

## 3.1 Central Locking (PSE/CL) Model 140

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#### Diagnosis – Function Test (CL)

Preliminary work:

Diagnosis - Diagnostic Trouble Code (DTC) Memory ..... 11 PSE

#### Component Locations

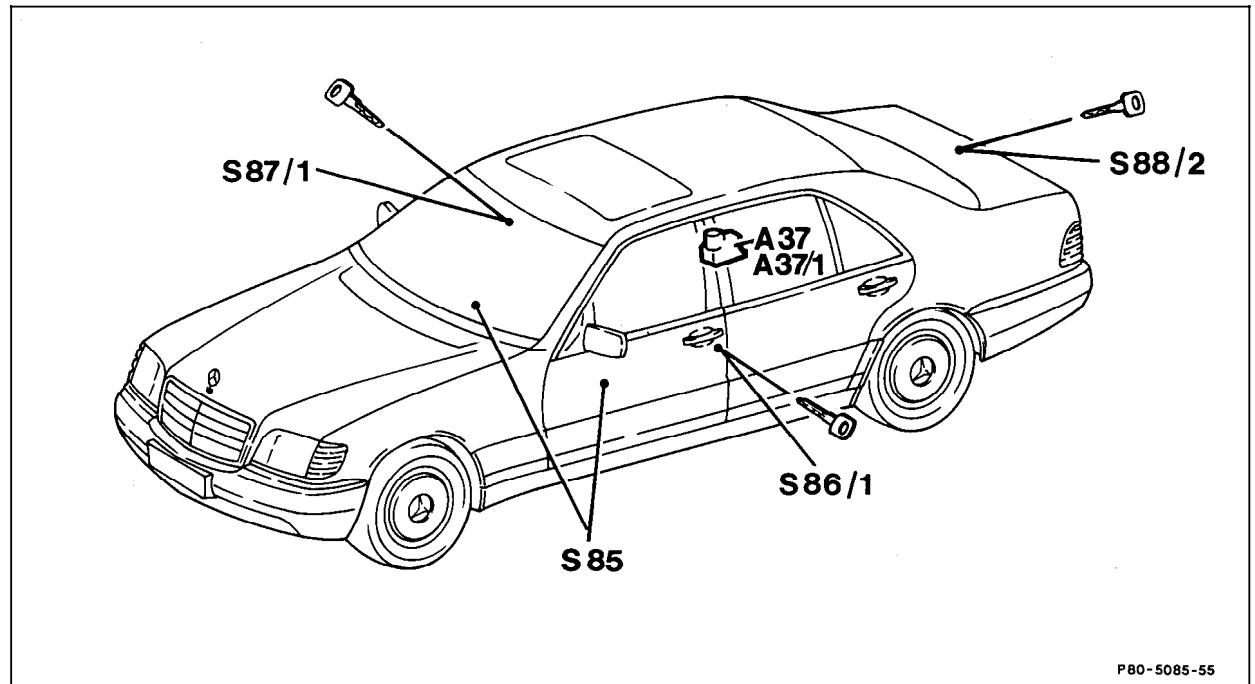


Figure 1

- A37, A37/1 PSE control module
- S85 1) Interior CL switch
- S86/1 Left front door lock switch
- S87/1 Right front door lock switch
- S88/2 Trunk lid lock switch

1) On sedan as of 06/92 in center console  
On coupé as of production start-up in center console

P80-5085-55

P80-5085-55

#### Diagnosis – Function Test (CL)

##### Preparation for Test:

1. Check fuse F2-5, F4-3 and fuse F4-11.
2. Battery voltage 11 – 14 V.
3. Vehicle unlocked.
4. All doors and trunk lid closed.

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 1.0 Locking vehicle via left front door	Turn key in left front door lock approx. 20° to the right.	All doors, trunk lid and filler flap lock in 3 sec.	<p>Vehicle does not lock and pump motor in PSE control module (A37, A37/1) <b>does not run.</b>                      23 PSE ⇒ 1.0,                      23 ⇒ 4.0.</p> <p>Vehicle does not lock even though pump motor in PSE control module (A37, A37/1) <b>runs.</b>                      32 PSE ⇒ 1.0,                      32 ⇒ 2.0.</p>

1) Observe Preparation for Test, see 22.

#### Diagnosis – Function Test (CL)

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 2.0 Unlocking vehicle via left front door	Turn key in left front door lock approx. 20° to the left.	All doors, trunk lid and filler flap unlock in 3 sec.	<p>Vehicle does not unlock and pump motor in PSE control module (A37, A37/1) <b>does not run</b>.            23 PSE ⇒ 1.0,            23 ⇒ 4.0.</p> <p>Vehicle does not unlock even though pump motor in PSE control module (A37, A37/1) <b>runs</b>.            32 PSE ⇒ 2.0,            32 ⇒ 1.0.</p>
⇒ 3.0 Locking vehicle via right front door	Turn key in right front door lock approx. 20° to the left.	All doors, trunk lid and filler flap lock in 3 sec.	<p>Vehicle does not lock and pump motor in PSE control module (A37, A37/1) <b>does not run</b>.            23 PSE ⇒ 1.0,            23 ⇒ 2.0.</p> <p>Vehicle does not lock even though pump motor in PSE control module (A37, A37/1) <b>runs</b>.            32 PSE ⇒ 1.0,            32 ⇒ 2.0.</p>

1) Observe Preparation for Test, see 22.

#### Diagnosis – Function Test (CL)

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 4.0 Unlocking vehicle via right front door	Turn key in front door lock approx. 20° to the right.	All doors, trunk lid and filler flap unlock in 3 sec.	<p>Vehicle does not unlock and pump motor in PSE control module (A37, A37/1) <b>does not run</b>.            23 PSE ⇒ 1.0,            23 ⇒ 2.0.</p> <p>Vehicle does not unlock even though pump motor in PSE control module (A37, A37/1) <b>runs</b>.            32 PSE ⇒ 2.0,            32 ⇒ 1.0.</p>
⇒ 5.0 Locking vehicle via trunk lid	Turn key in trunk lid lock approx. 20° to the right.	All doors, trunk lid and filler flap lock in 3 sec.	<p>Vehicle does not lock and pump motor in PSE control module (A37, A37/1) <b>does not run</b>.            23 PSE ⇒ 1.0,            23 ⇒ 3.0.</p> <p>Vehicle does not lock even though pump motor in PSE control module (A37, A37/1) <b>runs</b>.            32 PSE ⇒ 1.0,            32 ⇒ 2.0.</p>

1) Observe Preparation for Test, see 22.

#### Diagnosis – Function Test (CL)

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 6.0 Unlocking vehicle via trunk lid	Turn key in trunk lid lock approx. 20° to the left.	All doors, trunk lid and filler flap unlock in 3 sec.	<p>Vehicle does not unlock and pump motor in PSE control module (A37, A37/1) <b>does not run</b>.                      23 PSE ⇒ 1.0,                      23 ⇒ 3.0.</p> <p>Vehicle does not unlock even though pump motor in PSE control module (A37, A37/1) <b>runs</b>.                      32 PSE ⇒ 2.0,                      32 ⇒ 1.0.</p>
⇒ 7.0 Locking vehicle via interior central locking switch	All doors closed. Vehicle unlocked from outside. Press interior central locking switch in lock position.	All doors, trunk lid and filler flap lock in 3 sec.	<p>Vehicle does not lock and pump motor in PSE control module (A37, A37/1) <b>does not run</b>.                      23 PSE ⇒ 1.0,                      23 ⇒ 1.0.</p> <p>Vehicle does not lock even though pump motor in PSE control module (A37, A37/1) <b>runs</b>.                      32 PSE ⇒ 1.0,                      32 ⇒ 2.0.</p>

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

#### Diagnosis – Function Test (CL)

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 8.0 Unlocking vehicle via interior central locking switch	Front doors closed. Vehicle unlocked from outside. Press interior central locking switch in unlock position.	All doors, trunk lid and filler flap unlock in 3 sec.	Vehicle does not unlock and pump motor in PSE control module (A37, A37/1) <b>does not run</b> . 23 PSE ⇒ 1.0, 23 ⇒ 1.0.  Vehicle does not unlock even though pump motor in PSE control module (A37, A37/1) <b>runs</b> . 32 PSE ⇒ 2.0, 32 ⇒ 1.0.
⇒ 9.0 Unlocking vehicle by opening a front door from inside vehicle	Vehicle locked via the interior central locking switch. Open a front door.	All doors, trunk lid and filler flap unlock in 3 sec.	Vehicle does not unlock and pump motor in PSE control module (A37, A37/1) <b>does not run</b> . 23 PSE ⇒ 1.0, 23 ⇒ 5.0.  Vehicle does not unlock even though pump motor in PSE control module (A37, A37/1) <b>runs</b> . 32 PSE ⇒ 2.0, 32 ⇒ 1.0.

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

#### Electrical Test Program – Component Locations (CL)

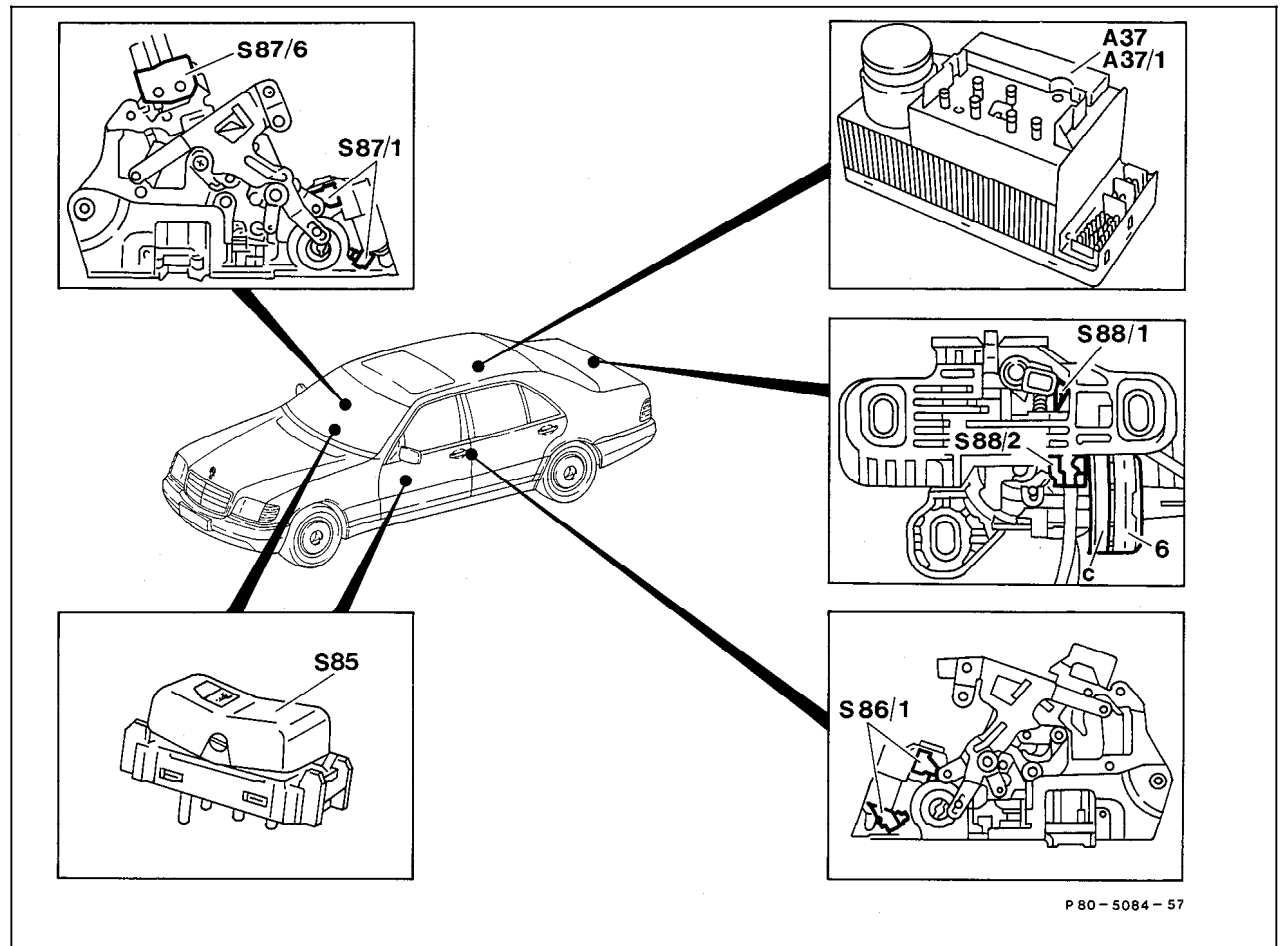


Figure 1

- |            |                         |
|------------|-------------------------|
| A37, A37/1 | PSE control module      |
| S85 1)     | Interior CL switch      |
| S86/1      | Left front lock switch  |
| S87/1      | Right front lock switch |
| S88/2      | Trunk lock switch       |

1) On sedan as of 06/92 in center console  
On coupé as of production start-up in center console



#### Electrical Test Program – Preparation for Test (CL)

Preliminary work:

Diagnosis - Diagnostic Trouble Code (DTC) Memory ..... 11 PSE

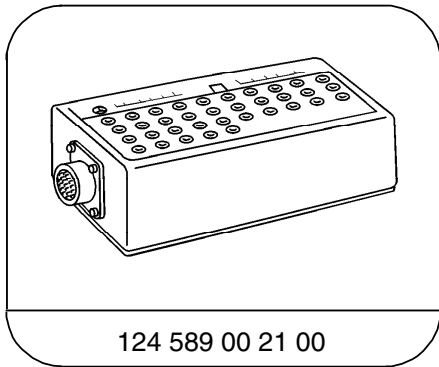
#### Preparation for Test:

1. Check fuse F2-5, F4-3 and fuse F4-11.
2. Provide access to PSE control module (A37, A37/1).
3. Disconnect convenience feature (CF) control module (N57), anti-theft alarm (ATA) control module (N26), infrared remote central locking (IRCL) control module (N54).
4. Connect socket box with test cable according to connection diagram, see 22 Figure 1.

#### Electrical wiring diagrams

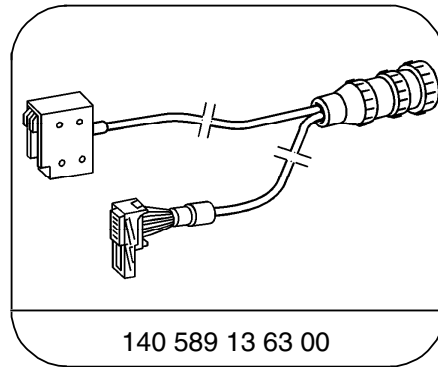
See Electrical Troubleshooting Manual, Model 140, Volume 2.

#### Special Tools



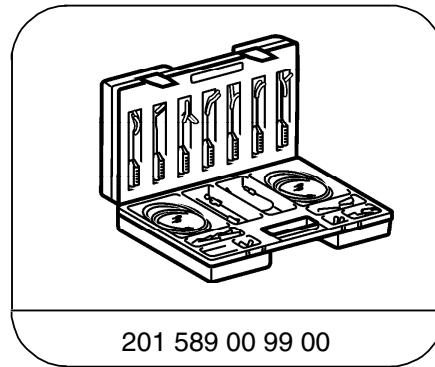
124 589 00 21 00

35-pin socket box



140 589 13 63 00

21-pin test cable



201 589 00 99 00

Electrical connecting set

#### Equipment

Multimeter <sup>1)</sup>

Fluke models 23, 83, 85, 87

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

## Electrical Test Program – Preparation for Test (CL)

Connection Diagram - Socket Box

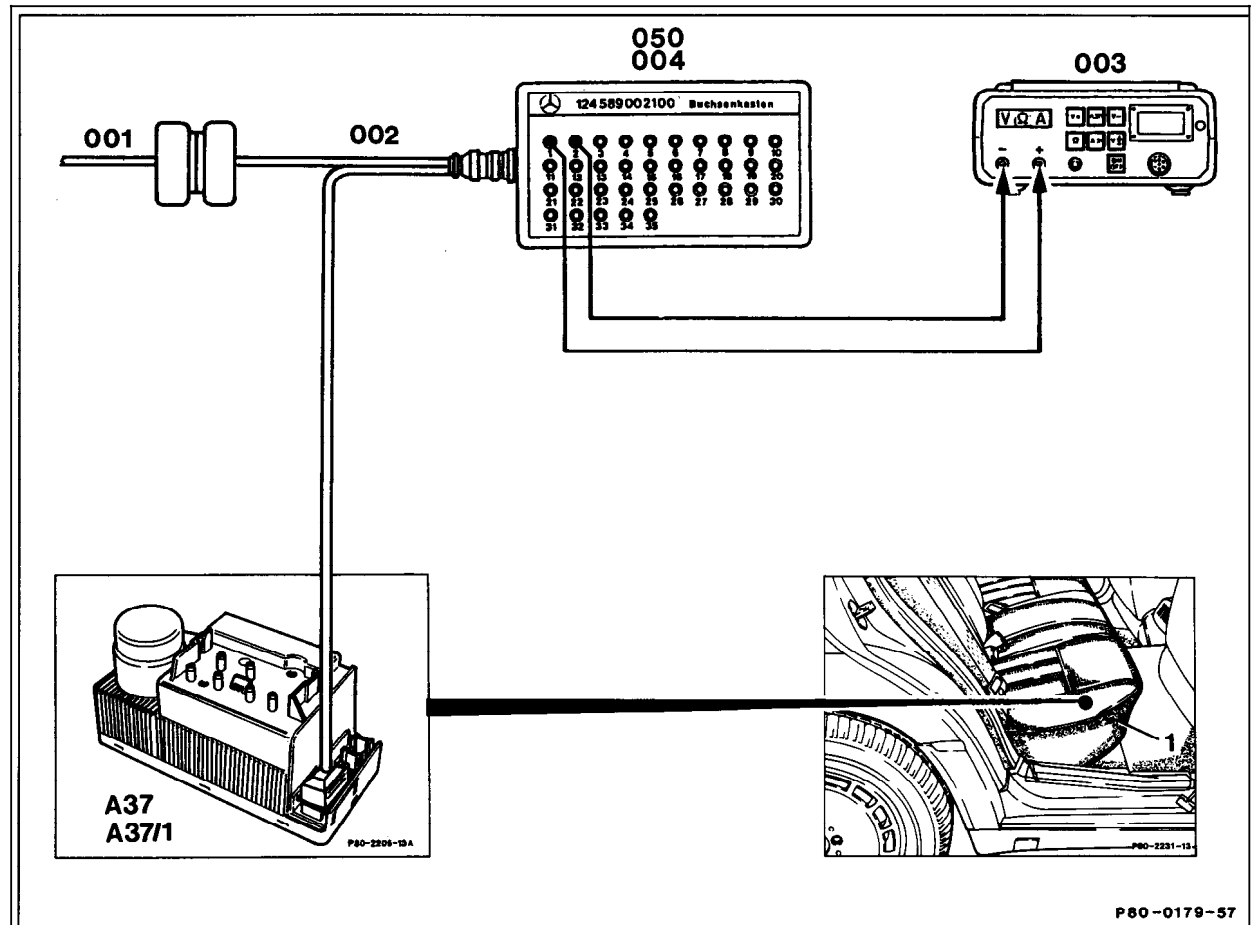



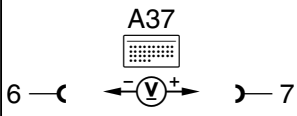

Figure 1

- 001 PSE control module connector
- 002 Test cable
- 003 Multimeter
- 004/050 Socket box (35-pole)
- A37, A37/1 PSE control module

P80-0179-57

P80-0179-57

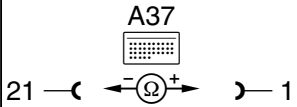

#### Electrical Test Program – Test (CL)

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 1.0	 <b>Interior central locking switch (S85)</b>		Front doors closed, vehicle unlocked from outside.  S85: <b>Rest position</b>  <b>Press to lock</b>   <b>Press to unlock</b>	CL: locks    CL: unlocks	Wiring, ⇒ 1.1, PSE control module (A37 or A37/1).  Wiring, ⇒ 1.1, A37 or A37/1.
⇒ 1.1	Interior central locking switch (S85)		Disconnect PSE control module (A37 or A37/1) from   S85: <b>Rest position</b>   <b>Press and hold to lock:</b>	<1 V   11 – 14 V	Wiring, S85.  Wiring, S85.





Electrical Test Program – Test (CL)

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 3.0 <sup>1)</sup> 7 8 12 13	<b>Trunk lid lock switch circuit (convenience, S88/2)</b>		Turn key to left, <b>Hold to unlock</b>  Turn key to right, <b>Hold to lock</b>	CL: unlocks  CL: locks	Wiring, ⇒ 3.1, ⇒ 4.1, PSE control module (A37 or A37/1).  Wiring, ⇒ 3.2, ⇒ 4.2, A37 or A37/1.
⇒ 3.1	S88/2		Disconnect PSE control module (A37 or A37/1) from  Separate plug connection, left front door (X35/1). S88/2: <b>Rest position</b>  <b>Hold to unlock</b>	>20 kΩ  <40 Ω	Wiring, S88/2.  Wiring, S88/2.

<sup>1)</sup> Except vehicles as of 12/93.





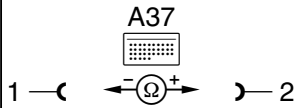
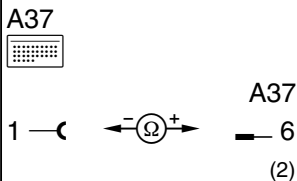
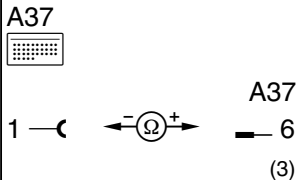


Electrical Test Program – Test (CL)

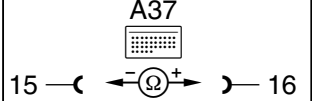
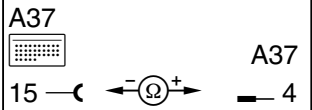
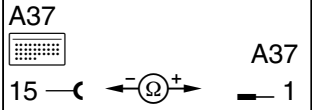
Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 5.0	Left front door switch circuit (S17/3) Right front door switch circuit (S17/4)		Pull out fuses F3-17, F4-11. Close all doors. <b>Open and close front doors alternately.</b>  <b>Both doors closed</b>  <b>One door open</b>	11 – 14 V  <1 V	Wiring, ⇒ 5.1, ⇒ 5.2, PSE control module (A37 or A37/1).  Wiring, ⇒ 5.1, ⇒ 5.2, A37 or A37/1.



#### Electrical Test Program – Test (CL)

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 6.0	<b>PSE control module (A37 or A37/1)</b> <b>Lock switch circuit 1</b> Internal connections	 <p>A37</p> <p>1 — Ω — 2</p>	Pull out fuse F4-11	<1 Ω	A37 or A37/1.
		 <p>A37</p> <p>1 — Ω — 6</p> <p>(2)</p>	Connector 2 unplugged on A37 or A37/1.	<1 Ω	A37 or A37/1.
		 <p>A37</p> <p>1 — Ω — 6</p> <p>(3)</p>	Connector 3 unplugged on A37 or A37/1.	<1 Ω	A37 or A37/1.

Electrical Test Program – Test (CL)

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 7.0	<b>PSE control module (A37 or A37/1)</b> <b>Lock switch circuit 2</b> Internal connections	 <p>A37 15 — Ω — 16</p>	Pull out fuse F4-11.	<1 Ω	A37 or A37/1.
		 <p>A37 15 — Ω — A37 4 (2)</p>	Connector 2 unplugged on A37 or A37/1.	<1 Ω	A37 or A37/1.
		 <p>A37 15 — Ω — A37 1 (3)</p>	Connector 3 unplugged on A37 or A37/1.	<1 Ω	A37 or A37/1.

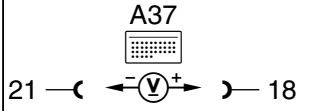
#### Electrical Test Program – Test (CL)

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 8.0	<b>PSE control module (A37 or A37/1)</b> <b>Front door contact</b> Internal connections	<p>A37 3 — <math>\leftarrow \text{---} \Omega \text{---} \rightarrow</math> — 5 A37 (2)</p>	<p>Pull out fuse F4-11.</p> <p>Connector 2 unplugged on A37 or A37/1.</p>	<1 $\Omega$	A37 or A37/1.
⇒ 9.0	<b>Trunk lid latch</b> Internal connections	<p>A37 18 — <math>\leftarrow \text{---} \Omega \text{---} \rightarrow</math> — 3 A37 (2)</p> <p>A37 18 — <math>\leftarrow \text{---} \Omega \text{---} \rightarrow</math> — 5 A37 (3)</p>	<p>Pull out fuse F4-11.</p> <p>Connector 2 unplugged on A37 or A37/1.</p> <p>Connector 3 unplugged on A37 or A37/1.</p>	<1 $\Omega$	A37 or A37/1.

#### Electrical Test Program – Test (CL)

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 10.0	<b>Convenience feature (CF) control module (N57)</b> Input from lock mechanism switch		Reconnect N57.  <b>Trunk lid:</b> Turn key to left.  Turn key to right.	CL: unlocks  CL: locks	Wiring, N57.  Wiring, N57.
⇒ 11.0	<b>Infrared remote central locking (IRCL) control module (N54), central locking function</b> Input from lock switch circuit, warning buzzer, trunk lid latch.		Reconnect N54.  <b>Right front door:</b> Turn key to left.  Turn key to right.	CL: locks  CL: unlocks	Wiring, N54.  Wiring, N54.

Electrical Test Program – Test (CL)

Test step <b>DTC</b>	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ [11.0]			Disconnect left and right tail lamp connectors. Trunk lid: <b>Closed</b>  <b>Open</b>	>5 V  <1 V	Wiring, N54.  Wiring, N54.
⇒ 12.0	<b>Anti-theft alarm (ATA) control module (N26)</b> Input from lock switch circuit front door contact, rear door contact, trunk lid latch.		Reconnect N26.  Carry out function test of ATA (refer to Diagnostic Manual, Body and Accessories, Volume 2, Section 13.2).		Wiring, N26.

## Pneumatic Test Program – Component Locations (CL)

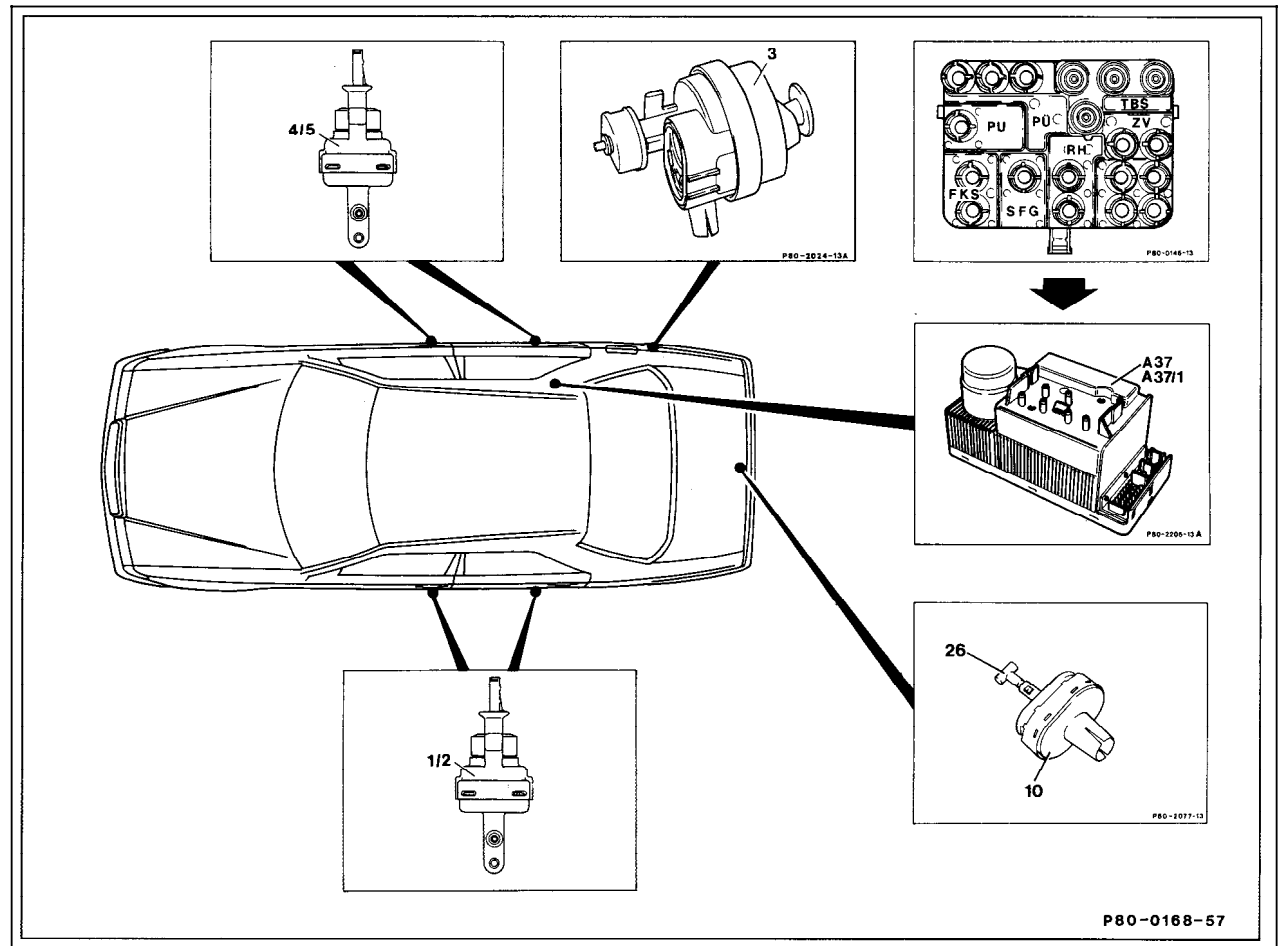


Figure 1

- A37, A37/1 PSE control module
- 1 Left front door actuator
- 2 Left rear door actuator
- 3 Filler flap actuator
- 4 Right front door actuator
- 5 Right rear door actuator
- 10 Trunk lock actuator

P80-0168-57



### 3.1 Pneumatic System Equipment (PSE)

Model 140

#### Pneumatic Test Program – Test (CL)

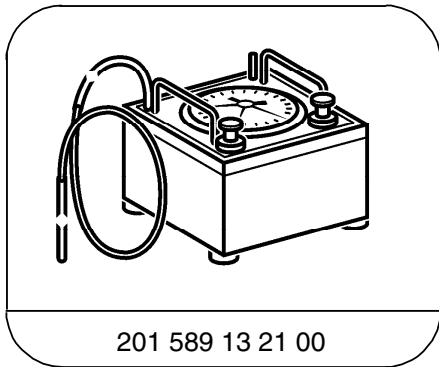
Preliminary work:

Diagnosis - Diagnostic Trouble Code (DTC) Memory .....	11 PSE
PSE Control Module Test .....	32 PSE

#### Data (mbar)

Test procedure	Permissible deviation
Allowable system leakage at 600 mbar pressure or 300 mbar vacuum in 1 minute.	30 mbar
Allowable leakage of actuators with lines at 600 mbar pressure or 300 mbar vacuum in 1 minute.	25 mbar

#### Special Tools



201 589 13 21 00

Tester

#### Pneumatic Test Program – Test (CL)

##### A. Entire system

###### Preparation for Test:

Vehicles up to 07/94:

1. Disconnect pneumatic multiple connector from PSE control module.
2. Connect tester to bottom side of pneumatic multiple connector at **ZV** (CL) using connector 129 805 04 44.

Vehicles as of 08/94:

1. Disconnect **yellow** pneumatic line with socket from PSE control module.
2. Connect tester to disconnected pneumatic line using connector 129 805 04 44.

###### Parts Required for Test:

1	Connector	129 805 04 44
2	Connection hose, 50 mm long	007 997 61 82
1	Pneumatic line, 1 m long	000 158 14 35

###### Note:

The connections on the PSE control module and pneumatic multiple connector are marked with their German acronyms. In other words:

**ZV** (German) = **CL** (English),  
**RH** (German) = **BA** (English),  
**FKS** (German) = **RHR** (English),  
**SFG** (German) = **RTG** (English),  
**PÜ/P+ (OSL)** (German) = **PÜ/P+ (OSB)** (English),  
**PU/P- (SRU)** (German) = **PU/P- (MVA)** (English).

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	<b>Complete system pressurized</b>	<b>Yellow</b> connector on tester. Connector ZV on bottom side of multiple connector.	Apply 600 mbar pressure to entire system.	Pressure loss 30 mbar in 1 minute.	33 PSE ⇒ 1.0, 32 ⇒ 3.0
2.0	<b>Complete system evacuated</b>	<b>Black</b> connector on tester. Connector ZV on bottom side of multiple connector.	Apply 300 mbar vacuum to entire system.	Vacuum loss 30 mbar in 1 minute.	33 PSE ⇒ 2.0, 32 ⇒ 4.0

#### Pneumatic Test Program – Test (CL)

#### B. Individual lines with actuators

##### Preparation for Test:

Vehicles up to 07/94:

1. Pry off **yellow** central locking (CL) pneumatic line at pneumatic multiple connector (using a 7 mm open end wrench).
2. Connect tester in sequence to each of the **yellow** CL pneumatic lines using connector 007 997 61 82.

Vehicles as of 08/94:

1. Disconnect pneumatic line leading to the non-operating pneumatic actuator at the pneumatic distributor. Letters on the distributor indicate to which of the CL actuators the pneumatic line leads.

- |     |                  |     |                       |
|-----|------------------|-----|-----------------------|
| A → | Left front door  | D → | Right rear door       |
| B → | Right front door | E → | Fuel tank filler flap |
| C → | Left rear door   | F → | Trunk lid             |

##### Note:

1. If an actuator does not operate correctly and no leakage is found, check the respective lines for kinks or blockages.
2. On vehicles as of approx. 06/94, the disconnected pneumatic lines are to be reconnected to the distributor with connector 007 997 61 82.

##### Parts Required for Test:

- |   |                       |               |
|---|-----------------------|---------------|
| 1 | Connector, 50 mm long | 007 997 61 82 |
|---|-----------------------|---------------|

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
3.0	<b>Line and actuator pressurized</b>	<b>Yellow</b> connector on tester	Apply 600 mbar pressure to line and actuator.	Pressure drop 25 mbar in 1 minute.	32 ⇒ 5.0, 32 ⇒ 7.0
4.0	<b>Line and actuator evacuated</b>	<b>Black</b> connector on tester	Apply 300 mbar vacuum to line and actuator.	Vacuum loss 25 mbar in 1 minute.	32 ⇒ 6.0, 32 ⇒ 8.0

#### Pneumatic Test Program – Test (CL)

#### C. Actuators

##### Preparation for Test:

1. Remove actuator, see SMS, Repair Instructions, Job No.'s 80–216, 80–220, 80–230, 80–240.
2. Connect vacuum/pressure tester to pneumatic connection of actuator.

##### Parts Required for Test:

- |   |                       |               |
|---|-----------------------|---------------|
| 1 | Pneumatic line        | 129 800 09 15 |
| 1 | Connector, 50 mm long | 007 997 61 82 |

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	<b>Actuator holds pressure.</b>	<b>Yellow</b> connector on tester	Apply 600 mbar pressure to actuator.	Pressure drop 25 mbar in 1 minute.	Actuator leaks. Replace actuator.
6.0	<b>Actuator holds vacuum.</b>	<b>Black</b> connector on tester	Apply 300 mbar vacuum to actuator.	Vacuum loss 25 mbar in 1 minute.	Actuator leaks. Replace actuator.

#### Pneumatic Test Program – Test (CL)

#### D. Lines

##### Preparation for Test:

1. Connect tester to one end of pneumatic line and plug other end with cap 000 987 29 45.

##### Parts Required for Test:

- |   |                       |               |
|---|-----------------------|---------------|
| 1 | Cap                   | 000 987 29 45 |
| 1 | Connector, 50 mm long | 007 997 61 82 |
| 1 | Connector             | 129 805 04 44 |

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0	<b>Line holds pressure.</b>	<b>Yellow</b> connector on tester	Apply 600 mbar pressure to line.	Pressure drop 0 mbar in 1 minute.	Pneumatic line leaks. Repair/replace line.
8.0	<b>Line holds vacuum.</b>	<b>Black</b> connector on tester	Apply 300 mbar vacuum to line.	Vacuum loss 0 mbar in 1 minute.	Pneumatic line leaks. Repair/replace line.