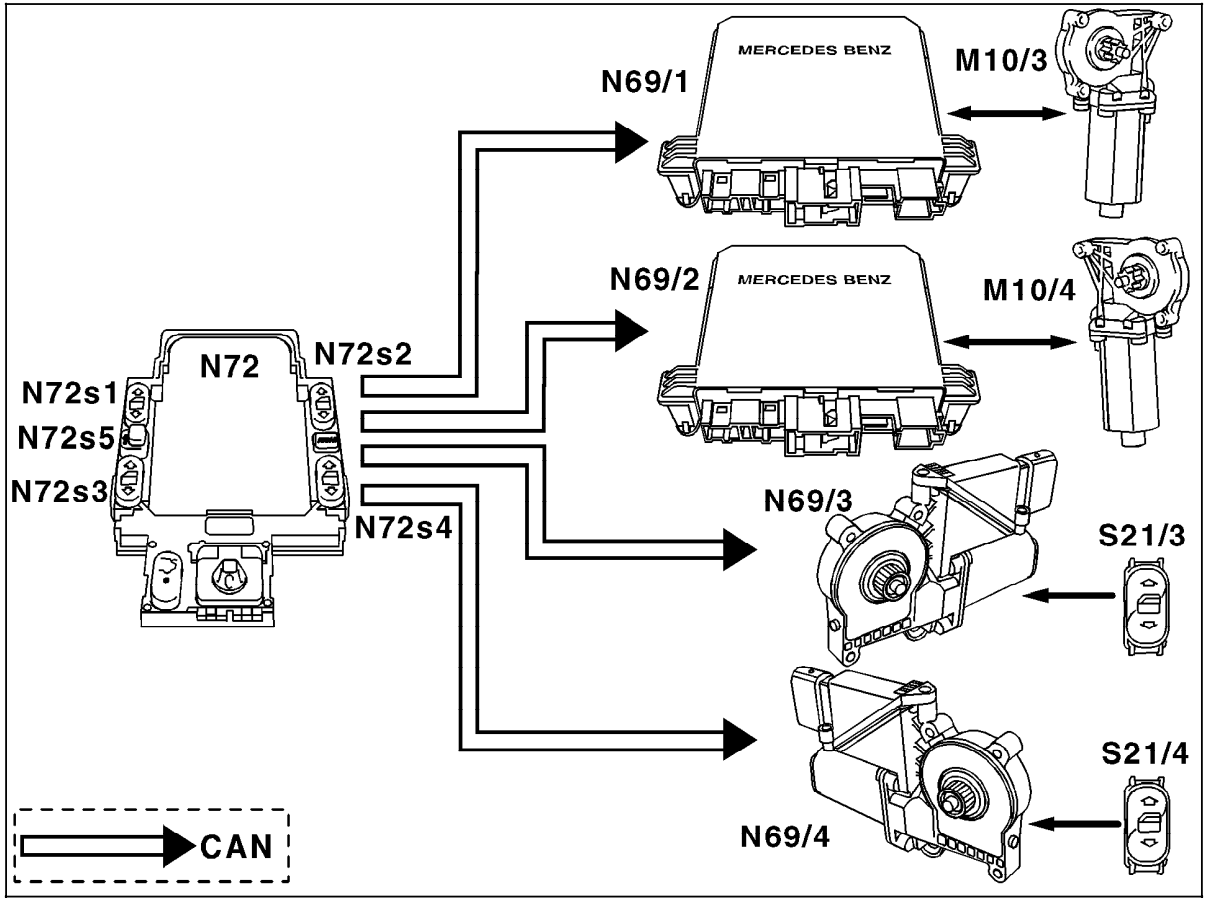
P77.20-0270-53

Figure 6

CAN	Control-Area-Network
M12/1	Sliding/pop-up roof
N70	Roof control panel control module
N70s1	Sliding/pop-up roof (SR) switch

Electrical Test Program – Connection of Components (CF)

Models 202, 210 shown



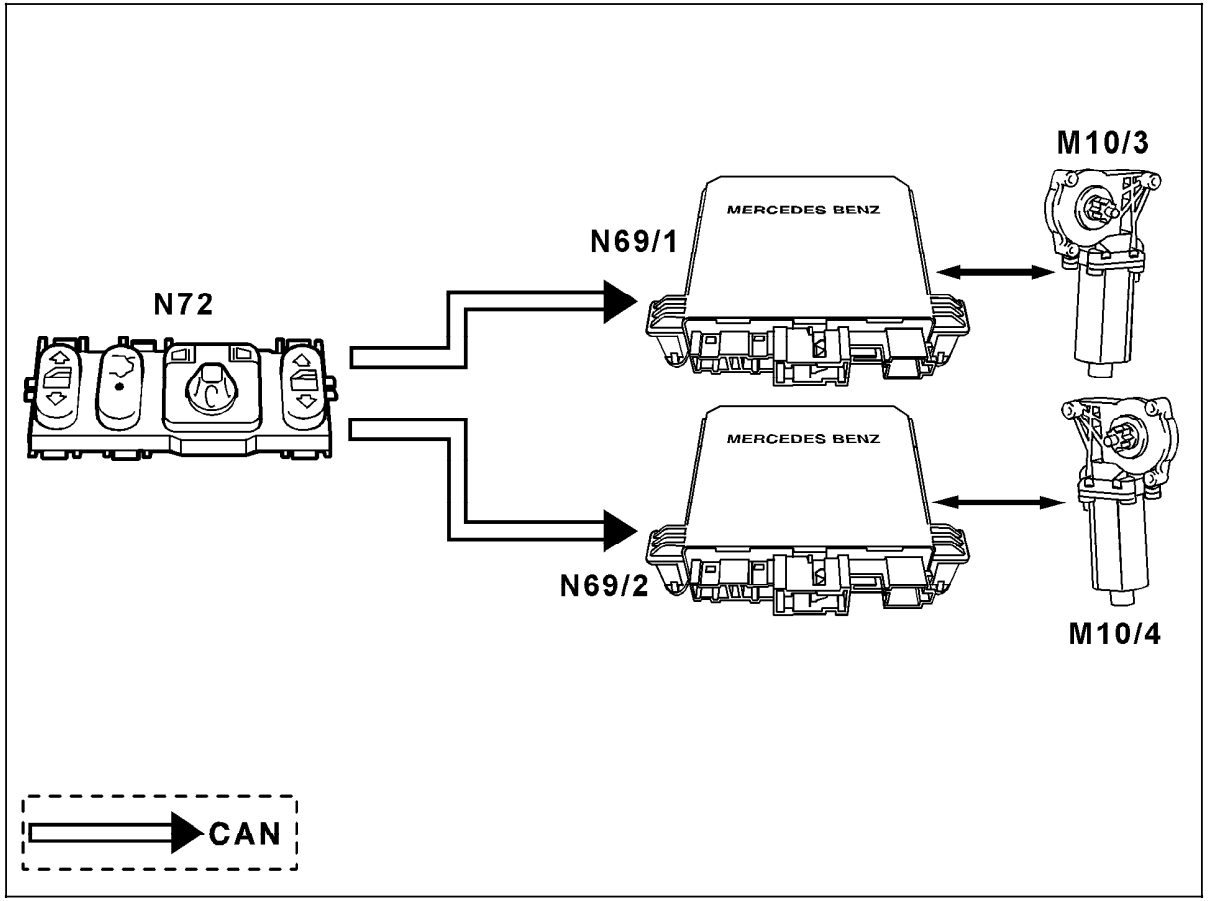
P72.29-0241-57

Figure 7

CAN	Control-Area-Network
M10/3	Left front power window motor
M10/4	Right front power window motor
N69/1	Front driver-side door control module
N69/2	Front passenger-side door control module
N69/3	Rear driver-side door control module
N69/4	Rear passenger-side door control module
N72	Lower control field control module
N72s1	Left front power window switch
N72s2	Right front power window switch
N72s3	Left rear power window switch
N72s4	Right rear power window switch
N72s5	Child safety lock switch
S21/3	Left rear power window switch
S21/4	Right rear power window switch

Electrical Test Program – Connection of Components (CF)

Model 208 shown



P72.29-0243-57

Figure 8

CAN Control-Area-Network
M10/3 Left front power window motor
M10/4 Right front power window motor
N69/1 Front driver-side door control module
N69/2 Front passenger-side door control module
N72 Lower control field control module
N72s1 Left front power window switch
N72s2 Right front power window switch

Electrical Test Program – Preparation for Test

Preliminary work:
Diagnosis - Diagnostic Trouble Code (DTC) Memory 12

Preparation for Test

1. Battery voltage > 11 V,
2. Fuses ok,
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. HHT Module: "Component Connections",
5. Voltage supply to all the following control modules:

- Circuit 15R from electronic ignition switch control module (N73)
- Electronic ignition switch control module (N73)
- Lower control field control module (N72)
- Front driver-side door control module (N69/1)
- Front passenger-side door control module (N69/2)
- Rear driver-side door control module (N69/3)
- Rear passenger-side door control module (N69/4) and

6. All CAN data lines ok, see DM, B&A, vol. 2, section 7.1, 23
7. Model 208.4 only:
   Switch middle console (S21/1) is installed instead of switch N72s1.
   S21/1 is connected to the Roll bar/power soft top control module (N52).

Electrical wiring diagrams:
Electrical Troubleshooting Manual, Model 202, group 72, 77, 82
Model 208, group 72, 77, 82
Model 210, group 72, 77, 82

Observe version coding for:
Front driver-side door control module (N69/1)
Front passenger-side door control module (N69/2)
Electronic ignition switch control module (N73)

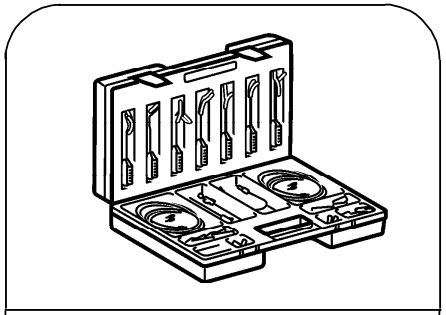
For test measuring purposes, the CAN connection to the following control modules must be connected:
PSE control module (A37)
Signal pickup-and activation module (SAM) (N10/1)

Model 208

Synchronization of the windows is only possible with the doors **closed**.

Electrical Test Program – Preparation for Test

Special Tools



201 589 00 99 00

Electrical connecting set

Conventional tools, test equipment

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

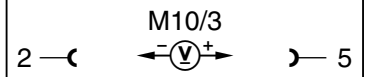
1) Available through the MBUSA Standard Equipment Program.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy [1]
1.0		**Door switches (S17/3, S17/4, S17/5, S17/6)**				DM, B&A, vol. 1, 3.4, PSE, 23
2.0		**Left front door IR receiver (A26/1)** Voltage supply	4 (3) — N69/1 — 14 (3)	Disconnect connector (3) from front driver-side door control module (N69/1).	4.5 – 5.5 V	⇒ 2.1, N69/1
2.1		**Left front door IR receiver (A26/1)**	1 — A26/1 — 2	Remove A26/1	4.5 – 5.5 V	Wiring.
3.0		**Right front door IR receiver (A26/2)** Voltage supply	4 (3) — N69/2 — 14 (3)	Disconnect connector (3) from front passenger-side door control module (N69/2).	4.5 – 5.5 V	⇒ 3.1, N69/2
3.1		**Right front door IR receiver (A26/2)**	2 — A26/2 — 3	Remove A26/2	4.5 – 5.5 V	Wiring.

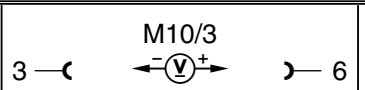
[1] Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
4.0	B1120	**Left front power window switch (N72s1)**		Ignition: **ON** Switch (N72s1): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN UP AUTO. UP	Lower control field control module (N72).
5.0	B1520	**Activation of:** **Left front power window motor (M10/3) via front driver-side door control module (N69/l)**		Disconnect connector from M10/3. Ignition: **ON** Switch (N72s1): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	Relay in control module N69/1 engages audibly. For approx. 1 second: 11 – 14 V 11 – 14 V –11 to –14 V –11 to –14 V	Wiring, ⇒ 4.0, N69/1

1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
6.0	B1520	**Left front power window motor (M10/3)** Voltage supply Hall sensor	M10/3  3 — 6	Ignition: **ON** Disconnect connector from M10/3	11 – 14 V	Wiring, Front driver-side door control module (N69/I).
7.0	B1520	**Left front power window motor (M10/3)** Hall sensor		Ignition: **ON** Switch (N72s1): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	 Window opens, raising values. Window closes, falling values.	Hall sensor

1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
8.0		**Left front power window switch (S21/1)** **Model 208.4 only**	N52 30 — V — 36	Ignition: **ON** Switch (S21/1) in position: 0 DOWN AUTO. DOWN UP AUTO. UP	 approx. 14 V approx. 8.5 V approx. 0 V approx. 5 V approx. 2.5 V	If one value is not OK, S21/1, If several values are not OK, ⇒ 8.1 All values are OK, ⇒ 8.2
8.1		Resistance Model 208.4 only	N52 30 — Ω — 36	Ignition: **OFF** Disconnect connector from N52, Switch (S21/1) in position: 0 DOWN AUTO. DOWN UP AUTO. UP	 > 20 kΩ approx. 900 Ω approx. 0 Ω approx. 510 Ω approx, 125 Ω	If one value is not OK, S21/1, If several values are not OK, Wiring, S21/1, All values are OK, N52
8.2		Switch illumination Model 208.4 only	S21/1 1 — V — 3	Disconnect connector from S21/1, Light switch S1 (58d) **ON**; Set combination display (A1) at max setting	 approx. 11 V	Wiring, S21/1

1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
9.0	B1121	**Right front power window switch (N72s2)**		Ignition: **ON** Switch (N72s2): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN UP AUTO. UP	Lower control field control module (N72).
10.0	B1520	**Activation of:** **Right front power window motor (M10/4) via front passenger-side door control module (N69/2)**	M10/4 2 — (–) (V) (+) — 5	Disconnect connector from M10/4. Ignition: **ON** Switch (N72s2): Press **back** of switch: Press **back** of switch past, first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	Relay in control module N69/2 engages audibly. For approx. 1 second: 11 – 14 V 11 – 14 V –11 to –14 V –11 to –14 V	Wiring, ⇒ 8.0, N69/2

1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
11.0	B1520	**Right front power window motor (M10/4)** Voltage supply Hall sensor	M10/4 3 — ◄ –V+ ► — 6	Ignition: **ON** Disconnect connector from M10/4	11 – 14 V	Wiring, N69/2
12.0	B1520	**Right front power window motor (M10/4)** Hall sensor		Ignition: **ON** Switch (N72s2): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	 Window opens, raising values. Window closes, falling values.	Hall sensor

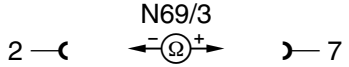
1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
13.0		**Right front power window switch (S21/2)** **Model 208.4 only**	N52 49 — 17	Ignition: **ON** Switch (S21/2) in position: 0 DOWN AUTO, DOWN UP AUTO, UP	11 – 14 V approx. 14 V approx. 8.5 V approx. 0 V approx. 5 V approx. 2.5 V	If one value is not OK, S21/2, If several values are not OK, ⇒ 13.1 All values are OK, ⇒ 13.2
13.1		Resistance Model 208.4 only	N52 49 — 17	Ignition: **OFF** Disconnect connector from N52 Switch (S21/2) in position: 0 DOWN AUTO, DOWN UP AUTO, UP	> 20 kΩ approx. 900 Ω approx. 0 Ω approx. 510 Ω approx. 125 Ω	If one value is not OK, S21/2, If several values are not OK, Wiring, S21/2 All values are OK, N52
13.2		Switch illumination Model 208.4 only	S21/1 1 — 3	Disconnect connector from S21/2 Light switch S1 (58d) ON; Set combination display (A1) at max setting	approx. 11 V	Wiring, S21/2

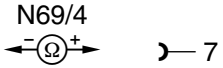
1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
14.0	B1122	**Left rear power window switch (N72s3)**		Ignition: **ON** Switch (N72s3): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN UP AUTO. UP	Lower control field control module (N72).
15.0	B1155 B1407	**Left rear power window switch (S21/3)**		Ignition: **OFF** Switch (S21/3): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	 1240 Ω 330 Ω 510 Ω 660 Ω	Wiring, S21/3

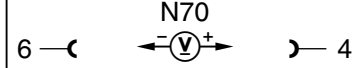
1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
16.0	B1123	**Right rear power window switch (N72s4)**		Ignition: **ON** Switch (N72s4): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	 DOWN AUTO. DOWN UP AUTO. UP	Lower control field control module (N72).
17.0	B1155 B1407	**Right rear power window switch (S21/4)**		Ignition: **OFF** Switch (S21/4): Press **back** of switch: Press **back** of switch past first detent and hold: Press **front** of switch: Press **front** of switch past first detent and hold:	 1240 Ω 330 Ω 510 Ω 660 Ω	Wiring, S21/4

1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
18.0		**Child safety lock switch (N72s5)**		Ignition: **ON** Switch (N72s5): Push switch to right: (Child symbol visible) Push switch to left: (Child symbol not visible)	 LOCKED UNLOCKED	Lower control field control module (N72).
19.0	B1520	**Sliding/pop-up roof motor (M12/1m1)** Hall sensors		Ignition: **ON** Press sliding/pop-up roof (SR) switch (N70s1): Press switch **forward**: Press switch **backward**:	 Sliding roof closes, raising values. Sliding roof opens, falling values.	⇒20.0
20.0	B1520	**Sliding/pop-up roof motor (M12/1m1)** Voltage supply Hall sensor		Disconnect connector (B) from N70 Ignition: **ON**	11 – 14 V	Roof control panel control module (N70).

1) Observe Preparation for Test, see 22.

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1]
21.0	B1118	**Sliding/pop-up roof (SR) switch (N70s1)**		Ignition: **ON** Switch (N70s1): Press switch **backward:** Press switch **forward:** Push switch **up:** Pull switch **down:**	 OPENING CLOSING OPENING CLOSING	Roof control panel control module (N70).
22.0		**Voltage supply from front driver-side door control module (N69/I) to left front door lock switch (CF) (S86/1)[2]**	N69/1 1 —▬  +  (2)		11 – 14 V	Front driver-side door control module (N69/1).
23.0	B1100 B1101	**Left front door lock switch (CF) (S86/1)[2]**	N69/1 2 —◖  ◗— 3 (2) (2)	With key in left front door lock: **Lock**: **Rest position:** **Unlock**:	 <1 Ω >20 kΩ <1 Ω	Wiring, S86/1

1) Observe Preparation for Test, see 22.

2) (only USA J)

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy[1)]
25.0		***Non-USA vehicles only, continue to next test step.***				
25.0		***Non-USA vehicles only, continue to next test step.***				
26.0		**Trunk lid lock switch (CF) (S88/2)**	A37 11 (1) — Ω — 21 (1)	With key in trunk lid lock: **Lock:** **Rest position:** **Unlock:**	 <1 Ω >20 kΩ <1 Ω	Wiring, S88/2

1) Observe Preparation for Test, see 22.

Version Coding

Version coding must be undertaked when a new front driver-side door control module (N69/I) and/or front passenger-side door control module (N69/2) are connected to battery current for the first time.

Coding

- (USA) (J)
- Rest of the world

Coding Accessories

- Electrical Seat Adjustment (ESA) YES/NO

The front driver-side door control module (N69/1) and/or front passenger-side door control module (N69/2) may be version coded as many times as necessary.