



3.4 PSE Control Module (PSE) Models 202, 208, 210 as of M. Y. 1998

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Notes:

The PSE provides pressure or vacuum for the following systems:

- Central locking (CL), (pressure or vacuum) – activation via remote central locking (RCL), interior switch (CL) (S6/1s2) and via mechanical key (only  .
- Remote trunk release (RTR), (pressure) – activation via remote trunk release switch (S15/1) or via remote central locking (RCL) (RTR for model 208/210 sedan only).
- Retractable rear head restraint (RHR), (vacuum) – activation via RHR unlocking switch (S6/1s3) (RHR for model 208/210 sedan only).

- Multi-contour seat (OSB), (pressure) – control of the working pressure via pressure switch in the PSE, as soon as the ignition ON signal is received via the CAN-interface.
- Manifold Vacuum Assist (MVA), (vacuum) – control of the working vacuum via pressure switch in the PSE, as soon as the ignition ON signal is received via the CAN-interface (MVA for model 210 only).

Diagnostic Trouble Code (DTC) Memory

- Pneumatic as well as electrical faults of the systems (CL, OSB, MVA, RTR and RHR) are recognized by the PSE and stored in the DTC memory. DTC memory can only be readout and erased using the Hand-Held-Tester (HHT).

CAUTION!

Erasing the DTC memory, will also erase the DTC memory for the Convenience Feature (CF) and Mirror, steering column adjustment, heated mirrors (MSC).

Additional components of the PSE:

- Heated rear window relay
- Crash sensor for emergency unlocking
- ATA control module

Replacement of the combination control module (N10-1 or N10-3):

- Combination control modules being replaced must be programmed and version coded prior to connecting to the vehicle electrical system. Please review D.M., Body and Accessories, Vol. 1, section 2, 31, for details.


(continued)

PSE control module version coding:

- The PSE control module (A37) must be version coded. In the HHT display, the menu point 5 appears as a result.
- Version coding is menu driven.
- Version codes with a (1) noted in the following table are based on the version of the PSE and thus do not need to be coded.

Version Coding Possibilities	Selection	Hints
Locking while driving	Yes/No	Automatic locking after V > 9 mph. i If "No" has been selected, the automatic lock function can not be activated even when pressing the CL interior switch (S6/1s2).
Automatic subsequent locking	Yes/No	The vehicle is locked after a period of time, provided that after unlocking none of the doors are opened.
Locking while driving via CL interior switch (S6/1s2)	Yes/No i Selection is relevant only if the "locking while driving" function is active (see above).	If "Yes" has been selected, the function "Automatic locking" can be controlled (activated/deactivated) via the CL interior switch (S6/1s2).
Alarm siren (1)	Yes/No	With the Yes selection, various country versions of the alarm siren can be selected.


Continued...

Version Coding Possibilities	Selection	Hints
Country version ATA (1)	World/ USA (headlamp shut-off delay) /Belgium	The country laws (via country codes) determine the type of alarm signals used.  With the menu point USA, the delayed shut-off illumination time of the headlamps can be set.
Interior protection (1)	Yes/No	Various version codes for interior protection can be set when selecting Yes.
Anti-tow protection (1)	Yes/No	
Panic alarm (1)	Yes/No	
Special Protection vehicle	Yes/No	

Diagnosis – Function Test (PSE)


Preparation for Test:

1. Voltage supply to all control modules and CAN data lines ok,
2. Fuses ok,
3. Battery voltage 11 to 14 V,
4. Ignition: **ON**
6. Connect HHT and readout DTC'S.
7. Review C/1, C/2, 11, 12, 13, 20, 21, 22, 31, 32

Test step/Test scope		Test condition	Nominal value	Possible cause/Remedy ¹⁾
⇒ 1.0 Press CL interior switch	SAM	CL interior switch (S6/1s2): Press close Press open	Not pressed Closed Open	23 PSE/CL ⇒ 1.0
⇒ 2.0 Press RHR unlocking switch	SAM	RHR unlocking switch (S6/1s3): Pressed Not pressed	ON OFF	See AD80.20-P-6003-01B
⇒ 3.0 Left front door switch (S17/3)	PSE	Left front door: Open Closed	ON OFF	23 PSE ⇒ 1.0







¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Function Test (PSE)

Test step/Test scope 	Test condition	Nominal value	Possible cause/Remedy ¹⁾
⇒ 4.0 PSE Right front door switch (S17/3)	Right front door: Open Closed	ON OFF	23 PSE ⇒ 2.0
⇒ 5.0 PSE Left rear door switch (S17/5) (except Model 208)	Left rear front door: Open Closed	ON OFF	23 PSE ⇒ 3.0
⇒ 6.0 PSE Right rear door switch (S17/5) (except Model 208)	Right rear front door: Open Closed	ON OFF	23 PSE ⇒ 4.0
⇒ 7.0 PSE Trunk lamp switch (S17/8) (Model 202, 208, 210 sedan only) Tailgate closing assist switch/interior illumination switch (A12s1)	Trunk lid/tailgate: Open Closed	ON OFF	23 PSE ⇒ 5.0

¹⁾ Observe Preparation for Test, see 22.

Diagnosis – Function Test (PSE)

Test step/Test scope		Test condition	Nominal value	Possible cause/Remedy ¹⁾
⇒ 8.0 Trailer recognition (not )	PSE	Trailer recognition microswitch (X58s1): Connected Not connected	 ON OFF	Wiring, X58s1
⇒ 9.0 RTR switch (N72s15) (except Model 202, 210 stationwagen)	UBF	RTR switch (N72s15): Pressed Not pressed	 ON OFF	See AD80.20-P-6002-03B
⇒ 10.0 Trunk release switch (S15/1) (except models 202, 210 station wagen)	PSE	Switch located on trunk lid lock switch (S88/2): Pressed Not pressed	 ON OFF	23 PSE ⇒ 6.0
⇒ 11.0 Locknut switch 1 (only  )	PSE	Use mechanical key on vehicle to: Lock vehicle Release key	 ON OFF	See section 4.9, 23, See DM, B&A, section 5.4, 13
⇒ 12.0 Locknut switch 2 (only  )	PSE	Use mechanical key on vehicle to: Lock vehicle Release key	 ON OFF	See section 4.9, 23, See DM, B&A, section 5.4, 13

1) Observe Preparation for Test, see 22.

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

Preparation for Test:

1. Review C/1, C/2, 11, 12, 13, 20, 21, 22, 31, 32
2. Voltage supply to all control modules and CAN data lines ok,
3. Unlock vehicle via Radio/IR remote central locking,
4. Fuses OK,
5. Battery voltage 11 to 14 V,
6. Connect the Hand-Held Tester (HHT) to X11/4, according to diagram, see section 0,
5. Check for additional DTC's in ATA control module.



The DTC memory can only be readout and erased via the HHT. Entry into the DTC memory for DAS is via the HHT display: Functions; Locking systems; Central locking or Remote trunk release; DTC memory. When reading out the DTC's, it is possible that not all DTC's of the systems CL, OSB, MVA, RHR, RTR are located in the PSE control module (A37). DTC's not found in the PSE control module may be found in the Signal pick-up and activation module (SAM) (N10/1) or Lower control field control module (N72).



Readout DTC memory and note failure codes.
Perform repairs of noted failures as per fault table.
Interrupt PSE control module power supply for approx. 3 seconds to erase safety memory.
Since the DTC memory has been integrated into the combination control module (N10-1 or N10-3), DTC memory must be erased after replacement of the PSE control module.

> Ω resistance too great
< Ω resistance too low
ΓΓ+ short circuit to positive (POS)
ΓΓ- short circuit to ground (GND)
-//- open circuit

Abbreviations:

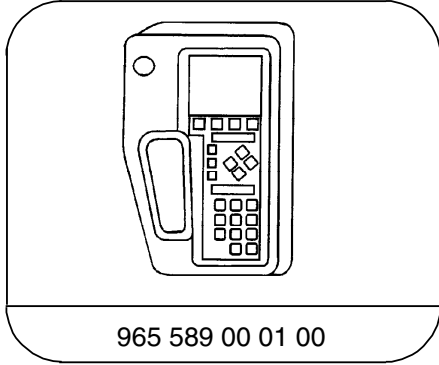
PSE: PSE control module

SAM: Signal pick-up and activation module

UBF: Lower control field control module

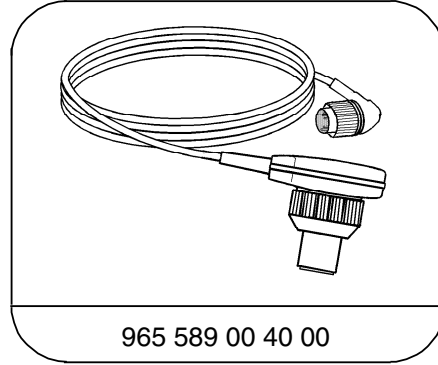
The above noted abbreviations are in the third column of the following DTC memory table in **bold type** to advise of hints (regarding in which of the control modules the DTC is stored).

Special Tools



965 589 00 01 00


Hand-Held-Tester



965 589 00 40 00


Test cable

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

DTC 	Possible cause	Hints	Test step/Remedy ¹⁾
B1116	RHR unlocking switch (S6/1s3), signal > 25 sec.	SRM	See AD80.20-P-6003-01B
B1117	Interior switch (CL) (S6/1s2), signal > 25 sec.	SRM	23 (PSE/CL) ⇒ 1.0
B1124	Remote trunk release switch (N72s15), signal > 25 sec.	UBF	See AD80.20-P-6002-03B
B1436 012	Central locking, drivers door – safety switch time exceeded or pneumatic demand to high.	PSE	33 (PSE/CL) ⇒ 1.0, 33 (PSE/CL) ⇒ 2.0
B1436 013	Central locking, fuel filler flap – safety switch time exceeded or pneumatic demand to high .	PSE	33 (PSE/CL) ⇒ 5.0, 33 (PSE/CL) ⇒ 6.0
B1436 014	Central locking, passenger door/rear doors – safety switch time exceeded or pneumatic demand to high .	PSE	33 (PSE/CL) ⇒ 3.0, 33 (PSE/CL) ⇒ 4.0

1) Observe Preparation for Test, see 22.

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

DTC 	Possible cause	Hints	Test step/Remedy ¹⁾
B1437	Safety switch time for retractable head restraint (RHR) pneumatic demand too high.	PSE	See AD80.20-P-8003-01A
B1438	Safety switch time for orthopedic seat backrest (OSB) pneumatic demand too high.	PSE	See AD80.20-P-8004-01A See AD80.20-P-8004-01B See AD80.20-P-8004-01C See AD80.20-P-8004-01D
B1439	Safety switch time for manifold vacuum assist (MVA) exceeded or pneumatic demand too high.	PSE	See AD80.20-P-8005-01B
B1440	Safety switch time for remote trunk release (RTR) exceeded or pneumatic demand too high.	PSE	See AD80.20-P-8002-01B
B1729	PSE control module (A37)		Replace PSE control module (A37).

1) Observe Preparation for Test, see 22.

Electrical Test Program – Component Locations (PSE)

Models 202, 208
(as shown on model 202)
(for balance of components see: Figure 2)

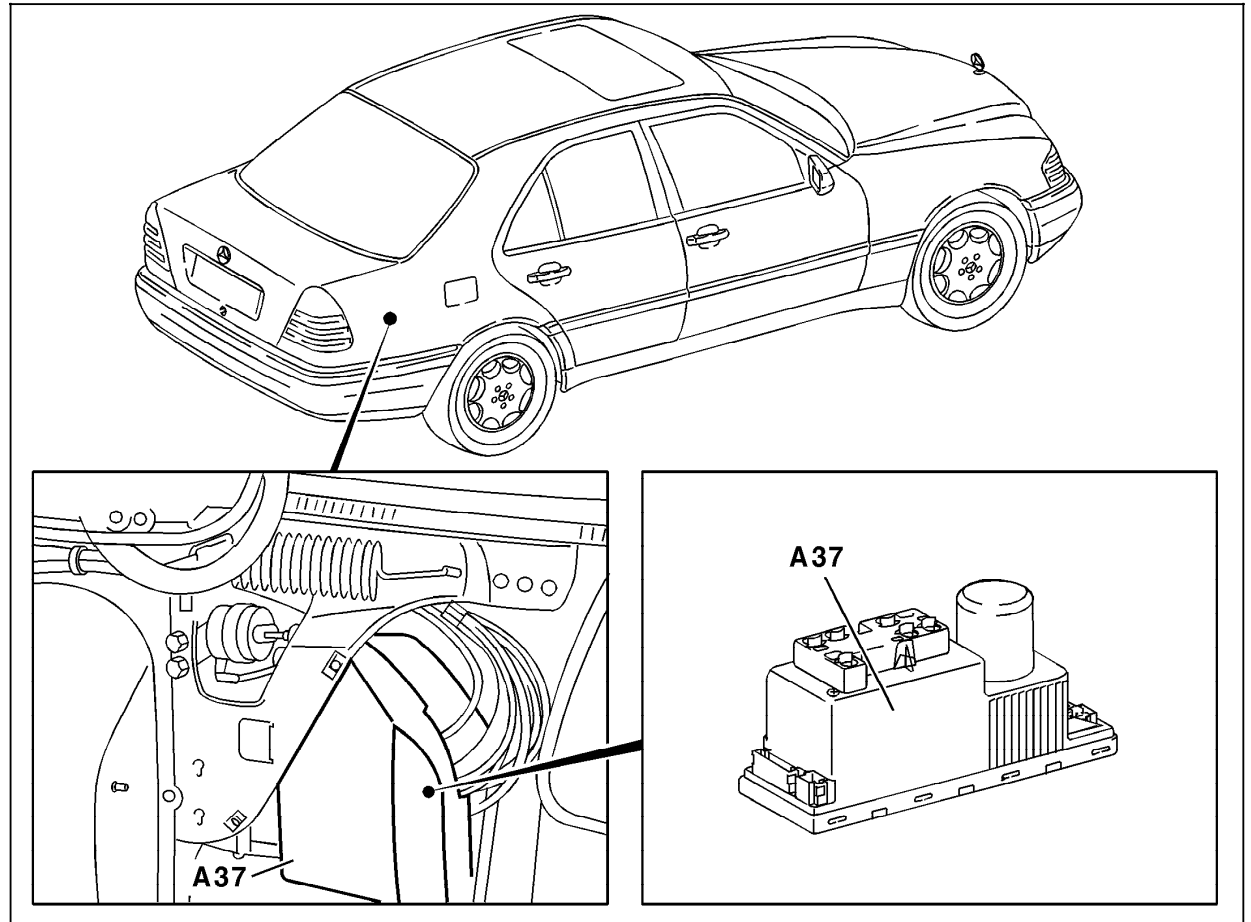


Figure 1

A37 PSE control module, combined functions

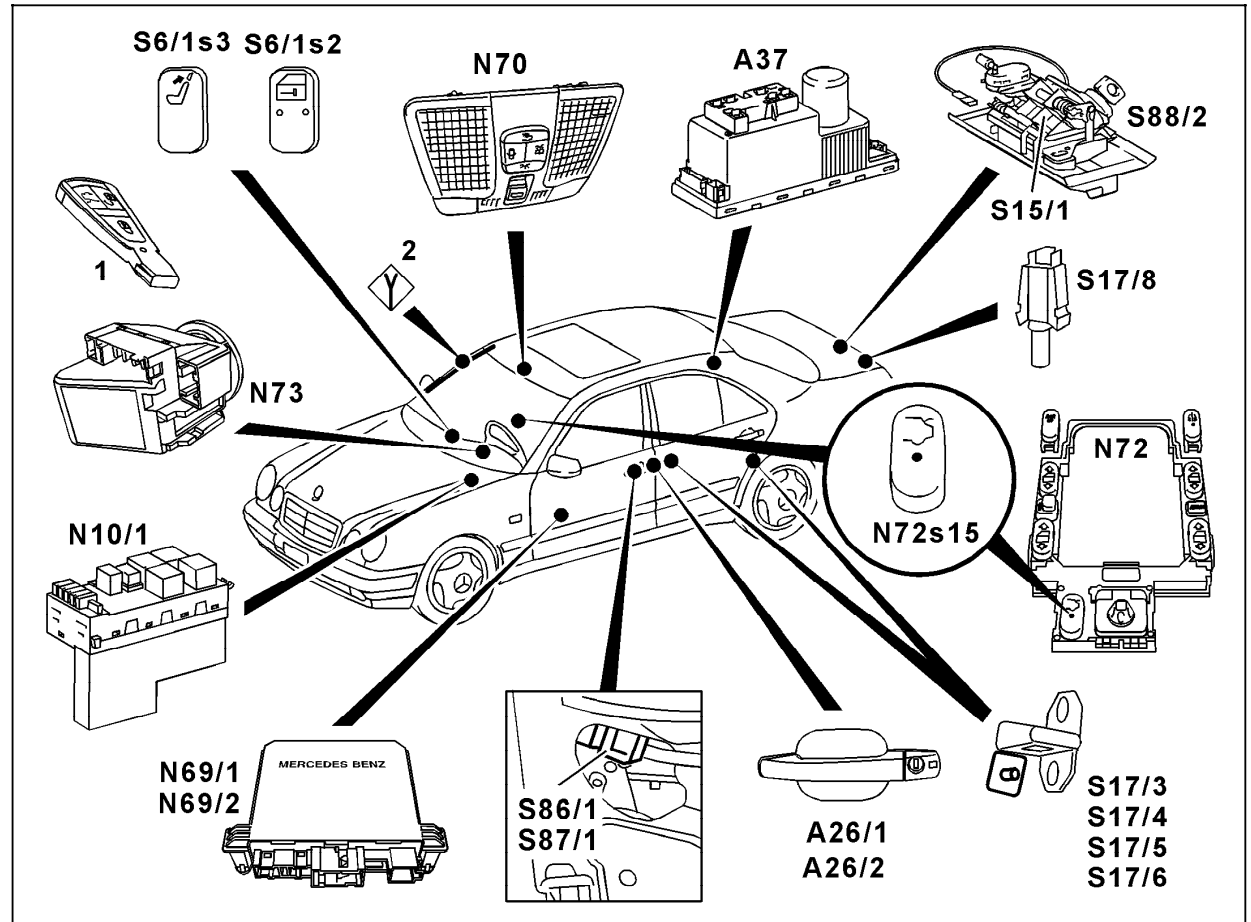
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Electrical Test Program – Component Locations (PSE)

Balance of components shown on Model 210 sedan

Figure 2

- A26/1 Left front door IR receiver
- A26/2 Right front door IR receiver
- A37 PSE control module, combined functions
- N10/1 Signal pick-up and activation module (SAM) left front
- N69/1 Front driver-side door control module
- N69/2 Front passenger-side door control module
- N70 Roof control panel control module
- N72s15 RTR switch
- N73 Electronic ignition lock control module
- S6/1s2 Interior switch (CL)
- S6/1s3 RHR unlocking switch
- S15/1 Trunk release switch
- S17/3 Left front door switch
- S17/4 Right front door switch
- S17/5 Left rear door switch
- S17/6 Right rear door switch
- S17/8 Trunk lamp switch
- S86/1 Left front door lock switch (CF) (only USA J)
- S87/1 Right front door lock switch (CF) (only USA J)
- S88/2 Trunk lid lock switch (CF) (only USA J)
- 1 Transmitter key
- 2 Antenna



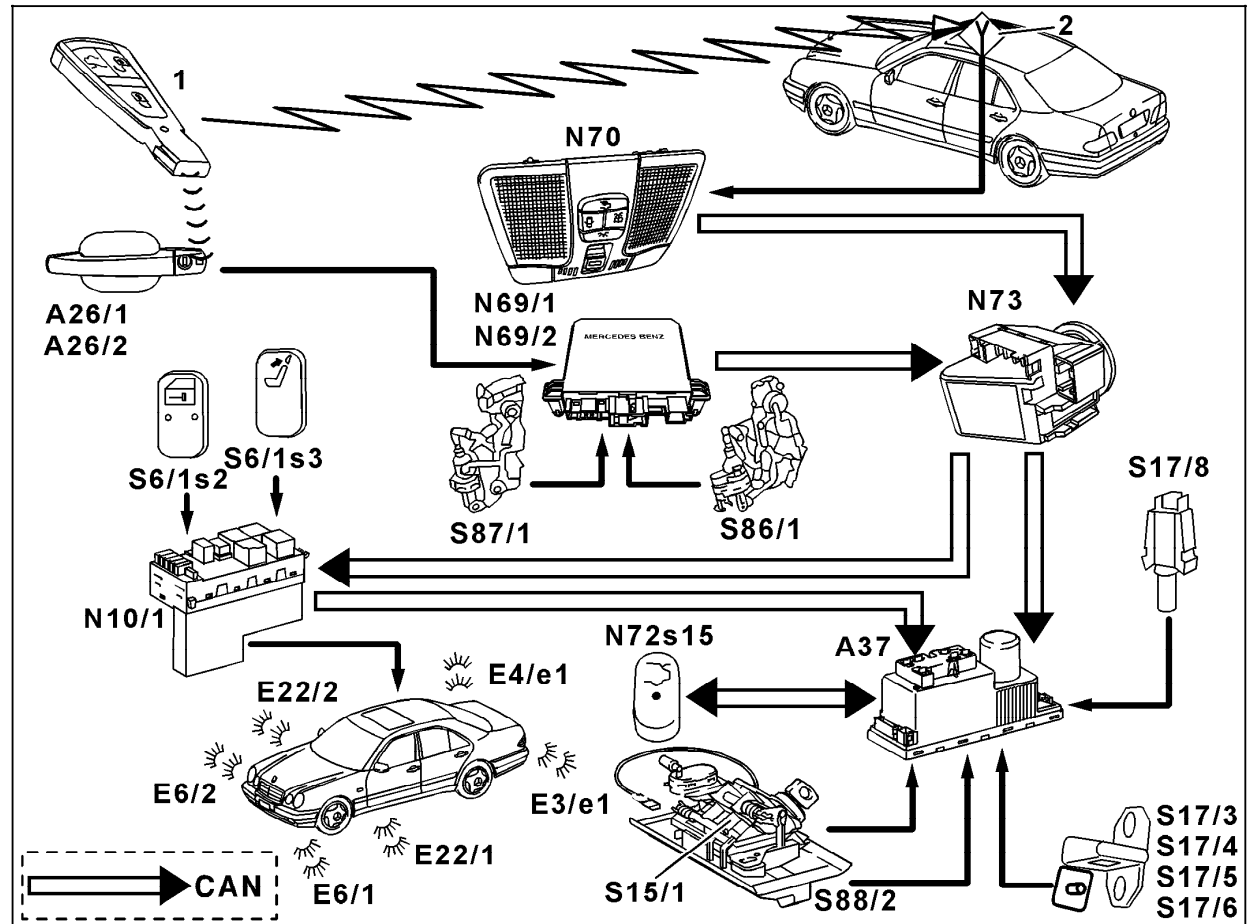
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Electrical Test Program – Connection of Components

Model 210 shown

Figure 1

- A26/1 Left front door IR receiver
- A26/2 Right front door IR receiver
- A37 PSE control module, combined functions
- CAN Control-Area-Network
- E3e1 Turn signal lamp
- E4e1 Turn signal lamp
- E6/1 Left turn signal/side marker lamp (USA)
- E6/2 Right turn signal/side marker lamp (USA)
- E22/1 Left auxiliary turn signal lamp
- E22/2 Right auxiliary turn signal lamp
- N10/1 Signal pick-up and activation module (SAM) left front
- N69/1 Front driver-side door control module
- N69/2 Front passenger-side door control module
- N70 Roof control panel control module
- N72s15 RTR switch
- N73 Electronic ignition lock control module
- S6/1s2 Interior switch (CL)
- S6/1s3 RHR unlocking switch
- S15/1 Trunk release switch
- S17/3 Left front door switch
- S17/4 Right front door switch
- S17/5 Left rear door switch
- S17/6 Right rear door switch
- S17/8 Trunk lamp switch
- S86/1 Left front door lock switch (CF) (only USA J)
- S87/1 Right front door lock switch (CF) (only USA J)
- S88/2 Trunk lid lock switch (CF) (only USA J)
- 1 Transmitter key
- 2 Antenna



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Electrical Test Program - Preparation for Test

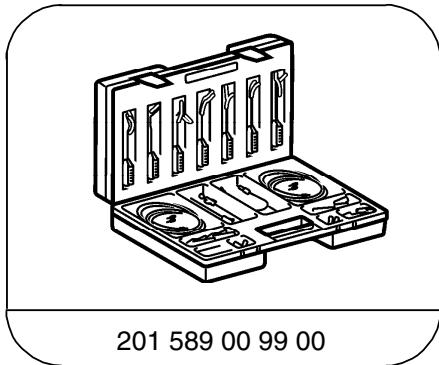
Preparation for Test:

1. Voltage supply to all control modules and CAN data lines ok,
2. Battery voltage 11 – 14 V,
3. Review section 0,
4. Review C/1, C/2, 11, 12, 20, 21, 22, 31, 32,
5. Connect HHT, see section 0,
6. For model 202 and 208, review PE80.00-P-1100D and for model 210 review PE80.00-P-1100A, prior to starting test.

Electrical Wiring Diagrams:

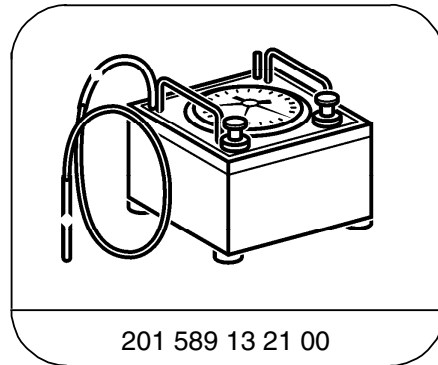
See Electric Troubleshooting Manual, Model 202/208, group 80,
Model 210, Volume 2, group 80

Special Tools



201 589 00 99 00

Electrical connecting set



201 589 13 21 00

Tester

Test equipment; See MBUSA Standard Service Equipment Program

Description	Brand, model, etc.
Digital multimeter	Fluke models 23, 77 III, 83, 85, 87

Electrical Test Program - Preparation for Test

Connection Diagram - Socket Box
Model 210
 (sedan shown)

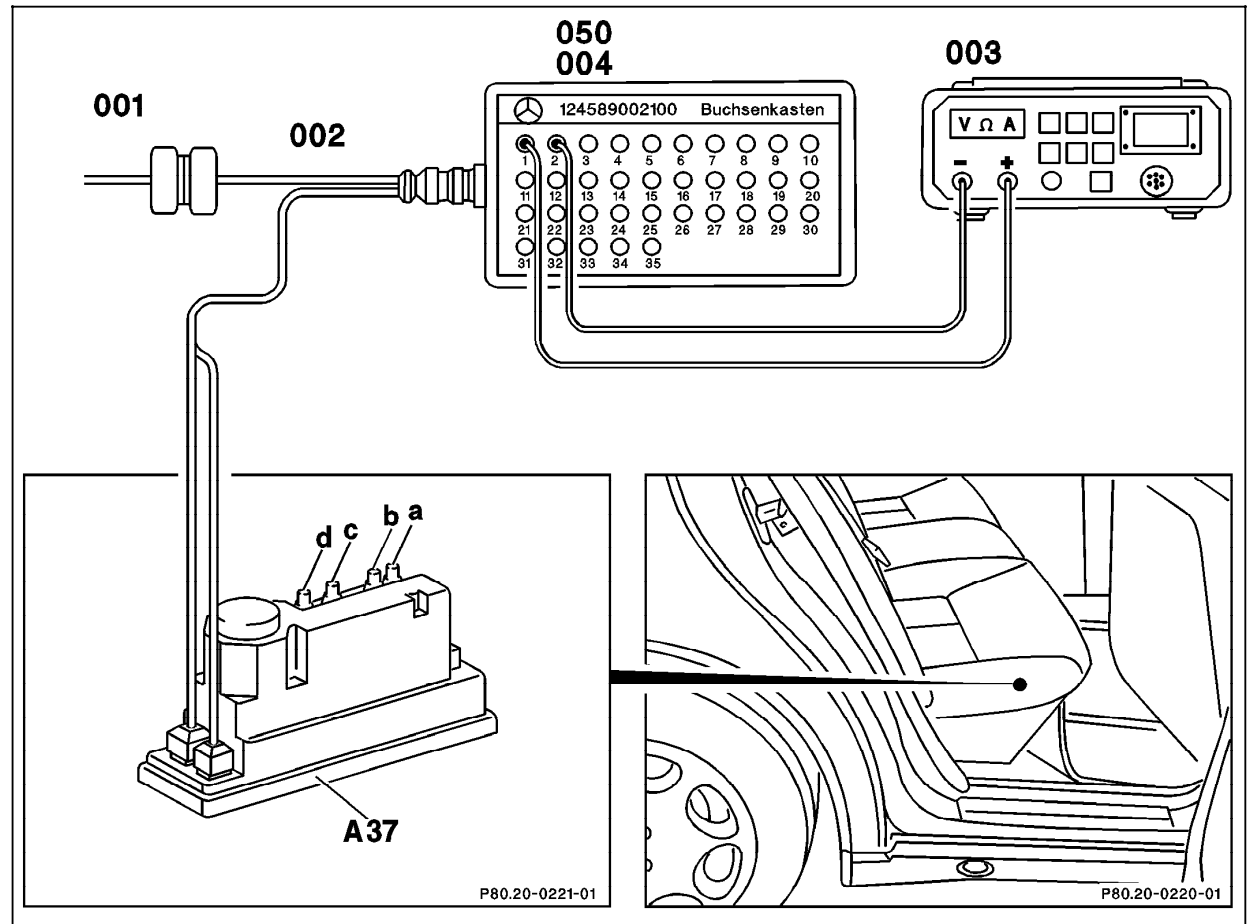


Figure 1

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

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Electrical Test Program - Preparation for Test

Connection Diagram - Socket Box

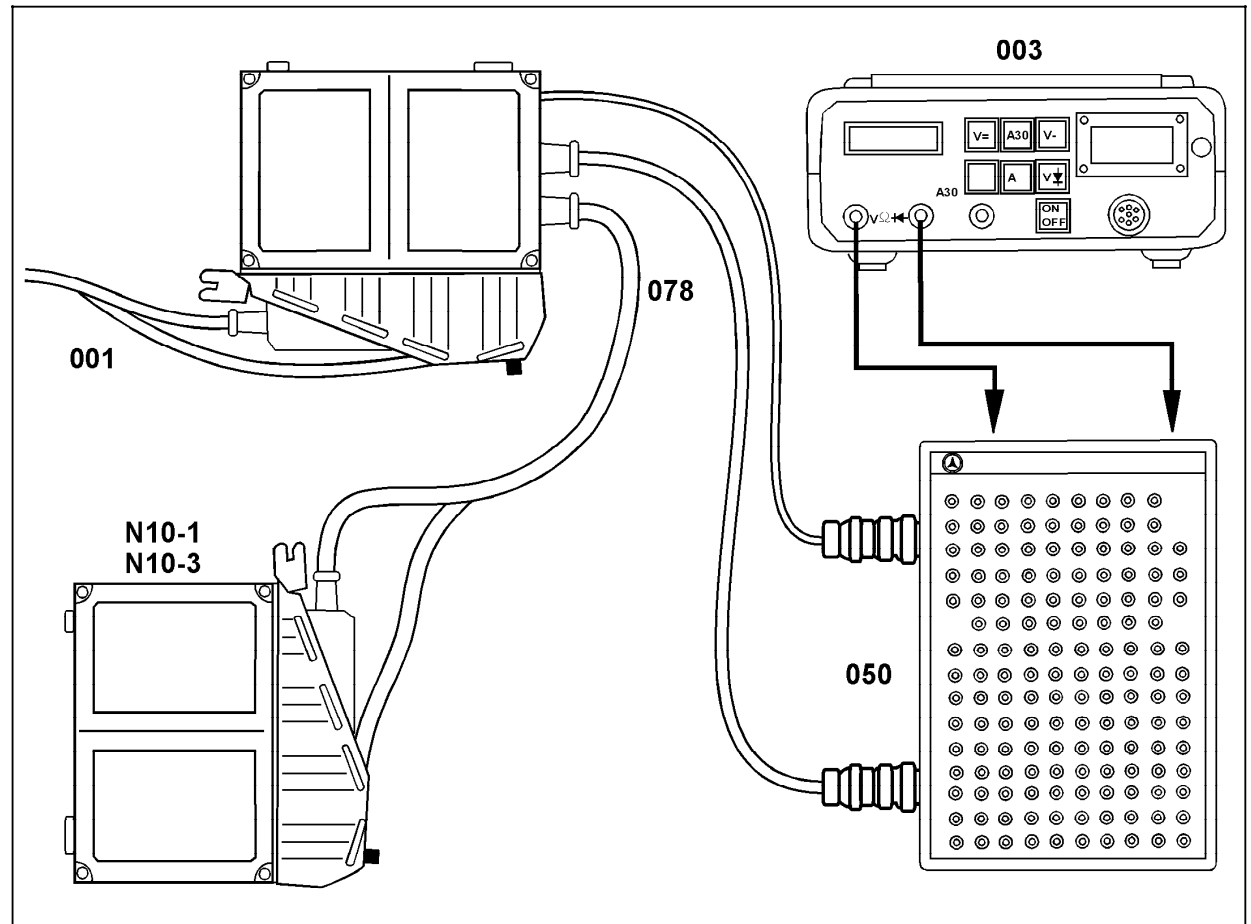


Figure 2

- N10-1 Combination control module (model 210)
- 001 PSE control module connector
- 002 Test cable
- 003 Multimeter
- 050 Socket box (35-pole)

P82.40-0214-06

Electrical Test Program - Preparation for Test

Connections - PSE control module (A37)

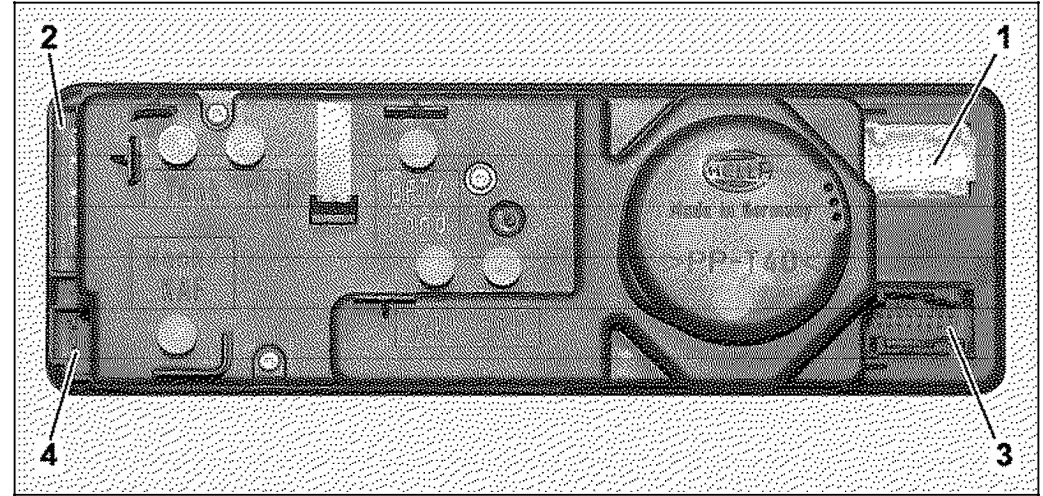

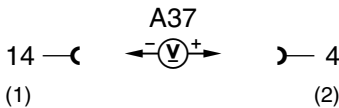
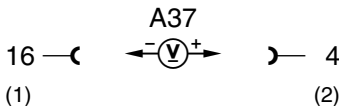
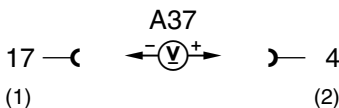
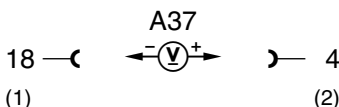


Figure 4


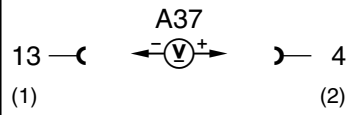
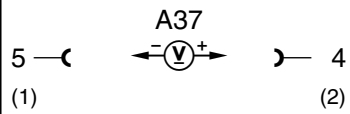
- 1 Connector 1 (control line PSE)
- 2 Connector 2 (voltage supply PSE)
- 3 Connector 3 (control line ATA)
- 4 Connector 4 (load connections ATA)

P80.20-2037-10

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		Left front door switch (S17/3)		Disconnect connectors 1 and 2 from A37. Left front door closed Left front door open	<1 V 11 – 14 V	Wiring, S17/3
2.0		Right front door switch (S17/4)		Disconnect connectors 1 and 2 from A37 Right front door closed Right front door open	<1 V 11 – 14 V	Wiring, S17/4
3.0		Left rear door switch (S17/5)		Disconnect connectors 1 and 2 from A37 Left rear door closed Left rear door open	<1 V 11 – 14 V	Wiring, S17/5
4.0		Right rear door switch (S17/6)		Disconnect connectors 1 and 2 from A37 Right rear door closed Right rear door open	<1 V 11 – 14 V	Wiring, S17/6

Electrical Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0		Trunk lamp switch (S17/8) or Tailgate closing assist switch/interior illumination switch (A12s1)		Disconnect connectors 1 and 2 from A37 Trunk lid/tail gate closed Trunk lid/tail gate open	<1 V 11 – 14 V	Wiring, S17/8 or A12s1
6.0		Trunk release switch (S15/1) (except Model 202/210 stationwagen)		Unlock vehicle using IR transmitter key. Disconnect connectors 1 and 2 from A37 S51/1 not pressed S15/1 pressed	<1 V 11 – 14 V	Wiring, S15/1

Electrical Test Program – Component Locations

Model 202 as of M.Y. 1998
Model 208
(Model 202 shown)

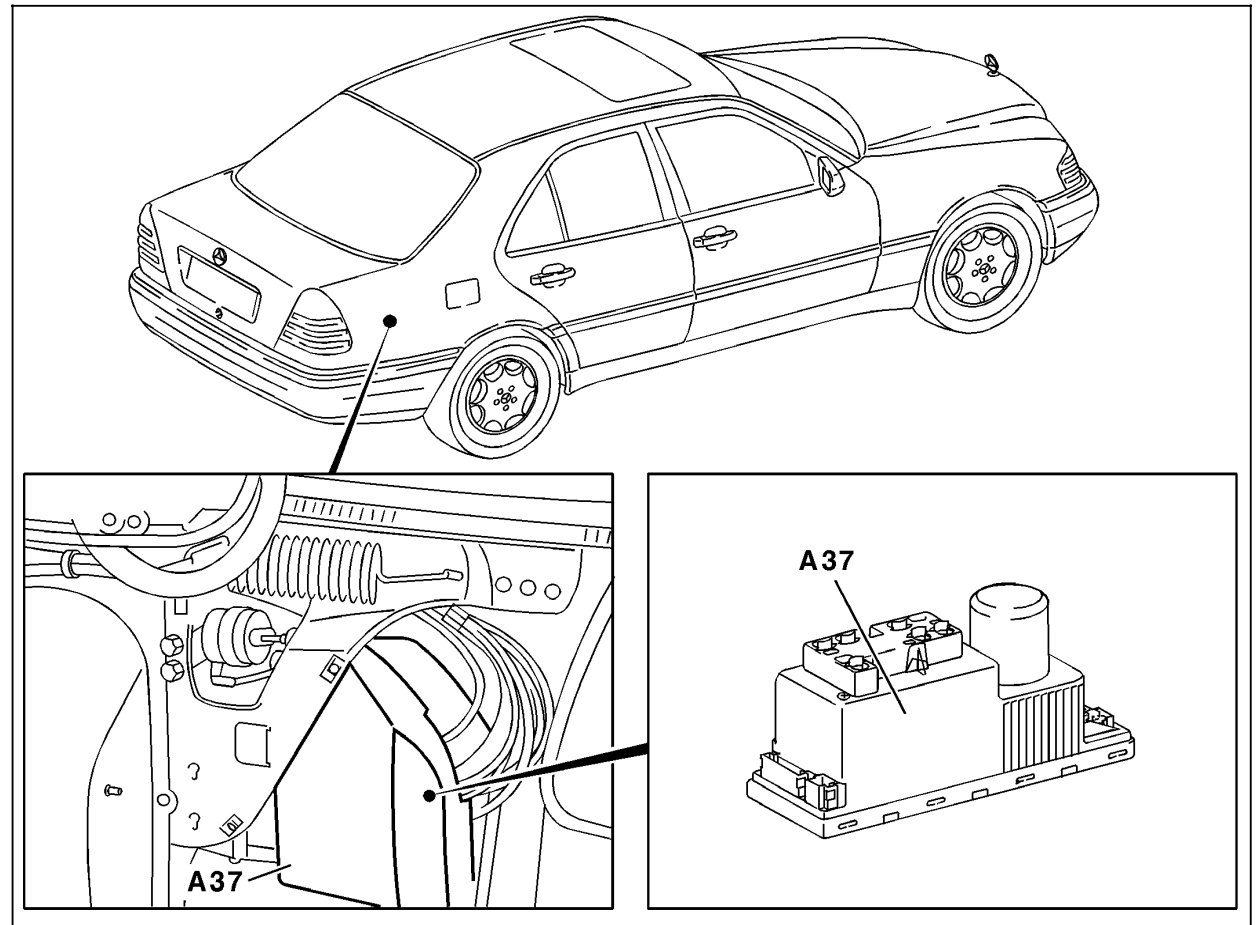


Figure 1

A37 PSE control module, combined functions

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Electrical Test Program – Component Locations

Model 210
(sedan shown)

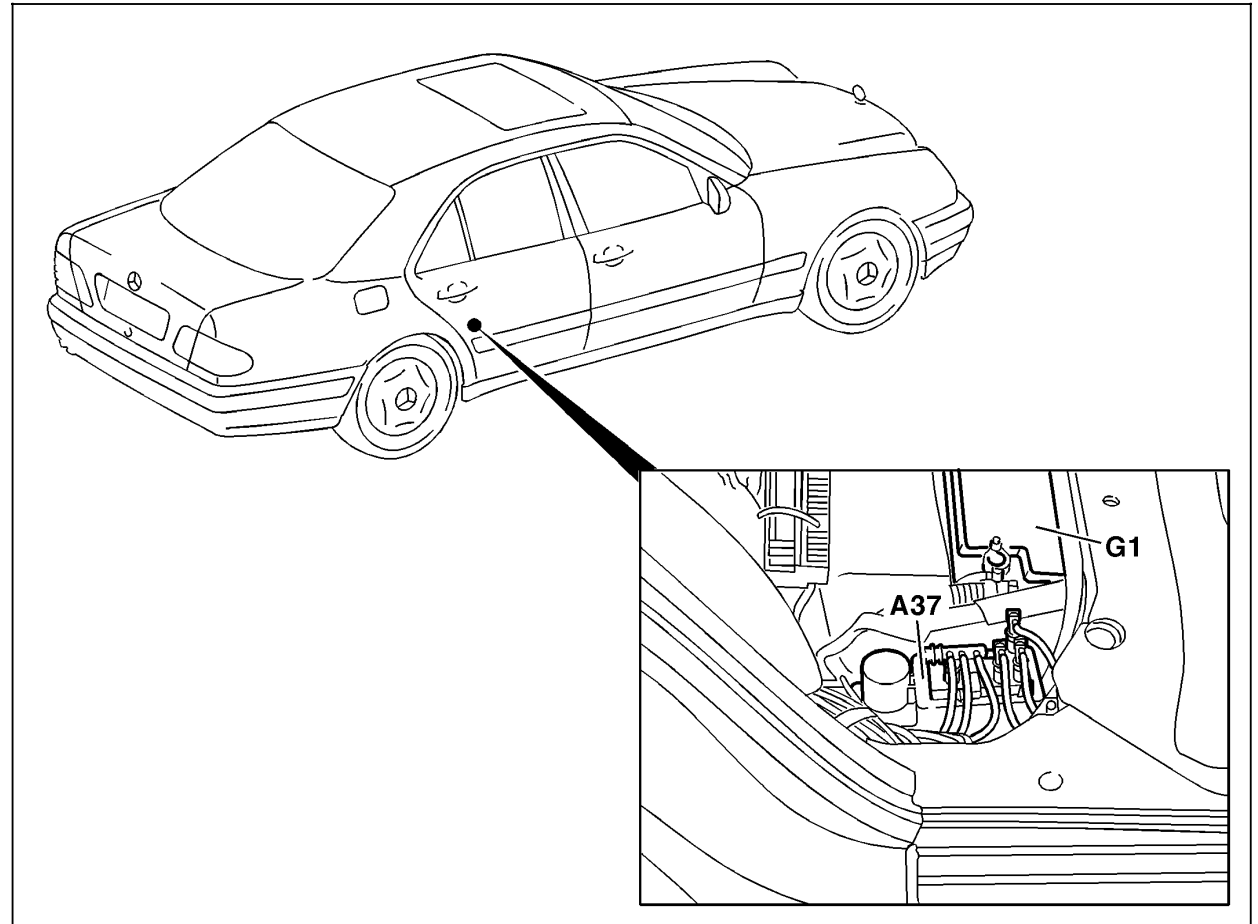


Figure 2

- A37 PSE control module
- G1 Battery

P80.20-0370-06

Pneumatic Test Program - Preparation for Test

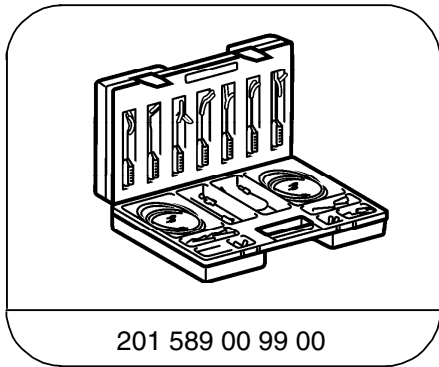
Preparation for Test:

1. Unlock vehicle using IR transmitter,
2. Connect vacuum/pressure tester with reservoir to PSE control module (see 32, Figure 1),
3. Voltage supply to all control modules and CAN data lines ok,
4. Battery voltage 11 – 14 V,
5. Fuses for PSE system and PSE control module ok,
6. Review section 0,
7. Review 31

Parts Required for Test:

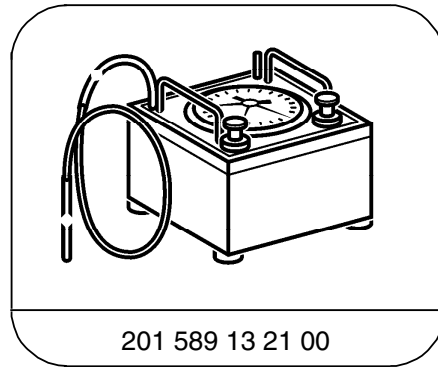
1	Reservoir	107 800 08 19
1	Y-distributor	117 078 01 45
3	Plug	000 987 11 45
1	Connection hose, 50 mm long	007 997 61 82
2	Pneumatic line, 1 m long	000 158 14 35
1	Connector	202 800 05 53

Special Tools



201 589 00 99 00

Electrical connecting set



201 589 13 21 00

Tester

Notes:

1. Before testing the safety switch time of the consumers, interrupt the PSE control module power supply for at least 3 seconds.
2. After completing the **PSE** control module test, interrupt the PSE control module power supply for at least 3 seconds (erase safety time memory).
3. Additionally, after completing the **PSE** control module test, do not operate any system which would require vacuum or pressure for approx. 10 minutes.
4. The connections on the PSE control module are marked with their German acronyms. Reference to these connections in this test are made to their U. S. equivalents. In other words:
 ZV (German) = CL (U.S.),
 SRU (German) = MVA (U.S.),
 OSL (German) = OSB (U.S.).

Pneumatic Test Program - Preparation for Test

Connection Diagram - Vacuum/Pressure Tester with Reservoir

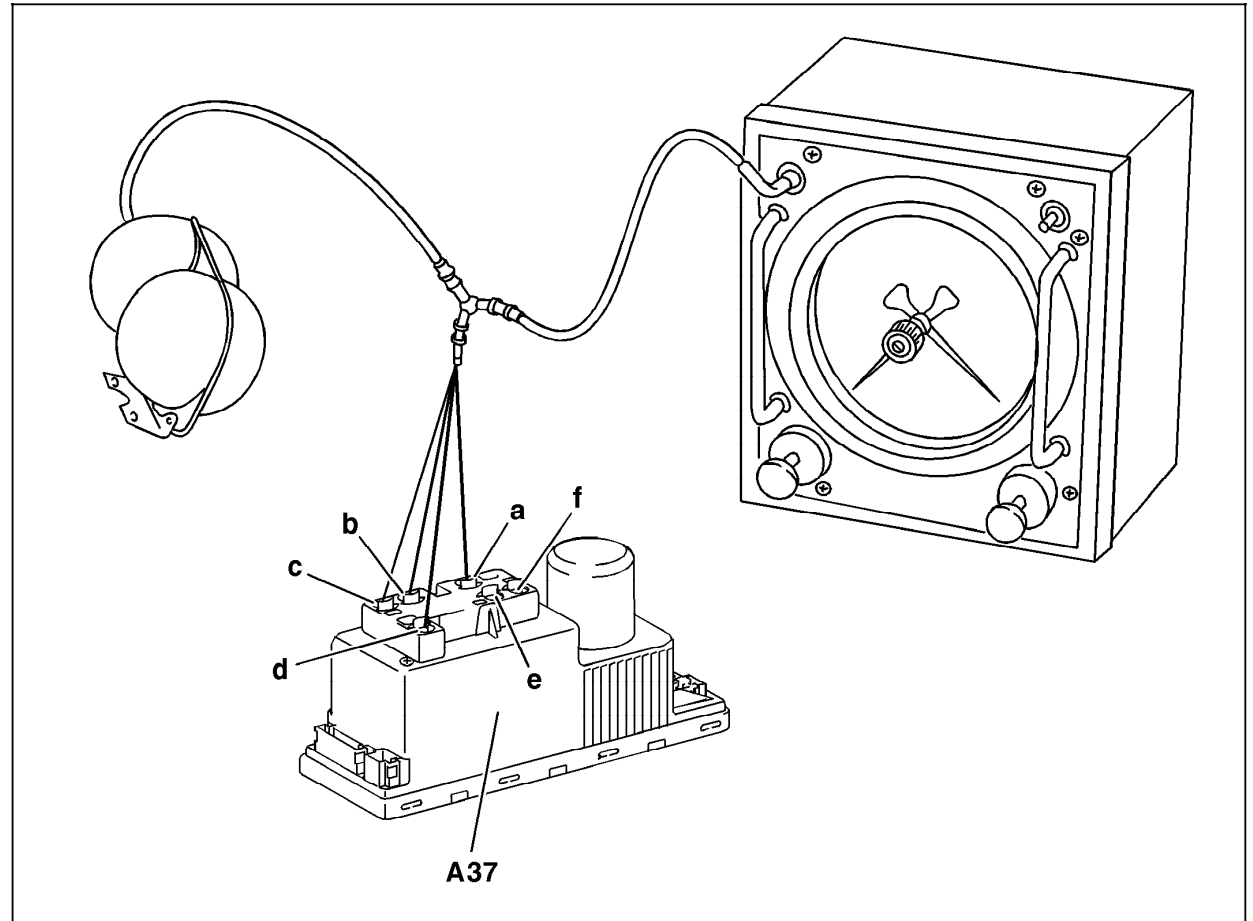


Figure 1

- a Right front/right rear door pneumatic connection
- b Left front door pneumatic connection
- c Fuel tank pneumatic connection
- d RTR/RHR in rear pneumatic connection
- e Multi-contour seat backrest pneumatic connection
- f MVA pneumatic connection
- A37 PSE control module, combined functions

P80.20-0366-06

3.4 Pneumatic System Equipment (PSE)

Models 202, 208, 210 as of M.Y. 1998

Pneumatic Test Program - PSE Control Module Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	Central locking system Left front door Vacuum supply	Connector FT to PSE control module Black connector on tester.	Cap all other connections on the PSE control module. Close doors. Lock vehicle using interior switch (CL).	450 mbar in 1.2 sec.	23 PSE/CL ⇒ 1.0, PSE control module (A37).
2.0	Central locking system Left front door Pressure supply	Connector FT to PSE control module. Yellow connector on tester.	Cap all other connections on the PSE control module. Close front doors. Unlock vehicle using interior switch (CL).	450 mbar in 0.8 s	23 PSE/CL ⇒ 1.0, (A37).
3.0	Central locking system Right front/right rear doors Vacuum supply	Connector BFT or BFT/Fond to PSE control module. Black connector on tester.	Cap all other connections on the PSE control module. Close doors. Lock vehicle using interior switch (CL).	450 mbar in 1.2 s	23 PSE/CL ⇒ 1.0, (A37).

Pneumatic Test Program - PSE Control Module Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.0	Central locking system Right front/right rear doors Pressure supply	Connector BFT or BFT/Fond to PSE control module. Yellow connector on tester.	Cap all other connections on the PSE control module. Close doors. Unlock vehicle using interior switch (CL).	450 mbar in 0.8 s	23 PSE/CL ⇒ 1.0, (A37).
5.0	Central locking system Fuel filler flap Vacuum supply	Connector TK or Tank to PSE control module. Black connector on tester.	Cap all other connections on the PSE control module. Lock vehicle using IR transmitter key	450 mbar in 1.2 s	See AD80.35-P-6000-04B PSE control module (A37).
6.0	Central locking system Fuel filler flap Pressure supply	Connector TK or Tank to PSE control module. Yellow connector on tester.	Cap all other connections on the PSE control module. Close all doors. Lock vehicle using IR transmitter key. Unlock vehicle using interior switch (CL).	450 mbar in 0.8 s	23 PSE/CL ⇒ 1.0, (A37).

3.4 Pneumatic System Equipment (PSE)

Models 202, 208, 210 as of M.Y. 1998

Pneumatic Test Program - PSE Control Module Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
7.0	Multi-contour seat backrest Pressure supply	Connector MKL to PSE control module. Yellow connector on tester	Cap all other connections on the PSE control module. Ignition switch: ON/OFF	Pump runs with 4 sec. delay. 450 mbar delay in 0.8 sec.	PSE control module (A37).
8.0	Retractable rear head restraints (RHR) Vacuum supply (model 210 sedan only)	Connector Heck/KAF or HFE/KAF to PSE control module. Black connector on tester	Cap all other connections on the PSE control module. Retractable head restraints raised. Ignition switch: On Press RHR switch.	450 mbar in 1.2 s	See AD80.20-P-6003-01B, (A37).
9.0	Manifold vacuum assist Vacuum supply (model 210 only)	Connector SRU to PSE control module. Black connector on tester	Cap all other connections on the PSE control module. Ignition switch: ON/OFF	Pump runs with 8 sec. delay. 450 mbar in 1.2 s	(A37).
10.0	Remote trunk lid release Pressure supply (model 210 sedan only)	Connector Heck/KAF or HFE/KAF to PSE control module. Yellow connector on tester	Cap all other connections on the PSE control module. Press RTR switch.	450 mbar in 1.2 s	See AD80.20-P-6002-03B, (A37).

Pneumatic Test Program - PSE Control Module Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
11.0	Central locking (Safety switch time)		Cap the following connectors on the PSE: Bosch: HFE/KAF, MVA, OSB Hella: Heck/KAF, MVA, OSB Close all doors Unlock vehicle via interior switch (CL).	Pump runs for 10±1 sec.	23 PSE/CL ⇒ 1.0, (A37).
12.0	Additional consumers Safety switch time		Cap the following connectors on the PSE: Bosch: FT, BFT, TK, MVA Hella: FT, BFT/Fond, Tank, MVA, OSB Ignition: ON Press RHR switch.	Pump runs for 60 sec.	See AD80.20-P-6003-01B, (A37).