

6.1 Model 140

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**Note:**

As of chassis end no. 118121, the trunk lid closing assist striker is no longer controlled by the closing assist supply pump but by the PSE control module. Therefore, the microswitch (S88/3) as well as some mechanical parts have been eliminated.

Diagnosis – Function Test

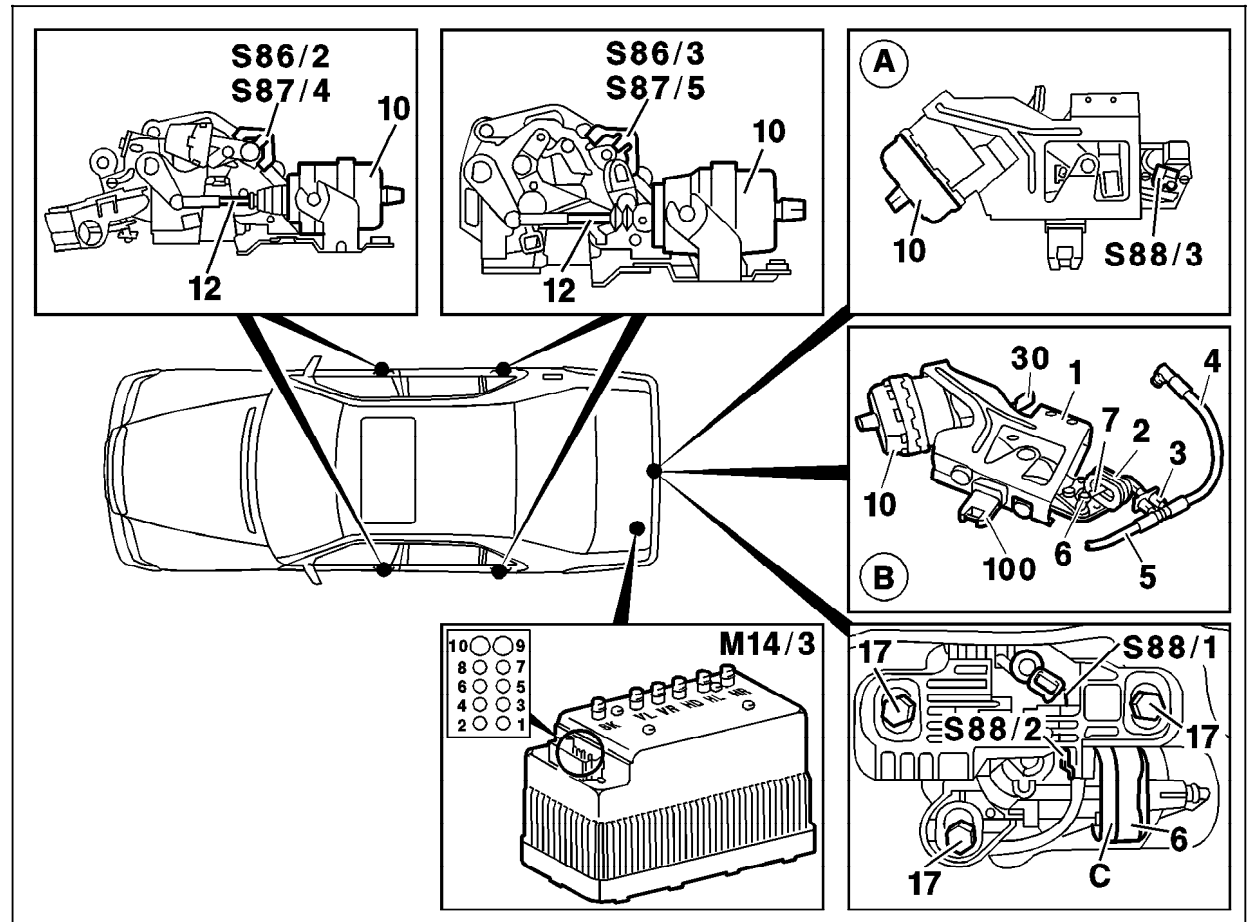


Figure 1

- A Version up to chassis end no. 118120
- B Version as of chassis end no. 118121
- M14/3 CA supply pump
- S86/2 Left front door closing assist microswitch
- S86/3 Left rear door closing assist microswitch
- S87/4 Right front door closing assist microswitch
- S87/5 Right rear door closing assist microswitch
- S88/1 Rotary tumbler/trunk lid microswitch
- S88/3 Trunk lid closing assist microswitch <sup>1)</sup>

<sup>1)</sup> No longer installed as of chassis end no. 118121.

P72-5363-57

### Diagnosis – Function Test

Test step/Test scope	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 1 Left front door closing assist	Close left front door to initial latch position. Press inward to second detent.	Left front door closes automatically.	23 ⇒ 3.0 33 ⇒ 1.0 – 3.0
⇒ 2 Right front door closing assist	Close right front door to initial latch position. Press inward to second detent.	Right front door closes automatically.	23 ⇒ 4.0 33 ⇒ 4.0 – 6.0
⇒ 3 Left rear door closing assist	Close left rear door to initial latch position. Press inward to second detent.	Left rear door closes automatically.	23 ⇒ 5.0 33 ⇒ 7.0 – 9.0
⇒ 4 Right rear door closing assist	Close right rear door to initial latch position. Press inward to second detent.	Right rear door closes automatically.	23 ⇒ 6.0 33 ⇒ 10.0 – 12.0
⇒ 5 Trunk lid closing assist	Close trunk lid with normal effort.	Trunk lid closes automatically.	23 ⇒ 7.0, 8.0 33 ⇒ 13.0 – 15.0

1) Observe Preparation for Test, see 22.

**Note:**

If one or more cycles of the closing assist supply pump are switched off by the safety feature (because of incorrect switch signals), the pump can be reset by briefly interrupting circuit 30. This can be done by removing fuse f9 in rear fuse box F4 for approx. 5 seconds, or by disconnecting the connector from the supply pump (M14/3). The pump should be reset before and after the function test (see 22/1, “Notes”).

Electrical Test Program – Component Locations

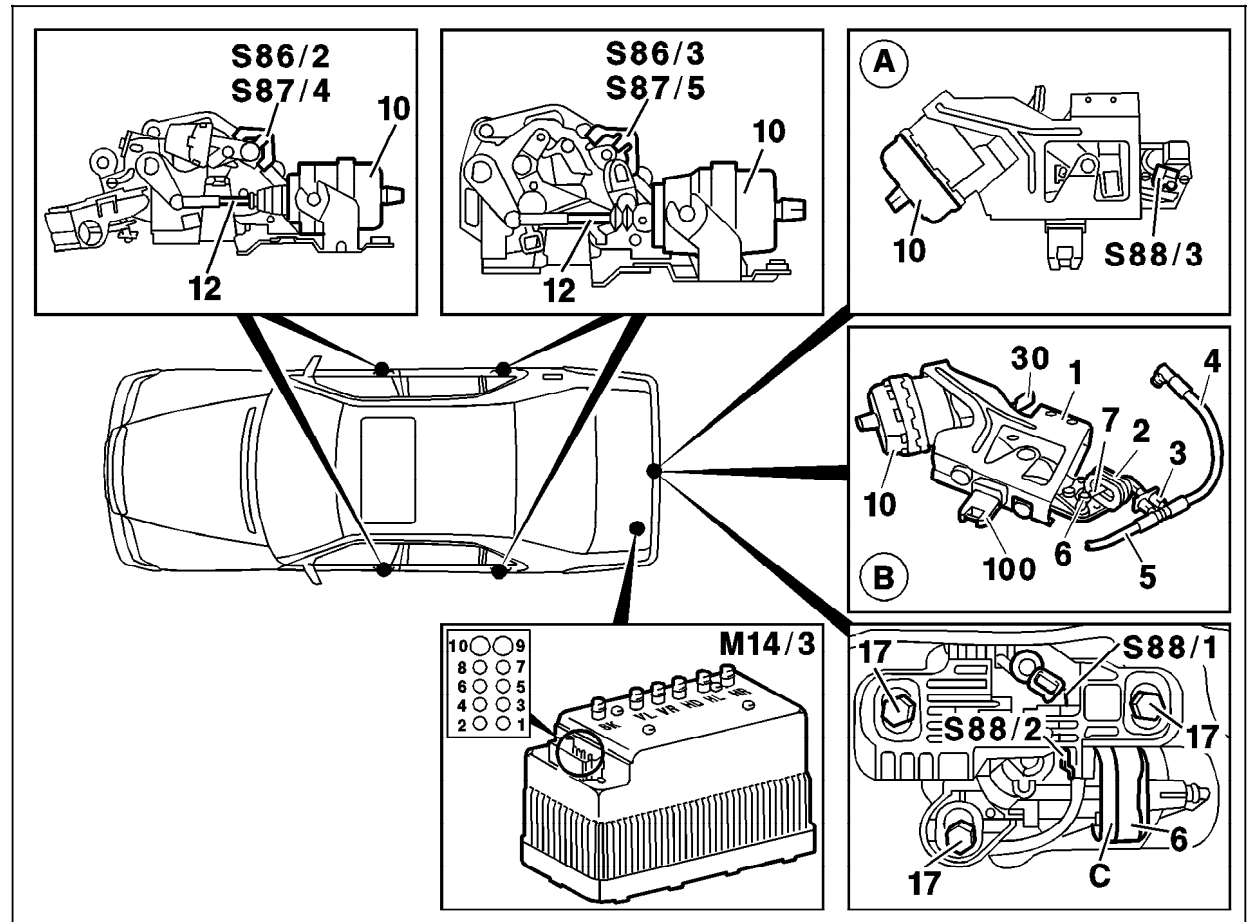


Figure 1

- A Version up to chassis end no. 118120
- B Version as of chassis end no. 118121
- M14/3 CA supply pump
- S86/2 Left front door closing assist microswitch
- S86/3 Left rear door closing assist microswitch
- S87/4 Right front door closing assist microswitch
- S87/5 Right rear door closing assist microswitch
- S88/1 Rotary tumbler/trunk lid microswitch
- S88/3 Trunk lid closing assist microswitch <sup>1)</sup>
- VL Left front door
- VR Right front door
- HD Trunk lid
- HL Left rear door
- HR Right rear door
- SK Vacuum vent connection (with screen)

<sup>1)</sup> No longer installed as of chassis end no. 118121.

P72-5363-57

### Electrical Test Program – Preparation for Test

Preliminary work:

Function Test ..... 11

#### Preparation for Test:

1. Check fuses F4–3, F4–9 in rear fuse box F4.
2. Provide access to CA supply pump (M14/3).
3. Check that vent line SK is clear. If the line or filter is plugged, kinked or restricted, closing assist may function intermittently. Resetting pump (M14/3) will not remedy this problem.

#### Electrical wiring diagrams

See Electrical Troubleshooting Manual, Model 140.

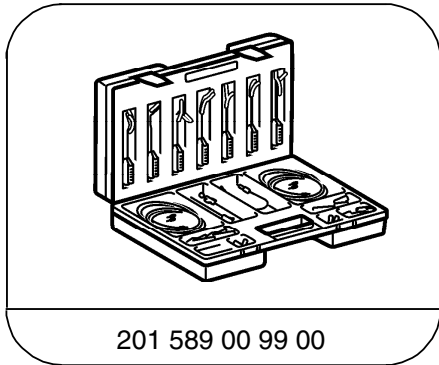
#### Notes:

If one or more pneumatic circuits of the CA supply pump are switched off by the safety feature (incorrect pressure buildup times), the pump can be reset by briefly interrupting circuit 30. This can be done by removing fuse F4–9 in rear fuse box F4 for approx. 5 seconds, or by disconnecting the connector from the CA supply pump (M14/3).

The closing assist system fault memory also detects pneumatic problems. If a leak in any pneumatic circuit is detected, the closing assist pump will shut that pneumatic circuit off, i. e. no pressure is supplied to the leaking line. The circuit remains disabled until the power to the pump is removed (see note above for resetting pump).

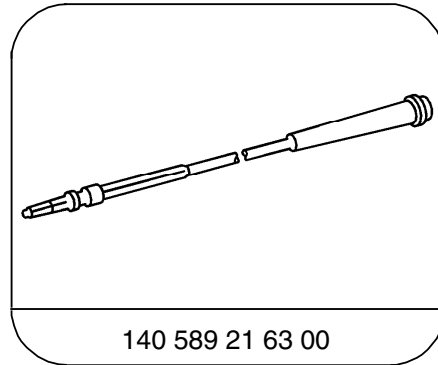
Electrical Test Program – Preparation for Test

Special Tools



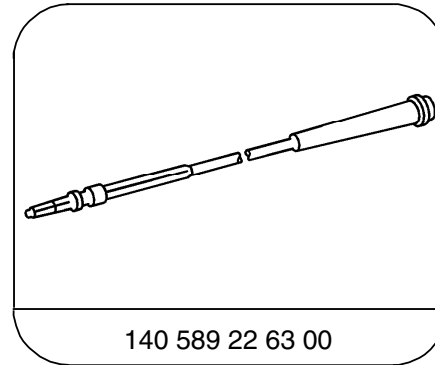
201 589 00 99 00

Electrical connecting set



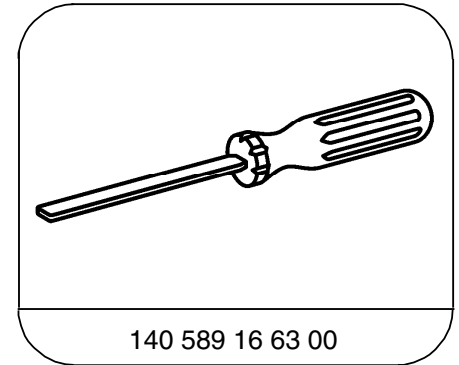
140 589 21 63 00

Adapter cable



140 589 22 63 00

Adapter cable



140 589 16 63 00





Removal lever

Conventional tools, test equipment

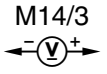
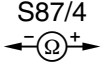
Description	Brand, model, etc.
Multimeter <sup>1)</sup>	Fluke models 23, 83, 85, 87

<sup>1)</sup> Available through the MBUSA Standard Equipment Program.

Electrical Test Program – Test

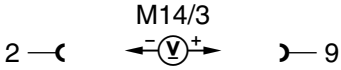
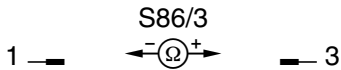
⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	<b>CA supply pump (M14/3)</b> Voltage supply circuit 30	10 —  — 9	Disconnect electrical connector from CA supply pump (M14/3).	11 – 14 V	Wiring.
2.0	<b>CA supply pump (M14/3)</b> Voltage supply circuit 15	10 —  — 6	Disconnect electrical connector from CA supply pump (M14/3). Ignition: <b>ON</b>	11 – 14 V	Wiring.
3.0	<b>Left front door CA microswitch (S86/2)</b> Voltage supply	4 —  — 9	Disconnect electrical connector from CA supply pump (M14/3). Open left front door. Close left front door past the second detent. Close left front door past the third detent.	<1 V 11 – 14 V <1 V	Wiring, S86/2 incorrectly adjusted (SMS, Repair Instructions, Job No. 72–264), ⇒ 3.1
3.1	Left front door CA microswitch (S86/2) Resistance	1 —  — 3	Disconnect S86/2. Open left front door. Close left front door past the second detent. Close left front door past the third detent.	>20 kΩ <1 Ω >20 kΩ	Wiring, S86/2, 33 ⇒ 1.0

Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	<b>Right front door CA microswitch (S87/4)</b> Voltage supply		Disconnect electrical connector from closing assist supply pump (M14/3).  Open right front door.  Close right front door past the second detent.  Close right front door past the third detent.	  <1 V  11 – 14 V  <1 V	Wiring, S87/4 incorrectly adjusted (SMS, Repair Instructions, Job No. 72–264), ⇒ 4.1
4.1	Right front door CA microswitch (S87/4) Resistance		Disconnect connector at S87/4.  Open right front door.  Close right front door past the second detent.  Close right front door past the third detent.	  >20 kΩ  <1 Ω  >20 kΩ	Wiring, S87/4, 33 ⇒ 4.0



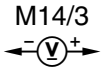
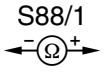
Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	<b>Left rear door CA microswitch (S86/3)</b> Voltage supply	 <p>M14/3 2 —( — ⊖ ⊕ — )— 9</p>	Disconnect plug connection from CA supply pump (M14/3).  Open left rear door.  Close left rear door past the second detent.  Close left rear door past the third detent.	<1 V  11 – 14 V  <1 V	Wiring, S86/3 incorrectly adjusted (SMS, Repair Instructions, Job No. 72–264), ⇒ 5.1
5.1	S86/3 Resistance	 <p>S86/3 1 — — ⊖ ⊕ — — 3</p>	Disconnect connector at S86/3.  Open left rear door.  Close left rear door past the second detent.  Close left rear door past the third detent.	>20 kΩ  <1 Ω  >20 kΩ	Wiring, S86/3, 33 ⇒ 7.0

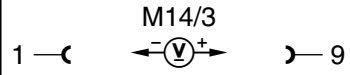
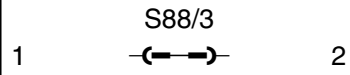
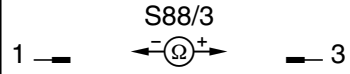
## Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
6.0	<b>Right rear door CA microswitch (S87/5)</b> Voltage supply		Disconnect plug connection from CA supply pump (M14/3).  Open right rear door.  Close right rear door past the second detent.  Close right rear door past the third detent.	<1 V  11 – 14 V  <1 V	Wiring, S87/5 incorrectly adjusted (SMS, Repair Instructions, Job No. 72–264), ⇒ 6.1
6.1	S87/5 Resistance		Disconnect connector at S87/5.  Open right rear door.  Close right rear door past the second detent.  Close right rear door past the third detent.	>20 kΩ  <1 Ω  >20 kΩ	Wiring, S87/5, 33 ⇒ 10.0

Electrical Test Program – Test

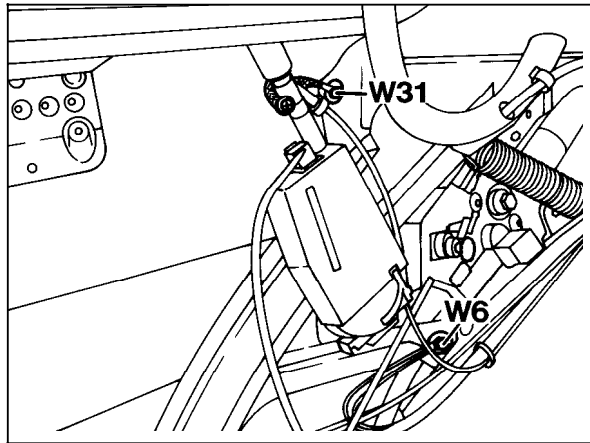
⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0	<b>Rotary tumbler/trunk lid microswitch (S88/1)</b> Voltage supply	5 —  — 9	Disconnect electrical connection from CA supply pump (M14/3).  Trunk lid open, Latch open.  Latch manually closed.	11 – 14 V  <1 V	Wiring, S88/1, ⇒ 7.1, PSE/CL 3.1 23
7.1	S88/1 Resistance	1 —  — 2	Disconnect connector at S88/1.  Trunk lid open, Latch open.  Latch manually closed.	<1 Ω  >20 kΩ	S88/1, M14/3 (SMS, Repair Instructions, Job No. 72–262), 33 ⇒ 13.0

### Electrical Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0	<b>Trunk lid CA microswitch (S88/3)</b> <sup>1)</sup> Voltage supply (Trunk latch tongue extended)		Disconnect electrical connection from M14/3. Open trunk lid. Trunk latch tongue should extend. Push red lever for trunk latch tongue to left. Press trunk latch tongue in. Push red lever back to right.	11 – 14 V          <1 V	Wiring, ⇒ 8.1.
8.1	S88/3 Voltage supply (Trunk latch tongue <b>not</b> extended)		Disconnect connector from S88/3.  Install bridge.  Remove bridge.	11 – 14 V    <1 V	Wiring.
8.2	S88/3 Resistance		Disconnect plug connection from S88/3. Trunk latch tongue extended. Press trunk latch tongue in.	<1 Ω    >20 kΩ	S88/3 (SMS, Repair Instructions, Job No. 72–535), 33 ⇒ 13.0.

<sup>1)</sup> No longer installed as of chassis end no. 118121.

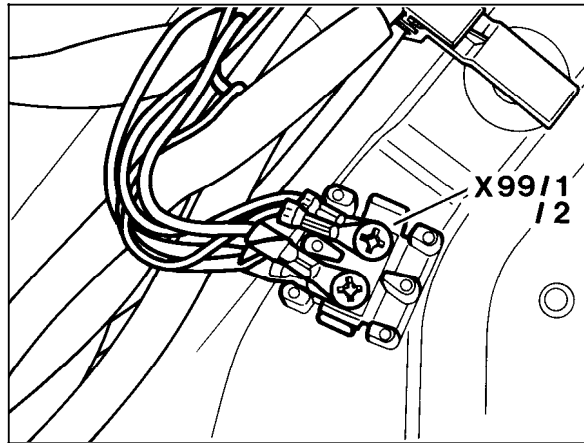
Electrical Test Program – Test



P54-2786-13

Figure 1

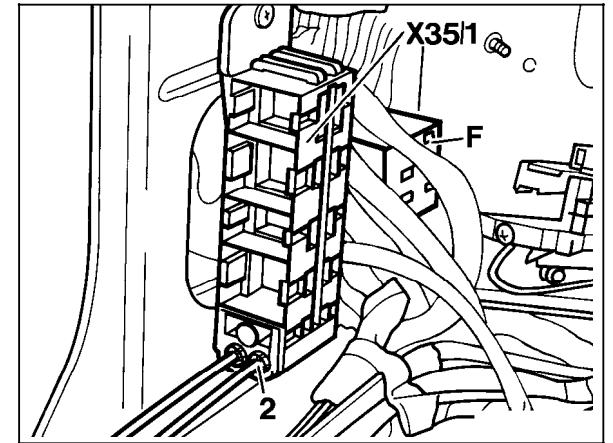
W6 Ground (left wheel housing in trunk)



P82-2995-13A

Figure 2

X99/1 Terminal block (circuit 31, left front door)  
 X99/2 Terminal block (circuit 31, right front door)



P80-2211-13A

Figure 3

X35/1 Left front door separation point

Electrical Test Program – Test

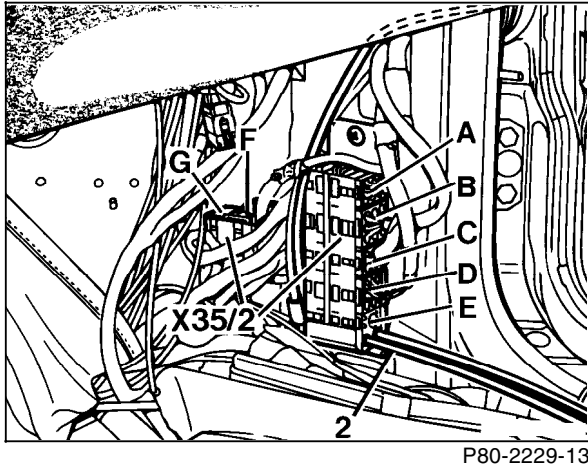


Figure 4

X35/2 Right front door separation point

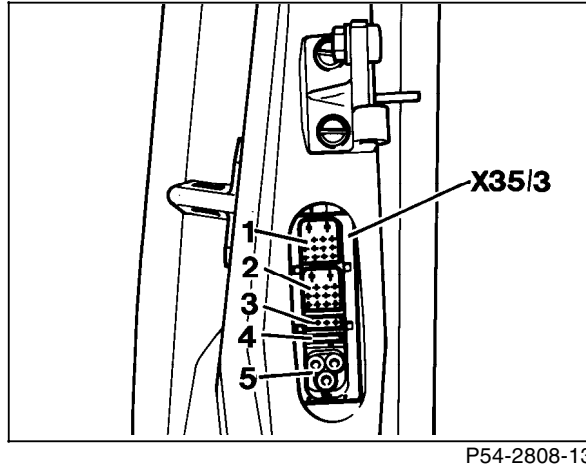


Figure 5

X35/3 Left rear door separation point  
X35/4 Right rear door separation point  
(mirror image of left shown)

Pneumatic Test Program – Component Locations

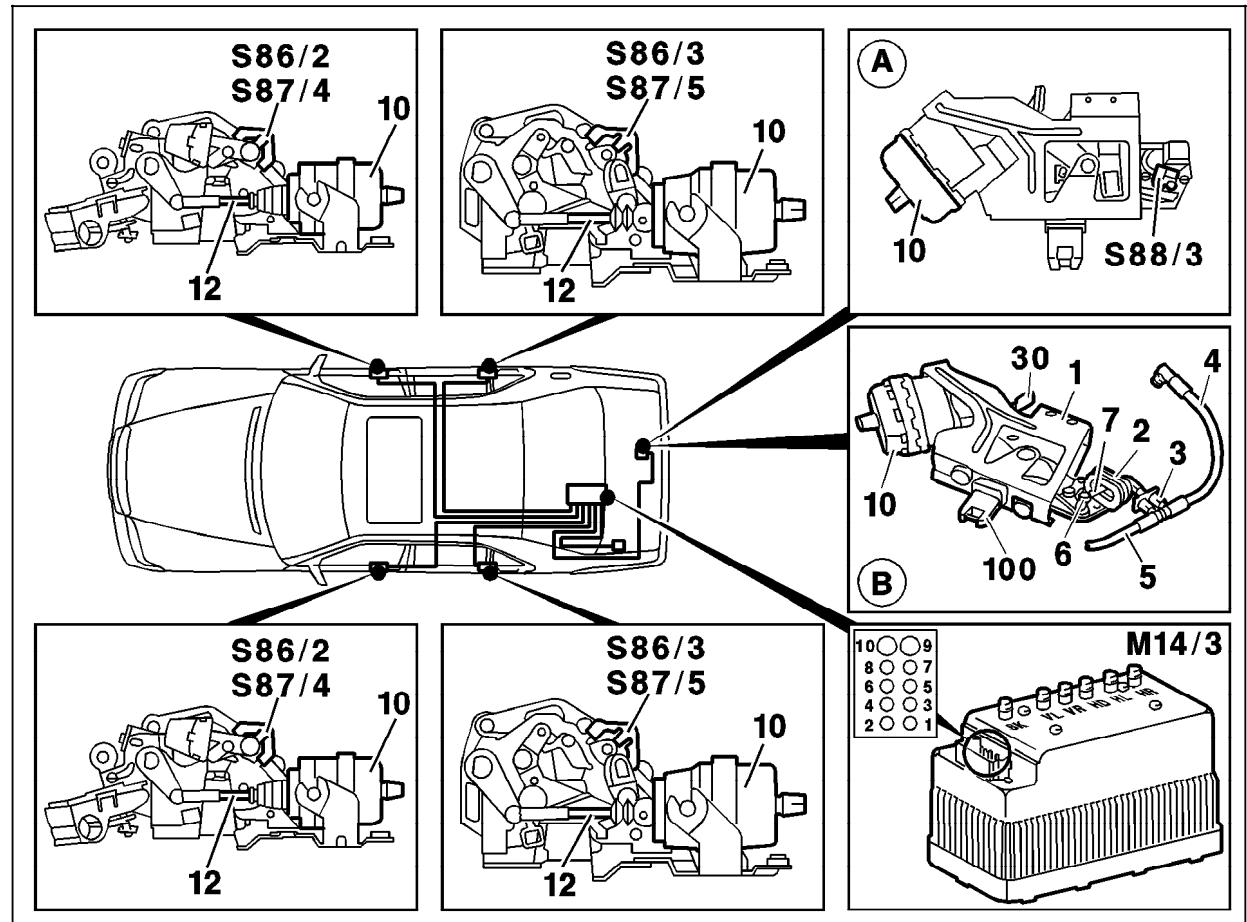


Figure 1

- A Version up to chassis end no. 118120
- B Version as of chassis end no. 118121
- M14/3 CA supply pump
- S86/2 Left front door closing assist microswitch
- S86/3 Left rear door closing assist microswitch
- S87/4 Right front door closing assist microswitch
- S87/5 Right rear door closing assist microswitch
- S88/1 Rotary tumbler/trunk lid microswitch
- S88/3 Trunk lid closing assist microswitch <sup>1)</sup>
- X35/1 Left front door separation point
- X35/2 Right front door separation point
- X35/3 Left rear door separation point
- X35/4 Right rear door separation point
- VL Left front door
- VR Right front door
- HD Trunk lid
- HL Left rear door
- HR Right rear door
- SK Vacuum vent connection (with screen)

<sup>1)</sup> No longer installed as of chassis end no. 118121.

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Pneumatic Test Program – Preparation for Test

Preliminary work: ..... 23

Data (mbar)

Test procedure	Permissible deviation
Permissible leakage from the entire system at >2 bar pressure in 1 minute.	Max. 100 mbar

Preparation for Test:

1. Provide access to closing assist supply pump (M14/3).
2. Assemble test lines according to connection diagram ( 33, Figures).
3. Connect test lines and pressure gauge according to connection diagram ( 33, Figure 1 or 2).

Note:

If one or more pneumatic circuits of the CA supply pump are switched off by the safety feature (incorrect pressure buildup times), the pump can be reset by briefly interrupting circuit 30. This can be done by removing fuse F4–9 in rear fuse box F4 for approx. 5 seconds, or by disconnecting the connector from the CA supply pump (M14/3).

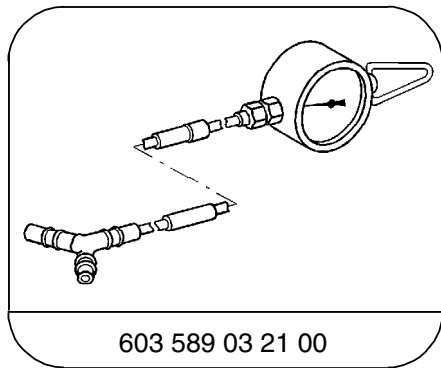


### Pneumatic Test Program – Preparation for Test

**Note:**

Any suitable pressure gauge which reads in bar (range 1 to 5 bar) can also be used.

**Special Tools**



603 589 03 21 00

Tester

**Conventional tools, test equipment**

Description	Brand, model, etc.
Engine analyzer <sup>1)</sup>	Bear DACE (Model 40-960) Sun MEA-1500MB

<sup>1)</sup> Available through the MBUSA Standard Equipment Program.

## Pneumatic Test Program – Preparation for Test

## Parts Required for Test

Part No.	Description	Quantity	Item no. ( 33, Figures 1 and 2)
007 997 61 82	Rubber hose	6 meters	3
129 800 09 15	Line	1	2
126 800 00 78	Check valve	1	6
129 805 04 44	Pneumatic connector	1	1
000 987 11 45	Cap	1	5
117 078 01 45	Junction connector	1	20
140 800 51 81	Line	1	21

Pneumatic Test Program – Test

CA Supply Pump Test Connections

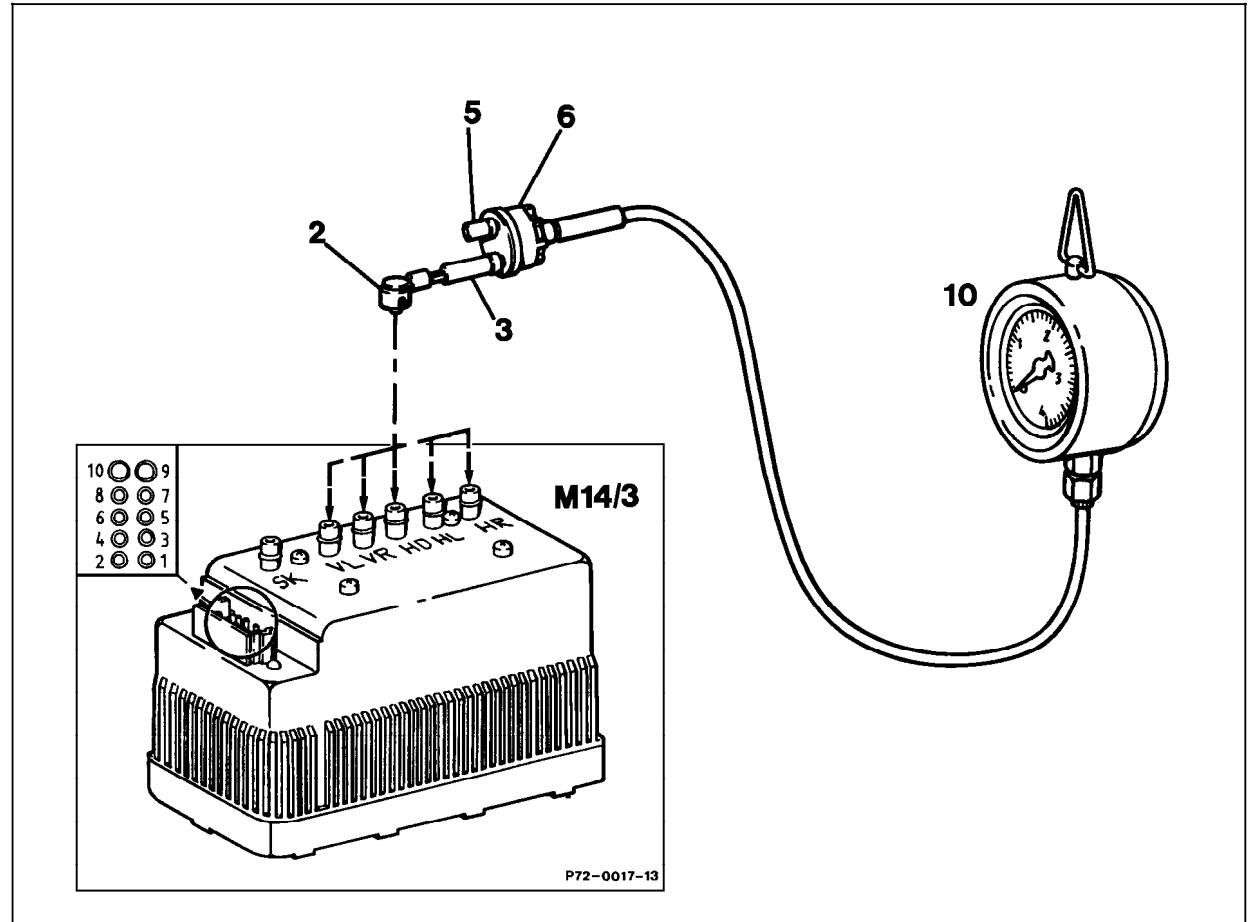


Figure 1

- 2 End piece cut off from part no. 129 800 09 15
- 3 End piece cut off from part no. 007 997 61 82
- 5 Cap, part no. 000 987 11 45
- 6 Check valve, part no. 126 800 00 78
- 10 Pressure gauge, part no. 603 589 03 21 00
- M14/3 CA supply pump

- VL Left front door
- VR Right front door
- HD Trunk lid
- HL Left rear door
- HR Right rear door
- SK Vacuum vent connection (with screen)

P72-0019-57

Pneumatic Test Program – Test

Testing Pneumatic Actuators and Pneumatic Lines/Connectors

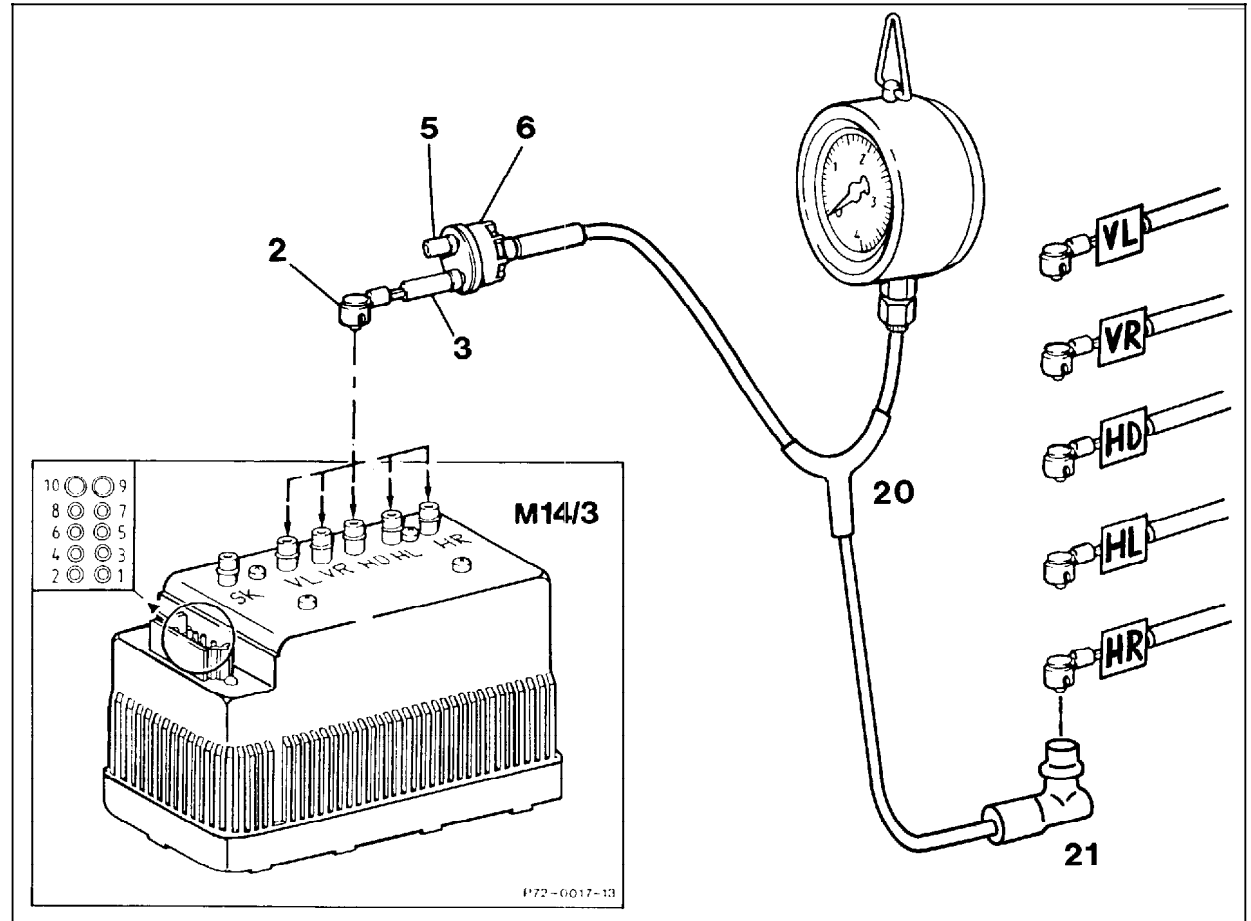


Figure 2

- 2 End piece cut off from part no. 129 800 09 15
- 3 End piece cut off from part no. 007 997 61 82
- 5 Cap, part no. 000 987 11 45
- 6 Check valve, part no. 126 800 00 78
- 20 Junction connector, part no. 117 078 01 45
- 21 Line, part no. 140 800 51 81
- M14/3 CA supply pump

- VL Left front door
- VR Right front door
- HD Trunk lid
- HL Left rear door
- HR Right rear door
- SK Vacuum vent connection (with screen)

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Pneumatic Test Program – Test

Testing Pneumatic Actuators

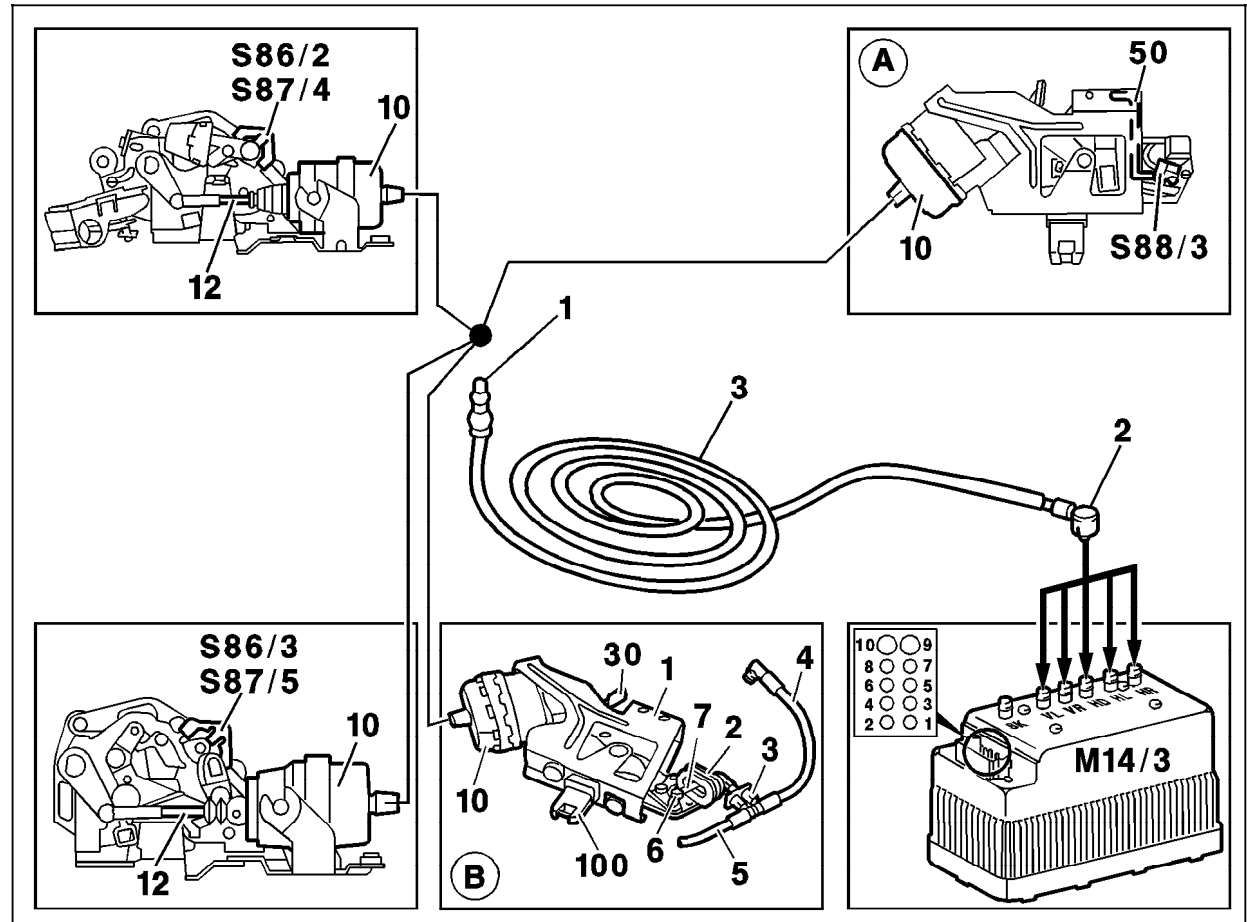


Figure 3

- A Version up to chassis end no. 118120
- B Version as of chassis end no. 118121
- 1 Pneumatic connector, part no. 129 805 04 44
- 2 End piece cut off from part no. 129 800 09 15
- 3 End piece cut off from part no. 007 997 61 82
- 10 Pneumatic actuators
- M14/3 CA supply pump
  
- VL Left front door
- VR Right front door
- HD Trunk lid
- HL Left rear door
- HR Right rear door
- SK Vacuum vent connection (with screen)

P72-5364-57

Pneumatic Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	<b>Left front door (VL)</b> Pressure supply	CA supply pump (M14/3) connection VL (Figure 1)	Using open end wrench, disconnect connection VL from M14/3. Connect pressure gauge according to connection diagram (Figure 1). Close left front door past the second detent.	>2 bar	M14/3 (SMS, Repair Instructions, Job No. 72-262), Clogged vent line SK )if vent line was left on pump).
2.0	<b>Left front door (VL)</b> Pneumatic actuator Pneumatic lines	CA supply pump (M14/3) connection VL (Figure 2)	Connect pneumatic test line according to connection diagram (Figure 2). Close left front door past the second detent.	Door must close by itself, wait 10 seconds >2 bar Pressure drop 100 mbar in 1 minute.	Pneumatic actuator or line leaking or kinked (SMS, Repair Instructions, Job No. 72-266), Clogged vent line SK (if vent line was left on pump).
3.0	<b>Left front door (VL)</b> Pneumatic actuator	CA supply pump (M14/3) connection VL (Figure 3)	Pull pneumatic line off actuator. Connect pneumatic test line according to connection diagram (Figure 3). Close left front door past the second detent.	Actuator must latch the door.	Pneumatic actuator leaking.

Pneumatic Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	<b>Right front door (VR)</b> Pressure supply	CA supply pump (M14/3) connection VR (Figure 1)	Using open end wrench, disconnect connection VR from M14/3. Connect pressure gauge according to connection diagram (Figure 1). Close right front door past the second detent.	>2 bar	M14/3 (SMS, Repair Instructions, Job No. 72-262), Clogged vent line SK (if vent line was left on pump).
5.0	<b>Right front door (VR)</b> Pneumatic actuator Pneumatic lines	CA supply pump (M14/3) connection VR (Figure 2)	Connect pneumatic test line according to connection diagram (Figure 2). Close right front door past the second detent.	Door must close by itself, wait 10 seconds >2 bar Pressure drop 100 mbar in 1 minute.	Pneumatic actuator or line leaking or kinked (SMS, Repair Instructions, Job No. 72-266), Clogged vent line SK (if vent line was left on pump).
6.0	<b>Right front door (VR)</b> Pneumatic actuator	CA supply pump (M14/3) connection VR (Figure 3)	Pull pneumatic line off actuator. Connect pneumatic test line according to connection diagram (Figure 3). Close right front door past the second detent.	Actuator must latch the door.	Pneumatic actuator leaking.

Pneumatic Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0	<b>Left rear door (HL)</b> Pressure supply	CA supply pump (M14/3) connection HL (Figure 1)	Using open end wrench disconnect connection HL from M14/3. Connect pressure gauge according to connection diagram (Figure 1). Close left rear door past the second detent.	>2 bar	M14/3 (SMS, Repair Instructions, Job No. 72–262), Clogged vent line SK (if vent line was left on pump).
8.0	<b>Left rear door (HL)</b> Pneumatic actuator Pneumatic lines	CA supply pump (M14/3) connection HL (Figure 2)	Connect pneumatic test line according to connection diagram (Figure 2). Close left rear door past the second detent.	Door must close by itself, wait 10 seconds >2 bar Pressure drop 100 mbar in 1 minute.	Pneumatic actuator or line leaking or kinked (SMS, Repair Instructions, Job No. 72-266), Clogged vent line SK (if vent line was left on pump).
9.0	<b>Left front door (HL)</b> Pneumatic actuator	CA supply pump (M14/3) connection HL (Figure 3)	Connect pneumatic line according to connection diagram (Figure 3). Close left rear door past the second detent.	Actuator must latch the door.	Pneumatic actuator leaking.



Pneumatic Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
10.0	<b>Right rear door (HR)</b> Pressure supply	CA supply pump (M14/3) connection HR (Figure 1)	Using open end wrench, disconnect connection HR from M14/3. Connect pressure gauge according to connection diagram (Figure 1). Close right rear door past the second detent.	>2 bar	M14/3 (SMS, Repair Instructions, Job No. 72-262), Clogged vent line SK (if vent line was left on pump).
11.0	<b>Right rear door (HR)</b> Pneumatic actuator Pneumatic lines	CA supply pump (M14/3) connection HR (Figure 2)	Pull pneumatic line off actuator. Connect pneumatic test line (HR) according to connection diagram (Figure 2). Close right rear door past the second detent.	Door must close by itself, wait 10 seconds >2 bar Pressure drop 100 bar in 1 minute.	Pneumatic actuator or line leaking or kinked (SMS, Repair Instructions, Job No. 72-266), Clogged vent line SK (if vent line was left on pump).
12.0	<b>Right rear door (HR)</b> Pneumatic actuator	CA supply pump (M14/3) connection HR (Figure 3)	Pull pneumatic line off actuator. Connect pneumatic test line according to connection diagram (Figure 3). Close right rear door past the second detent.	Actuator must latch the door.	Pneumatic actuator leaking.

Pneumatic Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.0	<b>Trunk lid (HD)</b> Pressure supply	CA supply pump (M14/3) connection HD (Figure 1)	Using open end wrench, disconnect connection HD from M14/3. Connect pressure gauge according to connection diagram (Figure 1).  Manually close latch (lower part).	>2 bar	M14/3 (SMS, Repair Instructions, Job No. 72-262).
14.0	<b>Trunk lid (HD)</b> Pneumatic actuator Pneumatic lines	CA supply pump (M14/3) connection HD (Figure 2)	Pull pneumatic line off trunk lid actuator (upper part). Striker tongue must be extended, if not, pull lever (50, Figure 3) to the outside (striker tongue extends). Starting chassis end no. 118121 the activation was modified, whereby the striker tongue is activated via the retractable trunk lid grip. Connect pneumatic test line according to connection diagram (Figure 2). Manually close latch (lower part).	Wait 10 seconds >2 bar Pressure drop 100 bar in 1 minute.	Pneumatic actuator or line leaking or kinked (SMS, Repair Instructions, Job No. 72-266).

Pneumatic Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
15.0	<b>Trunk lid (HD)</b> Pneumatic actuator	CA supply pump (M14/3) connection HD (Figure 3)	Pull pneumatic line off actuator. Connect pneumatic test line according to connection diagram (Figure 3).  Manually close latch (lower part).	Striker tongue retracts.	Pneumatic actuator leaking.

**Note:**

AS of chassis end number 118121, pressure or vacuum for the lock striker actuator is applied in parallel with the retractable trunk lid grip actuator. If during diagnosis, the retractable trunk lid grip actuator and pneumatic line are determined to be leak-free, be certain to check the multiple connector (3) and lock striker actuator (2) for possible leakage as well.

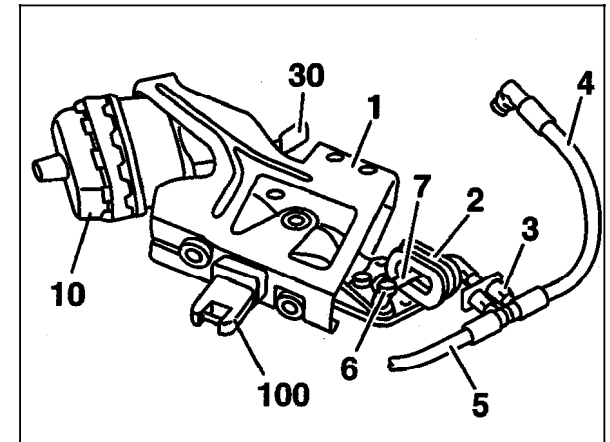


Figure 4

P88-5310-13

Pneumatic Test Program – Test

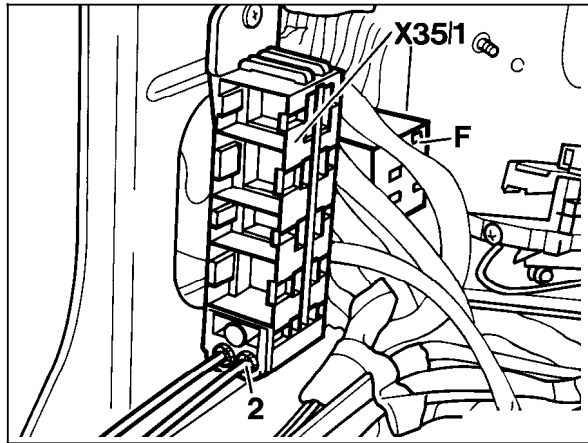


Figure 5

P80-2211-13A

X35/1 Left front door separation point

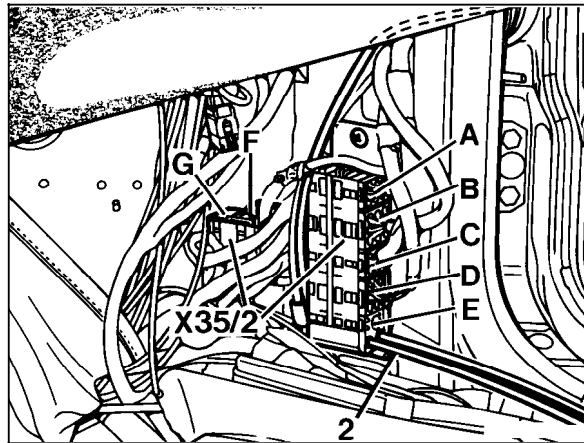


Figure 6

P80-2229-13

X35/2 Right front door separation point

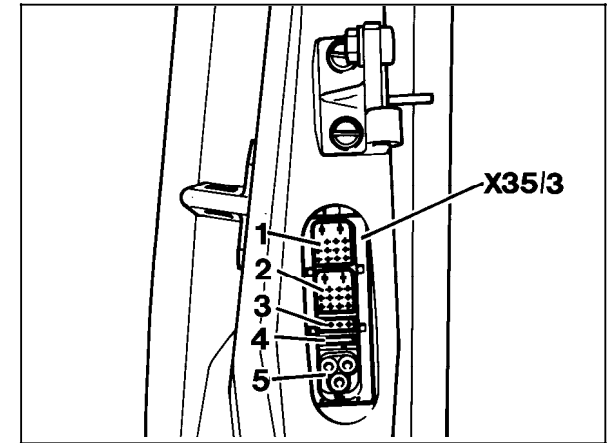


Figure 7

P54-2808-13

X35/3 Left rear door separation point  
 X35/4 Right rear door separation point  
 (mirror image of left shown)