


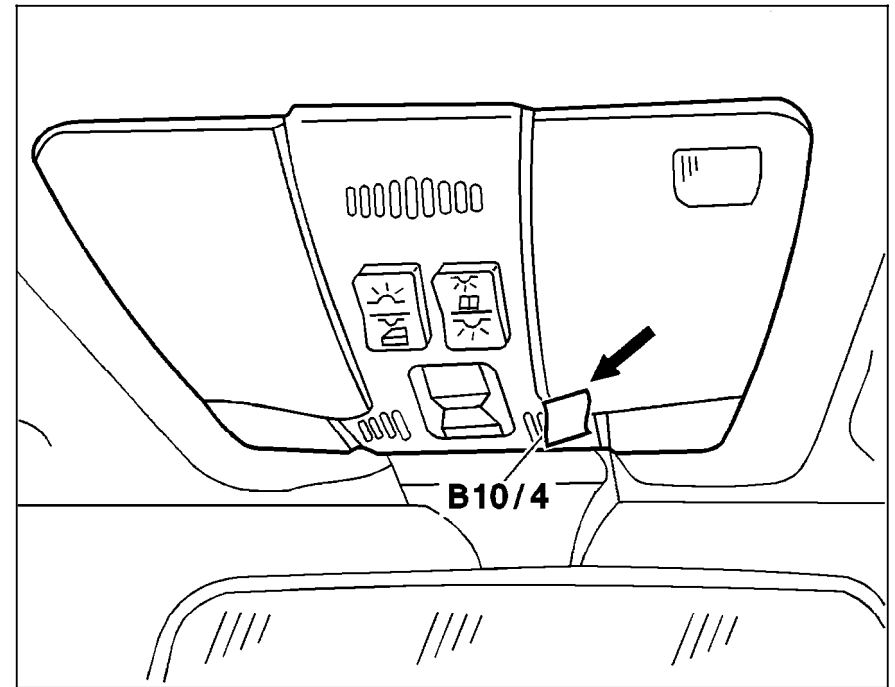
#### 3.3 Model 202 up to M.Y. 1995

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#### Diagnosis – Function Test

##### Preparation for Test

1. Check condition of fuses F1/1-3, F1/1-5, F1/1-11, F2-13, F2-14, F2-16, F3-35.
2. Check in-car temperature sensor aspirator blower by placing a small piece of paper (arrow) approximately 1" square over in-car temperature sensor aspirator blower vent grille (B10/4) with ignition **ON**. If there is sufficient ventilation the paper will remain on the vent grille, if not check aspirator blower for voltage supply and function.  
The after-run time for the blower motor is greater than six seconds.
3. Run engine at closed throttle and operating temperature (approx. 80 °C engine coolant temperature) during entire test (ensure that the shift lever is in "P" and that the parking brake is engaged).
4. Manually open the center and side air outlets.
5. Ensure that the  button is not depressed.







P83-5637-35

Figure 1



B10/4 In-car temperature sensor (with aspirator blower in E15)

#### Diagnosis – Function Test

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 1.0 Defrost	Press  Temperature selection at random setting	Blower runs with increased speed. Air venting from defroster outlets. A/C compressor engaged. Maximum heat output, 100% fresh air	23 ⇒ 9.0, 14.0, 15.0, 16.0, 17.0 42 ⇒ 1.0, 2.0, 3.0, 4.0
⇒ 2.0 Ventilation in cooling mode	Press  Temperature selection “LO”	Blower runs with increased speed. Air venting from center and side outlets. A/C compressor engaged, no heat output.	23 ⇒ 9.0, 14.0, 15.0, 16.0, 17.0 32 ⇒ 3.0, 4.0 42 ⇒ 1.0, 2.0, 3.0, 4.0
⇒ 3.0 Normal setting in regulating mode	Press  Temperature selection set at present in-car temperature.	Blower speed decreases. Air venting from defroster outlets, leak air from footwell outlets. A/C compressor engaged. Tempered air venting. Duovalve cycles and auxiliary coolant pump runs.	23 ⇒ 9.0, 14.0, 15.0, 16.0, 17.0 32 ⇒ 7.0 42 ⇒ 1.0, 2.0, 3.0, 4.0
⇒ 4.0 Economy not in heating mode	Temperature selection “LO” Press  Press	Air venting from dash outlets (ambient temperature) A/C compressor OFF.	23 ⇒ 14.0, 15.0, 16.0 32 ⇒ 1.0

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

#### Diagnosis – Function Test

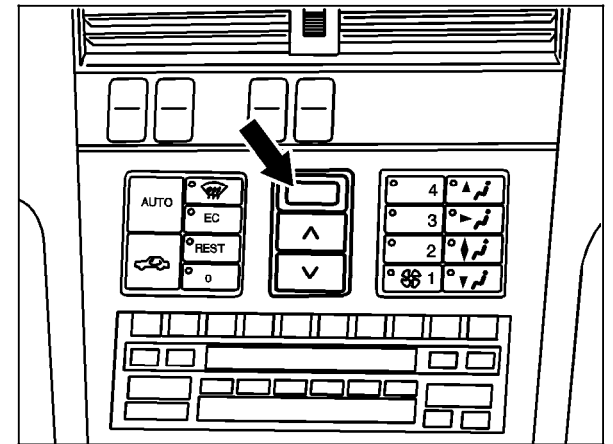
Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy <sup>1)</sup>
⇒ 5.0 Economy in heating mode	Temperature selection "HI" Press 	Air venting from footwell and side outlets left/right. Leak air from defroster outlets. Maximum heat output.	23 ⇒ 14.0, 15.0, 16.0 32 ⇒ 1.0
⇒ 6.0 Residual engine heat utilization	Ignition: <b>OFF</b> Press  Selected temperature > 79 °F (26 °C)	Heated air from footwell and side outlets, leak air from defroster outlets. Blower runs at low speed.	23 ⇒ 14.0, 15.0, 16.0 32 ⇒ 1.0

1) Observe Preparation for Test, see 22.

#### Diagnosis – Reading Actual Values (via A/C Pushbutton Control Module [N22])

##### Notes:

1. The display window (arrow) will show in sequence the actual temperature readings, refrigerant pressure, blower control voltage and software status of the A/C pushbutton control module (N22).
2. The temperature control is maintained during the duration of the test.





P83-5626-13

Figure 1

#### Diagnosis – Reading Actual Values (via A/C Pushbutton Control Module [N22])

##### Preparation for Test

1. Ignition: **ON**
2. Set temperature selection to 72 °F (press ∨ and ∧ simultaneously).
3. Press **AUTO**.
4. Press **REST** for more than 6 seconds.
5. The display will alternately show the number "01" and the in-car temperature (e.g. 72 °F), or "LO" if there is an open circuit, "HI" if there is a short circuit.
6. By pressing the  (ascending numbers) or  (descending numbers) the next test step is displayed (see table).
7. Press **REST** to end test program.

#### Diagnosis – Reading Actual Values (via A/C Pushbutton Control Module [N22])

Display code in N22 window	Possible cause	Test step/Remedy <sup>1)</sup>
01	In-car temperature sensor with aspirator blower (B10/4)	23 ⇒ 4.0
02	Outside temperature sensor (B10/5)	23 ⇒ 5.0
03	Heater core temperature sensor (B10/1)	23 ⇒ 7.0
05	Evaporator temperature sensor (B10/6)	23 ⇒ 6.0
06	ECT sensor (B10/8), e.g. 12.05 corresponds to 125 °C	23 ⇒ 8.0
07	Refrigerant pressure in bar, e.g. 12.08 corresponds to 12.8 bar	23 ⇒ 9.0
08	Blower control voltage, e.g. 16.05 corresponds to 1.65 V	23 ⇒ 16.0
09	Software status of A/C pushbutton control module, e.g. 01	-
15	Selected in-car temperature	-
20	Version code	Reading and programming of version code 14
21	Engine speed, e.g. 06.00 – 70.00 corresponds to 600 - 7000 rpm	23 ⇒ 27.0
22	A/C compressor speed, e.g. 00.00 – 84.00 corresponds to 0 - 8400 rpm	23 ⇒ 17.0

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


#### Diagnosis – Reading Actual Values (via A/C Pushbutton Control Module [N22])

Display code in N22 window	Possible cause	Test step/Remedy <sup>1)</sup>
23	Vehicle speed (km/h)	DM, Chassis and Drivetrain, Vol. 2, Section 5.3 (ASR) DM, Chassis and Drivetrain, Vol. 2, Section 6.3 (ABS)
50	80.° – 00.° not used	-
51	Number of current slip recognitions (poly-V-belt)	23 ⇒ 17.0
52	Number of stored slip recognitions (poly-V-belt)	23 ⇒ 17.0

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



**Diagnosis - Reading Actual Values (via Hand-Held Tester [HHT])****Note:** Observe Preparation for Function Test, see 11

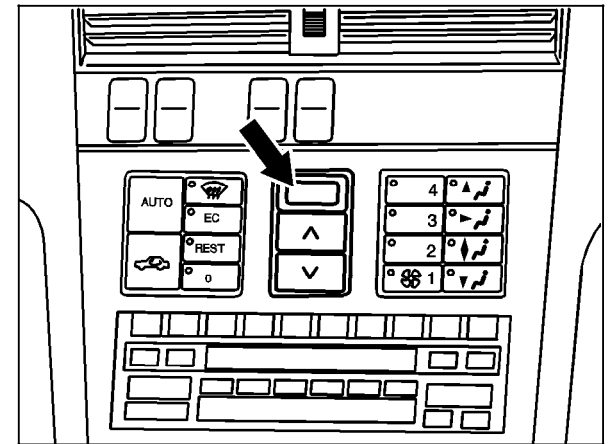
	Possible cause	Test step/Remedy <sup>1)</sup>
01	In-car temperature sensor with aspirator blower (B10/4)	23 ⇒ 4.0
02	Outside temperature sensor (B10/5)	23 ⇒ 5.0
03	Heater core temperature sensor (B10/1)	23 ⇒ 7.0
05	Evaporator temperature sensor (B10/6)	23 ⇒ 6.0
06	ECT sensor (B10/8)	23 ⇒ 8.0
07	Refrigerant pressure in bar	23 ⇒ 9.0
21	Engine speed	23 ⇒ 27
22	A/C compressor speed	23 ⇒ 17.0
23	Vehicle speed (km/h)	DM, Chassis and Drivetrain, Vol. 2, Section 5.3 (ASR) DM, Chassis and Drivetrain, Vol. 2, Section 6.3 (ABS)

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

#### Diagnosis – Individual Flap Test (via A/C Pushbutton Control Module [N22])

**Notes:**

1. The display window (arrow) in the A/C pushbutton control module (N22) will show the code 53. Pressing the various buttons will activate the individual vacuum actuators (see table 13/3). The LED on the depressed button lights up.
2. The temperature control is maintained during the duration of the test.



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Figure 1

#### Diagnosis – Individual Flap Test (via A/C Pushbutton Control Module [N22])

##### Preparation for Test

1. Engine: **At Idle**
2. Press **AUTO**.
3. Press **L** stage 4.
4. Set temperature selection to 72 °F (simultaneously press  $\vee$  and  $\wedge$ )
6. Press **REST** for more than 6 seconds.
7. The display alternately shows the number "01" and the in-car temperature.
8. Press **↕** within 5 seconds. The display shows "53".
9. By pressing the "air distribution" and **L** 1 - 4 (one after the other) the individual vacuum actuators are activated (see table).  
Turn on: By pressing the individual button.  
Turn off: By pressing the same button again.  
Function indication: By LED in individual button.
10. Press **EC** to end test program.









##### Note:

Two stage vacuum actuators function at full stroke (100%) only, if the long stroke (80%) and the short stroke (20%) are pressed.

Pressing the short stroke (20%) by itself does not change the flap position.

If the number "53" appears on the display and non of the buttons listed in the table are depressed, then there is no vacuum present and air comes from the defroster outlets and the side outlets.

#### Diagnosis – Individual Flap Test (via A/C Pushbutton Control Module [N22])

Diagnostic Trouble Code (DTC)	Activated flap <sup>3)</sup>	Test condition	Nominal value/Air output	Test step/Remedy <sup>1)</sup>
53	Defroster flap long stroke (80%)	Pushbutton  stage 4	Leak air from defroster outlets, air venting from side outlets left/right.	23⇒ 25.0 32⇒ 1.0
53	Defroster flap short stroke (20%)	Pushbutton  <sup>2)</sup>	Air venting from side outlets left/right.	23⇒ 26.0 32⇒ 2.0
53	Center outlet tempering flap	Pushbutton  stage 3	Warm air from center outlet.	23⇒ 20.0 32⇒ 3.0
53	Center outlet diverter flap	Pushbutton 	Cold air from center outlet.	23⇒ 19.0 32⇒ 4.0
53	Recirculating air flap long stroke (80%)	Pushbutton  stage 2	Air flow from center outlet increases.	23⇒ 21.0 32⇒ 5.0
53	Recirculating air flap short stroke (20%)	Pushbutton  <sup>2)</sup>	100% recirculating air	23⇒ 22.0 32⇒ 6.0
53	Footwell flap long stroke (80%)	Pushbutton  stage 1	Air flow from footwell outlets increases.	23⇒ 23.0 32⇒ 7.0
53	Footwell flap short stroke (20%)	Pushbutton  <sup>2)</sup>	Air flow from left/right footwell outlets.	23⇒ 24.0 32⇒ 8.0

1) Observe Preparation for Test.


2) Before actuating the short stroke (20%), the long stroke (80%) must be actuated.

3) All activations of the flaps also can be performed with the Hand-Held Tester (HHT).

#### Diagnosis – Individual Flap Test (via Hand-Held Tester [HHT])

**Note:**

1. Observe Preparation for Function Test, see 11.
2. The components and functions described in the table below can be activated via the Hand-Held Tester (HHT).  
The data and notes for the individual test steps are to be taken from the display in the window of the HHT.

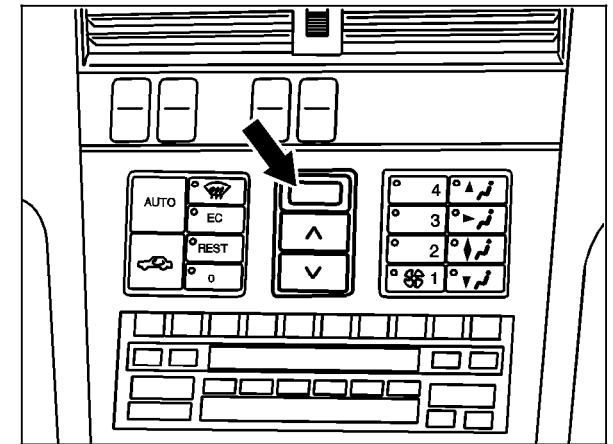
	Possible cause	Test step/Remedy <sup>1)</sup>
01	Auxiliary fan (M4)	23⇒ 11.0, 12.0
02	Auxiliary coolant pump (M13)	23⇒ 14.0
03	Duovalve (Y21)	23⇒ 15.0
04	A/C compressor (A9)	23⇒ 17.0
05	Defroster outlet flap	23⇒ 25.0, 26.0, 32⇒ 1.0, 2.0
06	Footwell flap	23⇒ 23.0, 24.0, 32⇒ 7.0, 8.0
07	Fresh/recirculating air flap	23⇒ 21.0, 22.0, 32⇒ 5.0, 6.0
08	Diverter/tempering flaps	23⇒ 19.0, 20.0, 32⇒ 3.0, 4.0
09	Blower motor (A32m1)	23⇒ 16.0
<b>Gasoline engines only</b> 10	Closed throttle speed increase	23⇒ 13.0

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

#### Diagnosis – Reading and Programming Version Code

##### Reading Version Code

1. Ignition: **ON**
2. Press **REST** for more than 6 seconds. Press **↵** to set display to "20".
3. The display window (arrow) will show the version code (see table).  
If the version code does not correspond with the engine type, the version code must be newly programmed (see table).
4. Press **REST** to end test.





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Figure 1

#### Diagnosis – Reading and Programming Version Code

##### Programming Version Code

1. Ignition: **OFF**
2. Press **REST** and hold depressed.
3. Ignition: **ON**
4. Release **REST**.
  - LED **REST** blinks at 1 Hz.
  - Display shows - - ρ.
  - All other LED's are "OFF".
  - The function of the A/C pushbutton control module is as in position **0**.
5. Set version code by pressing  (see table). The first activation of  must occur within 30 seconds after ignition "ON" (after that the programming mode is blocked).
6. Store version code by pressing **EC**. A previously stored version code is thereby erased.
7. Turn ignition: **OFF** to end version code programming.


#### Diagnosis – Reading and Programming Version Code

Displayed code in N22  1)	Engine version	Temperature display
0	Not programmed	–
1	Engine 104	°C
2	Engine 104	°F
3	Engine 605 (Non – U.S.)	–
4	Engine 605 (Non – U.S.)	–
5	Engine 111	°C
6	Engine 111	°F
7	Engine 601, 604 (Non – U.S.)	°C
8	Engine 601, 604 (Non – U.S.)	°F
9	Engine 605 (Non – U.S.)	°C
10	Engine 605 (Non – U.S.)	°F
11	Engine 604 (Non – U.S.)	°C
12	Engine 604 (Non – U.S.)	°F

1) For reading version code with Hand-Held Tester.



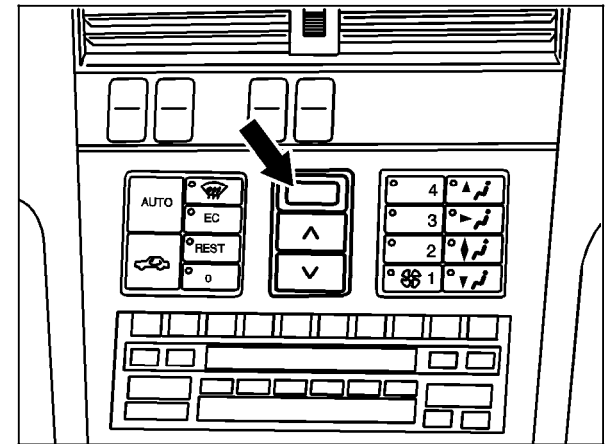
#### Diagnosis – Reading and Programming Version Code

Displayed code in N22  1)	Engine version	Temperature display
13	Engine 104	°C
14	Engine 104	°F
15	Engine 111	°C
16	Engine 111	°F
17	Engine 605, 604, 601 (Non – U.S.)	°C
18	Engine 605, 604, 601 (Non – U.S.)	°F
19	Engine 605 (Non – U.S.)	°F
20	Engine 605 (Non – U.S.)	°C
21	Engine 604 (Non – U.S.)	°F
22	Engine 604 (Non – U.S.)	°C

1) For reading version code with Hand-Held Tester.

**Diagnosis – Diagnostic Trouble Code (DTC) Memory****Notes for Diagnosis**

- The A/C pushbutton control module (N22) has DTC memory and data output. The diagnostic trouble codes and data are displayed via the temperature display window (arrow). The stored DTC's will remain in memory even with the vehicle battery disconnected.
- The DTC memory differentiates between continuous and intermittent faults.
- All DTC's can also be read with the Hand-Held Tester (HHT).





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Figure 1

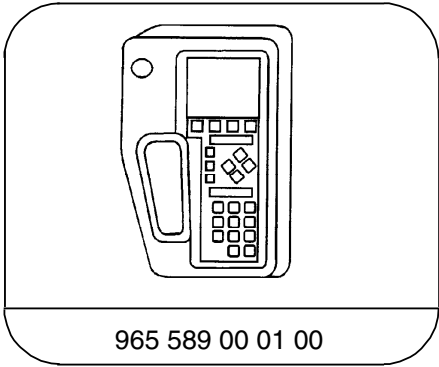
### Diagnosis – Diagnostic Trouble Code (DTC) Memory

#### Preparations for DTC Readout

1. Ignition: **ON**
2. Press ▼ until "L0" appears in display window.
3. Within 20 seconds press **REST** and  simultaneously for more than 2 seconds.
4. The LED in  blinks at 1 Hz and the display shows "di R".
5. Press **AUTO** repeatedly until all DTC's are displayed. Record each DTC as it is displayed.
6. Each malfunction (short circuit, open circuit, etc.) has a specific DTC code. The continuous faults are displayed first (e.g. 02). If no continuous faults are stored, the display shows "En d".  
Press **AUTO** again and the intermittent faults will be displayed.  
Intermittent DTC's are recognizable by the ° - symbol e.g. 04 °. If no intermittent faults are stored, the display shows "En o d".
7. Press **AUTO** again and the display shows "dE L" (delete).  
  
To erase: Press ▼ and ▲ simultaneously for more than 5 seconds and the display shows "-- -".  
To cancel erase: By pressing **AUTO** the continuous faults will appear again.
8. Bring temperature preselection to base setting (press √ and ∧ simultaneously to restore to 72 °F).
9. Ignition: **OFF**, end of test program.

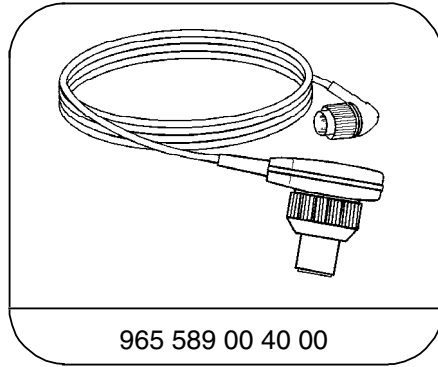
Diagnosis – Diagnostic Trouble Code (DTC) Memory

Special Tools



965 589 00 01 00


Hand-Held-Tester



965 589 00 40 00

Test cable

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


Diagnostic trouble code (DTC) N22 	Possible cause	Test step/Remedy <sup>1)</sup>
01      –	No malfunction in system	–
02      002	A/C pushbutton control module (N22)	N22
03      003	In-car temperature sensor with aspirator blower (B10/4), short circuit <sup>2)</sup>	23⇒ 4.0
04      004	In-car temperature sensor with aspirator blower (B10/4), short circuit <sup>3)</sup>	23⇒ 4.0
05      005	In-car temperature sensor with aspirator blower (B10/4), short or open circuit <sup>2)</sup>	23⇒ 4.0
06      006	In-car temperature sensor with aspirator blower (B10/4), short or open circuit <sup>3)</sup>	23⇒ 4.0
07      007	Outside temperature sensor (B10/5), short circuit <sup>2)</sup>	23⇒ 5.0
08      008	Outside temperature sensor (B10/5), short circuit <sup>3)</sup>	23⇒ 5.0
09      009	Outside temperature sensor (B10/5), short or open circuit <sup>2)</sup>	23⇒ 5.0
10      010	Outside temperature sensor (B10/5), short or open circuit <sup>3)</sup>	23⇒ 5.0
11      011	Heater core temperature sensor (B10/1), short circuit <sup>2)</sup>	23⇒ 7.0
12      012	Heater core temperature sensor (B10/1), short circuit <sup>3)</sup>	23⇒ 7.0
13      013	Heater core temperature sensor (B10/1), short or open circuit <sup>2)</sup>	23⇒ 7.0
14      014	Heater core temperature sensor (B10/1), short or open circuit <sup>3)</sup>	23⇒ 7.0

<sup>1)</sup> Observe Preparation for Test.

<sup>2)</sup> Continuous faults.

<sup>3)</sup> Intermittent faults.

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


Diagnostic trouble code (DTC) N22 	Possible cause	Test step/Remedy <sup>1)</sup>
19 019	Evaporator temperature sensor (B10/6), short circuit <sup>2)</sup>	23⇒ 6.0
20 020	Evaporator temperature sensor (B10/6), short circuit <sup>3)</sup>	23⇒ 6.0
21 021	Evaporator temperature sensor (B10/6), short or open circuit <sup>2)</sup>	23⇒ 6.0
22 022	Evaporator temperature sensor (B10/6), short or open circuit <sup>3)</sup>	23⇒ 6.0
23 023	Engine coolant temperature sensor (B10/8), short circuit <sup>2)</sup>	23⇒ 8.0
24 024	Engine coolant temperature sensor (B10/8), short circuit <sup>3)</sup>	23⇒ 8.0
25 025	Engine coolant temperature sensor (B10/8), short or open circuit <sup>2)</sup>	23⇒ 8.0
26 026	Engine coolant temperature sensor (B10/8), short or open circuit <sup>3)</sup>	23⇒ 8.0
27 027	Refrigerant pressure sensor (B12), short circuit <sup>2)</sup>	23⇒ 9.0
28 028	Refrigerant pressure sensor (B12), short circuit <sup>3)</sup>	23⇒ 9.0
29 029	Refrigerant pressure sensor (B12), short or open circuit <sup>2)</sup>	23⇒ 9.0
30 030	Refrigerant pressure sensor (B12), short or open circuit <sup>3)</sup>	23⇒ 9.0

1) Observe Preparation for Test.

2) Continuous faults.

3) Intermittent faults.

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


Diagnostic trouble code (DTC) N22 	Possible cause	Test step/Remedy <sup>1)</sup>
31 031	A/C compressor rpm sensor (A9I1)	23⇒ 17.0
32 032	Poly-V-belt slip recognition	23⇒ 17.0
47 047	Auxiliary coolant pump (M13), short circuit <sup>2)</sup>	23⇒ 14.0
48 048	Auxiliary coolant pump (M13), short circuit <sup>3)</sup>	23⇒ 14.0
49 049	Auxiliary coolant pump (M13), short or open circuit <sup>2)</sup>	23⇒ 14.0
50 050	Auxiliary coolant pump (M13), short or open circuit <sup>3)</sup>	23⇒ 14.0
51 051	Duovalve (Y21), short circuit <sup>2)</sup>	23⇒ 15.0
52 052	Duovalve (Y21), short circuit <sup>3)</sup>	23⇒ 15.0
53 053	Duovalve (Y21), short or open circuit <sup>2)</sup>	23⇒ 15.0
54 054	Duovalve (Y21), short or open circuit <sup>3)</sup>	23⇒ 15.0
59 059	A/C compressor electromagnetic clutch (A9k1) <sup>2)</sup>	23⇒ 17.0
60 060	A/C compressor electromagnetic clutch (A9k1) <sup>3)</sup>	23⇒ 17.0
61 061	A/C compressor electromagnetic clutch (A9k1), short or open circuit <sup>2)</sup>	23⇒ 17.0

1) Observe Preparation for Test.

2) Continuous faults.

3) Intermittent faults.

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

Diagnostic trouble code (DTC) N22 	Possible cause	Test step/Remedy <sup>1)</sup>
62      062	A/C compressor electromagnetic clutch (A9k1), short or open circuit <sup>3)</sup>	23⇒ 17.0
63      063	Activation of auxiliary fan stage 1, short circuit <sup>2)</sup>	23⇒ 11.0
64      064	Activation of auxiliary fan stage 1, short circuit <sup>3)</sup>	23⇒ 11.0
65      065	Activation of auxiliary fan stage 1, short or open circuit <sup>2)</sup>	23⇒ 11.0
66      066	Activation of auxiliary fan stage 1, short or open circuit <sup>3)</sup>	23⇒ 11.0
67      067	Activation of auxiliary fan stage 2, short circuit <sup>2)</sup>	23⇒ 12.0
68      068	Activation of auxiliary fan stage 2, short circuit <sup>3)</sup>	23⇒ 12.0
69      069	Activation of auxiliary fan stage 2, short or open circuit <sup>2)</sup>	23⇒ 12.0
70      070	Activation of auxiliary fan stage 2, short or open circuit <sup>3)</sup>	23⇒ 12.0
71      071	Closed throttle speed increase, short or open circuit <sup>2)</sup>	23⇒ 13.0
72      072	Closed throttle speed increase, short or open circuit <sup>3)</sup>	23⇒ 13.0
73      073	Closed throttle speed increase, short circuit <sup>2)</sup>	23⇒ 13.0
74      074	Closed throttle speed increase, short circuit <sup>3)</sup>	23⇒ 13.0
75      075	Switchover valve block (8 connections, Y11/3), diverter flap <sup>2)</sup>	23⇒ 19.0


<sup>1)</sup> Observe Preparation for Test.

<sup>2)</sup> Continuous faults.

<sup>3)</sup> Intermittent faults.



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


Diagnostic trouble code (DTC) N22 	Possible cause	Test step/Remedy <sup>1)</sup>
76      076	Switchover valve block (Y11/3), diverter flap <sup>3)</sup>	23⇒ 19.0
77      077	Switchover valve block (Y11/3), diverter flap, short or open circuit <sup>2)</sup>	23⇒ 19.0
78      078	Switchover valve block (Y11/3), diverter flap, short or open circuit <sup>3)</sup>	23⇒ 19.0
79      079	Switchover valve block (Y11/3), tempering flap <sup>2)</sup>	23⇒ 20.0
80      080	Switchover valve block (Y11/3), tempering flap <sup>3)</sup>	23⇒ 20.0
81      081	Switchover valve block (Y11/3), tempering flap, short or open circuit <sup>2)</sup>	23⇒ 20.0
82      082	Switchover valve block (Y11/3), tempering flap, short or open circuit <sup>3)</sup>	23⇒ 20.0
83      083	Switchover valve block (Y11/3), fresh/recirculating air flap, long stroke (80%) <sup>2)</sup>	23⇒ 21.0
84      084	Switchover valve block (Y11/3), fresh/recirculating air flap, long stroke (80%) <sup>3)</sup>	23⇒ 21.0
85      085	Switchover valve block Y11/3), fresh/recirculating air flap, long stroke (80%) short or open circuit <sup>2)</sup>	23⇒ 21.0
86      086	Switchover valve block Y11/3), fresh/recirculating air flap, long stroke (80%) short or open circuit <sup>3)</sup>	23⇒ 21.0
87      087	Switchover valve block (Y11/3), fresh/recirculating air flap, short stroke (20%) <sup>2)</sup>	23⇒ 22.0

1) Observe Preparation for Test.

2) Continuous faults.

3) Intermittent faults.

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


Diagnostic trouble code (DTC) N22 	Possible cause	Test step/Remedy <sup>1)</sup>
88      088	Switchover valve block (Y11/3), fresh/recirculating air flap, short stroke (20%) <sup>3)</sup>	23⇒ 22.0
89      089	Switchover valve block (Y11/3), fresh/recirculating air flap, short stroke (20%) short or open circuit <sup>2)</sup>	23⇒ 22.0
90      090	Switchover valve block (Y11/3), fresh/recirculating air flap, short stroke (20%) short or open circuit <sup>3)</sup>	23⇒ 22.0
91      091	Switchover valve block (Y11/3), defroster flap, long stroke (80%) <sup>2)</sup>	23⇒ 25.0
92      092	Switchover valve block (Y11/3), defroster flap, long stroke (80%) <sup>3)</sup>	23⇒ 25.0
93      093	Switchover valve block (Y11/3), defroster flap, long stroke (80%) short or open circuit <sup>2)</sup>	23⇒ 25.0
94      094	Switchover valve block (Y11/3), defroster flap, long stroke (80%) short or open circuit <sup>3)</sup>	23⇒ 25.0
95      095	Switchover valve block (Y11/3), defroster flap, short stroke (20%) <sup>2)</sup>	23⇒ 26.0
96      096	Switchover valve block (Y11/3), defroster flap, short stroke (20%) <sup>3)</sup>	23⇒ 26.0

1) Observe Preparation for Test.

2) Continuous faults.

3) Intermittent faults.

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

Diagnostic trouble code (DTC) N22 	Possible cause	Test step/Remedy <sup>1)</sup>
97      097	Switchover valve block (Y11/3), defroster flap, short stroke (20%) short or open circuit <sup>2)</sup>	23⇒ 26.0
98      098	Switchover valve block (Y11/3), defroster flap, short stroke (20%) short or open circuit <sup>3)</sup>	23⇒ 26.0
99      099	Switchover valve block (Y11/3), footwell flap, long stroke (80%) <sup>2)</sup>	23⇒ 23.0
100     100	Switchover valve block (Y11/3), footwell flap, long stroke (80%) <sup>3)</sup>	23⇒ 23.0
101     101	Switchover valve block (Y11/3), footwell flap, long stroke (80%) short or open circuit <sup>2)</sup>	23⇒ 23.0
102     102	Switchover valve block (Y11/3), footwell flap, long stroke (80%) short or open circuit <sup>3)</sup>	23⇒ 23.0
103     103	Switchover valve block (Y11/3), footwell flap, short stroke (20%) <sup>2)</sup>	23⇒ 24.0
104     104	Switchover valve block (Y11/3), footwell flap, short stroke (20%) <sup>3)</sup>	23⇒ 24.0
105     105	Switchover valve block (Y11/3), footwell flap, short stroke (20%) short or open circuit <sup>2)</sup>	23⇒ 24.0
106     106	Switchover valve block (Y11/3), footwell flap, short stroke (20%) short or open circuit <sup>3)</sup>	23⇒ 24.0

1) Observe Preparation for Test.

2) Continuous faults.

3) Intermittent faults.

#### Electrical Test Program – Component Locations

#### Component locations in passenger compartment

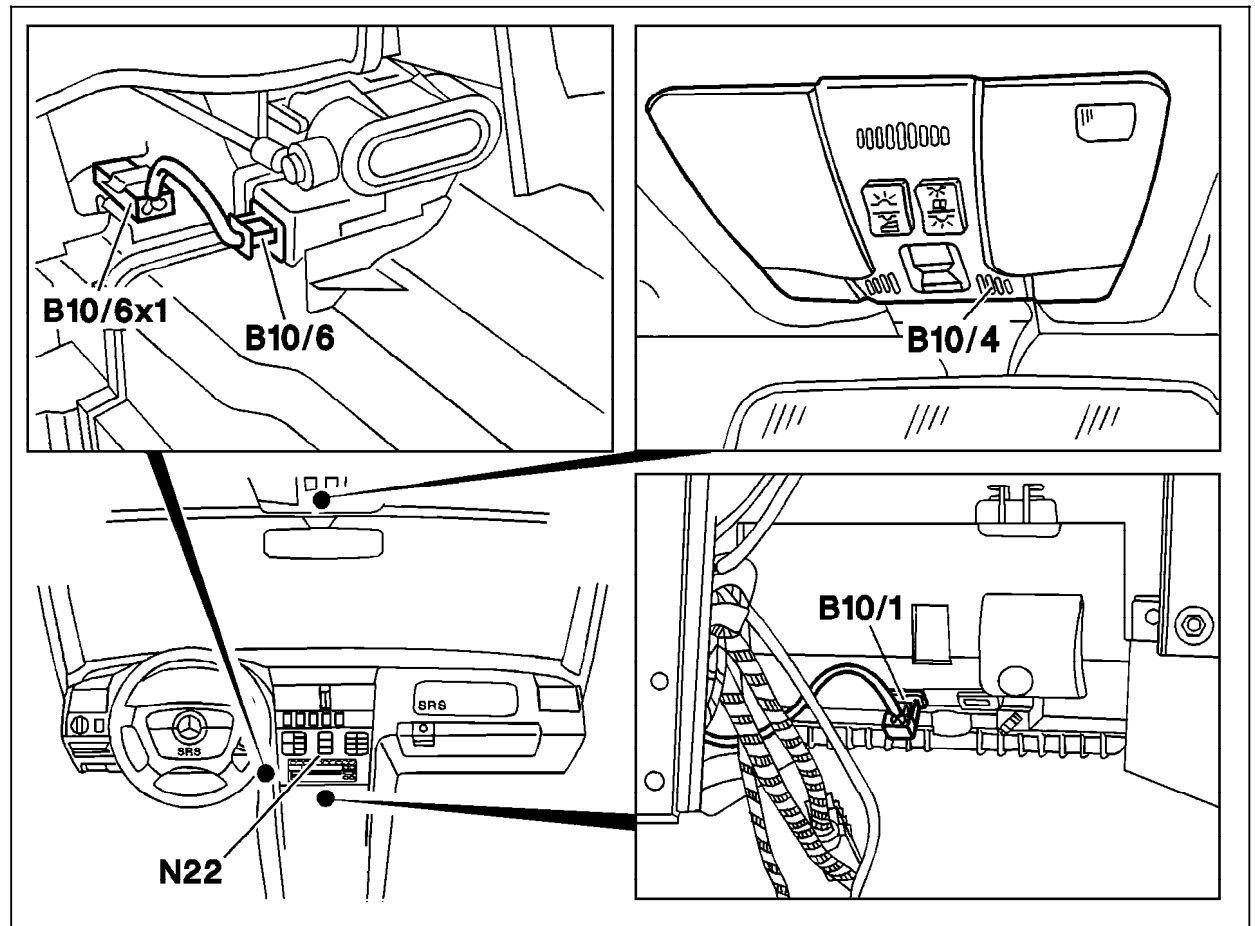


Figure 1

- B10/1 Heater core temperature sensor
- B10/4 In-car temperature sensor  
(with aspirator blower in E15)
- B10/6 Evaporator temperature sensor
- B10/6x1 Evaporator temperature sensor connector
- N22 A/C pushbutton control module

P83-5677-57

#### Electrical Test Program – Component Locations

#### Component locations in engine compartment

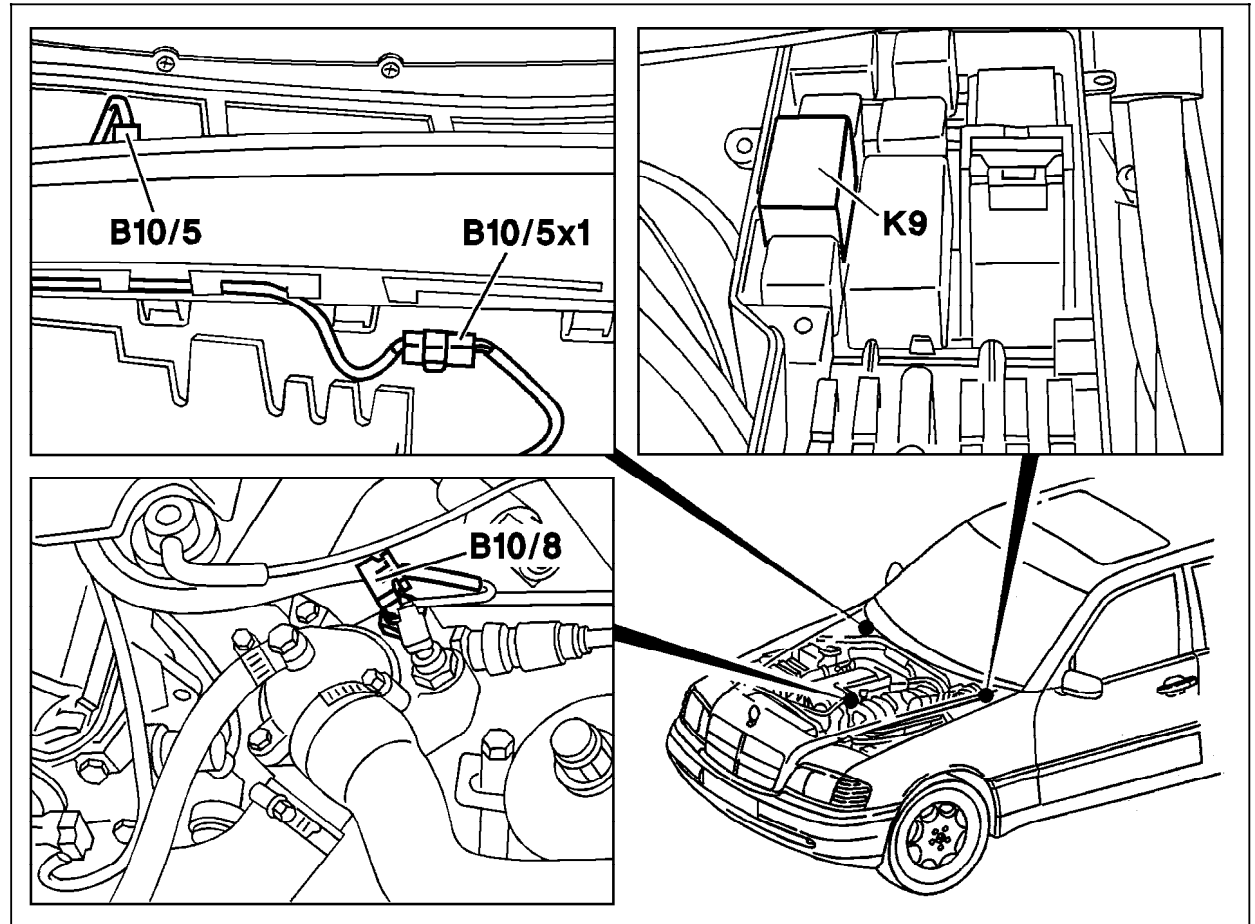


Figure 2

- B10/5 Outside temperature sensor
- B10/5x1 Outside temperature sensor connector
- B10/8 Engine coolant temperature sensor (A/C)
- K9 Auxiliary fan relay module (stage 2)

P83-5660-57

Electrical Test Program – Component Locations

Component locations in engine compartment

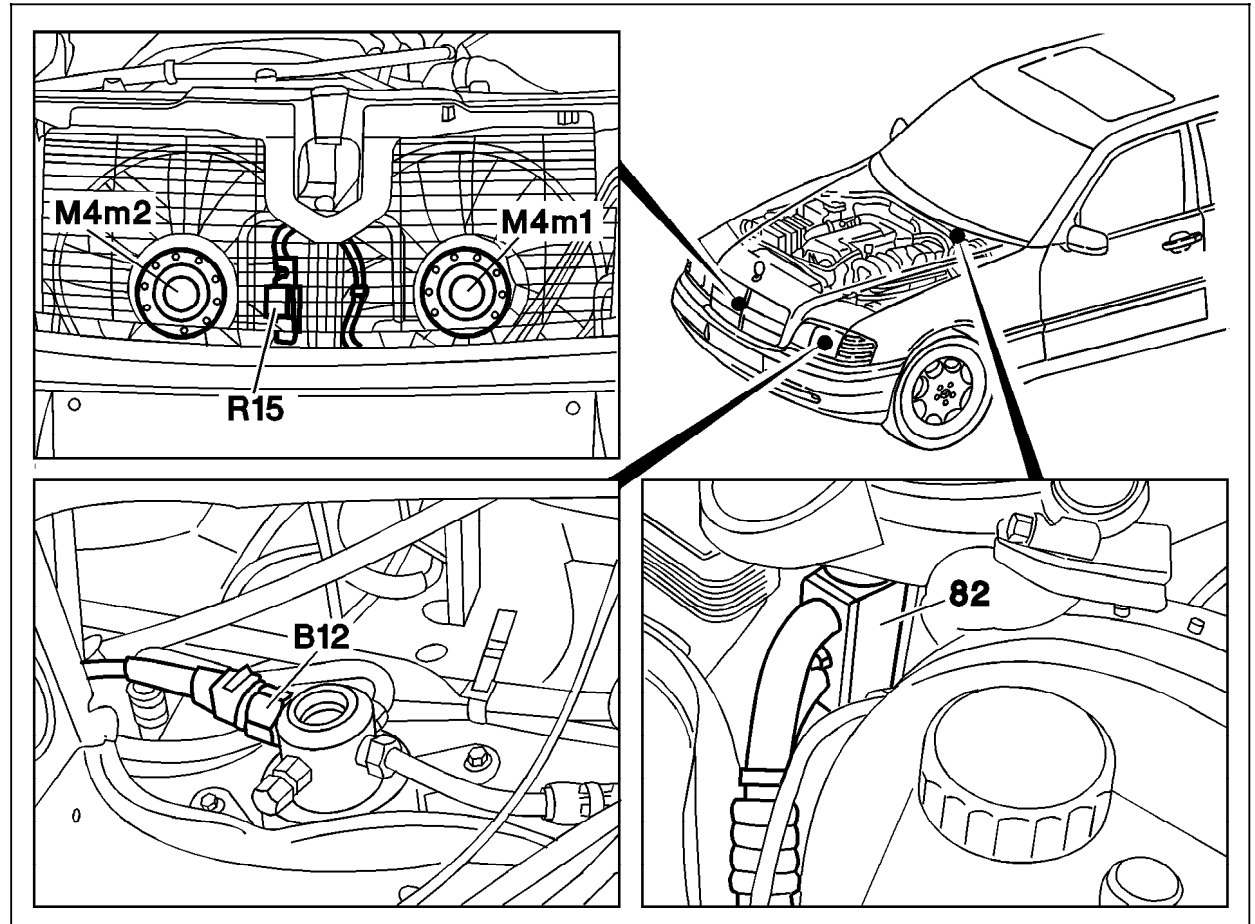


Figure 3

- 82 Expansion valve
- B12 Refrigerant pressure sensor
- M4m1 Left auxiliary fan
- M4m2 Right auxiliary fan
- R15 Auxiliary fan preresistor

P83-5658-57

#### Electrical Test Program – Preparation for Test

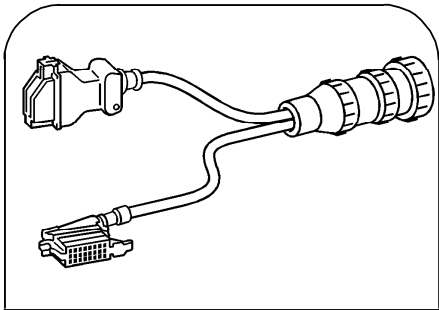
- Remove A/C pushbutton control module (N22).

Electrical wiring diagrams :  
Electrical Troubleshooting Manual, Model 202.

**Note:**

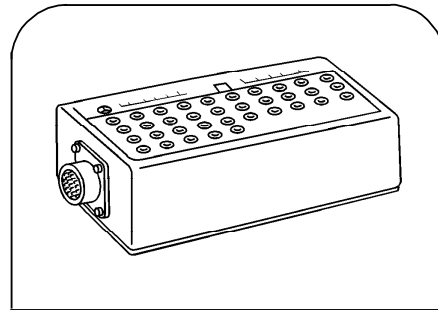
Upon completion of test, erase DTC memory from A/C pushbutton control module (see 15).

**Special Tools**



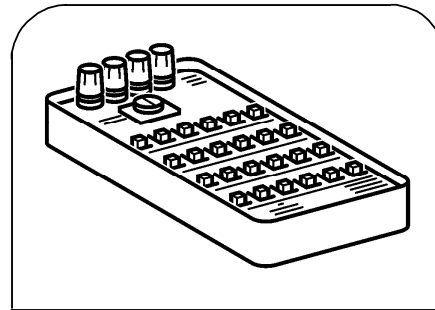
126 589 20 63 00

27-pin test cable



124 589 00 21 00

35-pin socket box



124 589 09 63 00

Ohm decade

**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 - Preparation for Test

Connection Diagram – Socket Box

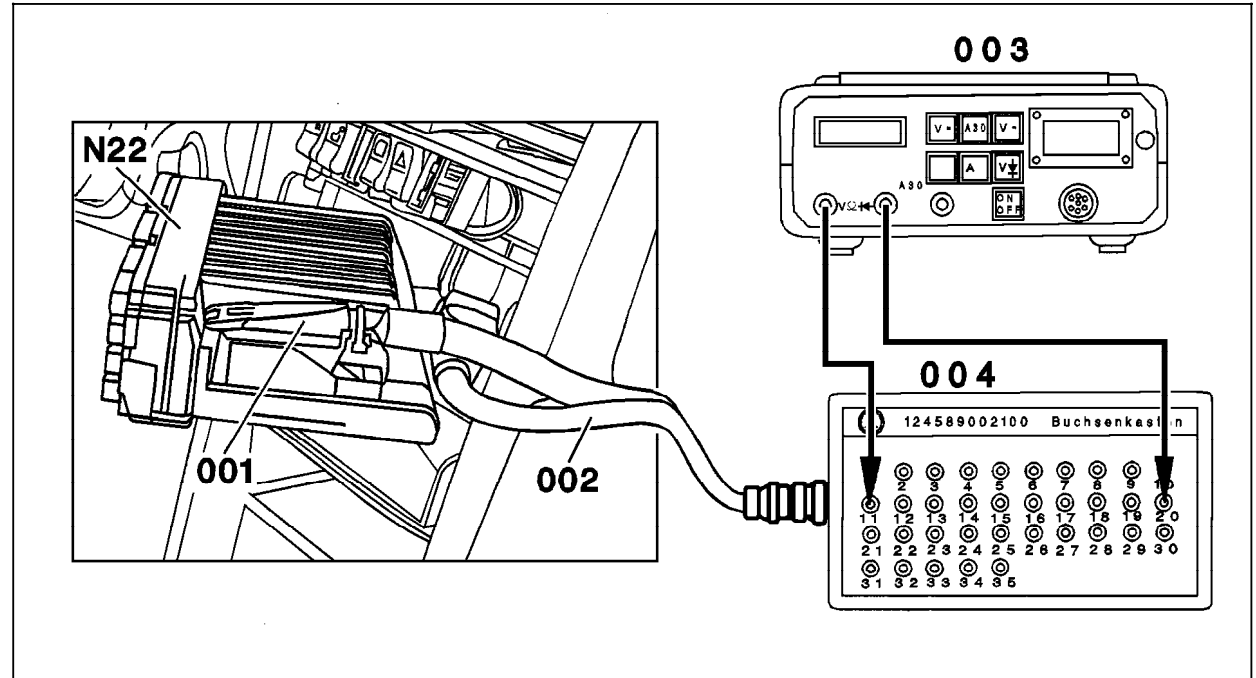


Figure 1

- 001 Right connector, A/C pushbutton control module
- 002 Test cable
- 003 Multimeter
- 004 Socket box
- N22 A/C pushbutton control module

P83-5679-55



#### Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 1.0	<b>A/C pushbutton control module (N22)</b> Voltage supply Circuit 30		on right connector (2).	11-14 V	Wires, Circuit 31, ⇒ 1.1
⇒ 1.1	Circuit 30		on right connector (2).	11-14 V	Wires.
⇒ 2.0	<b>Voltage supply, circuit 15</b>		on right connector (2). Ignition: <b>ON</b>	11-14 V	Wires.
⇒ 3.0	<b>Voltage supply, circuit 15x</b>		on left connector (1). Ignition: <b>ON</b>	11-14 V	Wires.

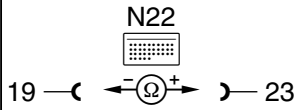


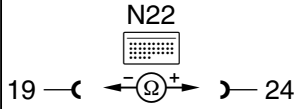


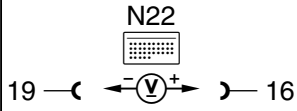

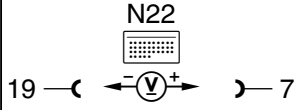

#### Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 4.0 03 04 05 06	<b>In-car temperature sensor with aspirator blower (B10/4)</b> Resistance	<p>N22 19 —(Ω)— 20</p>	Ignition: <b>OFF</b> on left connector (1). Disconnect N22 from .	°C            kΩ 10        19.0 – 21.0 20        11.9 – 13.0 30        7.7 – 8.4 45        4.2 – 4.6	Wires, B10/4.
⇒ 5.0 07 08 09 10	<b>Outside temperature sensor (B10/5)</b> Resistance	<p>N22 19 —(Ω)— 21</p>	Ignition: <b>OFF</b> on left connector (1). Disconnect N22 from .	°C            kΩ 10        5.2 – 5.8 20        3.2 – 3.6 30        2.0 – 2.3 45        1.1 – 1.25	Wires, B10/5.
⇒ 6.0 19 20 21 22	<b>Evaporator temperature sensor (B10/6)</b> Voltage	<p>N22 19 —(V)— 22</p>	on left connector (1). Ignition: <b>ON</b>	°C            V 0            3.7 – 4.1 10          3.1 – 3.5 20          2.6 – 3.0 30          2.0 – 2.4 45          1.4 – 1.8	Wires, ⇒ 6.1, A/C pushbutton control module (N22).
⇒ 6.1	Resistance	<p>N22 19 —(Ω)— 22</p>	Ignition: <b>OFF</b> on left connector (1). Disconnect N22 from .	°C            kΩ 0            7.3 – 10.0 10          4.2 – 6.0 20          2.8 – 3.9 30          1.7 – 2.6 45          1.0 – 1.5	Wires, B10/6.

### 3.3 Air Conditioning (A/C)

Model 202

#### Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 7.0	11 12 13 14 <b>Heater core temperature sensor (B10/1)</b> Resistance		Ignition: <b>OFF</b>  on left connector (1). Disconnect N22 from  .	°C              kΩ 10      19.0 – 21.2 20      11.9 – 13.2 30      7.7 – 8.4 45      4.2 – 4.6	Wires, B10/1.
⇒ 8.0	23 24 25 26 <b>ECT sensor (B10/8)</b> Resistance		Ignition: <b>OFF</b>  on left connector (1). Disconnect N22 from  .	°C              kΩ 20      5.0 – 8.0 60      1.0 – 1.5 85      0.46 – 0.65 100      0.3 – 0.4 120      0.19 – 0.22	Wires, B10/8.
⇒ 9.0	27 28 29 30 <b>Refrigerant pressure sensor (B12)</b> Voltage		 on left connector (1). Ignition: <b>ON</b>	bar              V 2      0.5 – 0.75 10      1.4 – 1.8 18      2.4 – 2.8 28      3.5 – 4.0	Wires, B12, ⇒ 9.1
⇒ 9.1	Voltage supply		 on left connector (1). Ignition: <b>ON</b>	4.75 – 5.25 V	Wires, B12, A/C pushbutton control module (N22).

Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 10.0	<b>Diagnostic signal output</b>	<p>N22 18</p>	Ignition: <b>ON</b> on left connector (1).	11 – 14 V	Wires, A/C pushbutton control module (N22).
⇒ 11.0	<b>Auxiliary fan (M4), stage 1</b>	<p>N22 16</p>	Ignition: <b>ON</b> on right connector (2).  Ignition: <b>OFF</b> Unplug engine coolant temperature sensor (B10/8).	11 – 14 V M4: <b>OFF</b>	Wires, N22, ⇒ 11.1
		<p>B10/8 1 — 2</p>	Set resistance to 310 Ω	M4: <b>ON</b> in stage 1	
		<p>N22 16</p>	Ignition: <b>ON</b>	< 1 V	

#### Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 11.1	Auxiliary fan (M4), stage 1	<p style="text-align: center;">K9</p> <p style="text-align: center;">⊥ ←(V)<sup>+</sup>→ 2/5</p> <p style="text-align: center;">K9</p> <p style="text-align: center;">2/5 ←(V)<sup>+</sup>→ 2/1</p> <p style="text-align: center;">R15</p> <p style="text-align: center;">1 ←(Ω)<sup>+</sup>→ 2</p>	<p>Ignition: <b>OFF</b> Unplug ECT sensor (B10/8).</p> <p style="text-align: center;">B10/8</p> <p style="text-align: center;">1 ←( )→ 2</p> <p>Set resistance to 310 Ω Unplug auxiliary fan relay module (K9).</p> <p>Ignition: <b>ON</b></p> <p>Ignition: <b>ON</b></p> <p>Ignition: <b>OFF</b></p>	<p>6.5 – 7.5 V</p> <p>2.5 – 3.5 V</p> <p>&lt; 1 Ω</p>	<p>Wires.</p> <p>Wires, Auxiliary fan preresistor (R15).</p> <p>R15, Auxiliary fan relay module (K9).</p>

Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 12.0 67 68 69 70	Auxiliary fan (M4), stage 2	<p>  N22 7                 </p> <p>  B10/8 1 2                 </p> <p>  N22 7                 </p>	<p>  N22 on right connector (2). Ignition: <b>ON</b>  Ignition: <b>OFF</b> Unplug ECT sensor (B10/8).  Set resistance to 250 Ω.  Ignition: <b>ON</b> </p>	<p>11 – 14 V M4: <b>OFF</b></p> <p>M4: <b>ON</b> in stage 2</p> <p>&lt; 1 V</p>	⇒ 12.1
⇒ 12.1	Auxiliary fan, stage 2	<p>  K9 1                 </p>	<p>Ignition: <b>OFF</b> Unplug auxiliary fan relay module (K9). Ignition: <b>ON</b></p>	11 – 14 V	Wires, K9, ⇒ 12.2
⇒ 12.2	Auxiliary fan, stage 2	<p>  K9 2/1 2/5                 </p>	<p>Ignition: <b>OFF</b> Unplug auxiliary fan relay module (K9).</p>	< 1 Ω	Wires, Auxiliary fan preresistor (R15).

Electrical Test Program – Test












Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 13.0 71 72 73 74  Gasoline engine only!	Engine rpm increase	<p>N22 10</p>	<p>on right connector (2). Ignition: <b>ON</b>  Press pushbutton </p>	<p>&lt; 1 V  9 – 14 V</p>	Wires, A/C pushbutton control module (N22).
⇒ 14.0 47 48 49 50	Auxiliary coolant pump (M13)	<p>N22 12</p>	<p>on right connector (2). Ignition: <b>ON</b> Set temperature selector wheel to: “Red” detent  Set temperature selector wheel to: “Blue” detent</p>	<p>&lt; 1 V  11 – 14 V</p>	⇒ 14.1, Wires, N22.
⇒ 14.1	Auxiliary coolant pump (M13) Resistance	<p>M13 2/1 — 2/2</p>	Ignition: <b>OFF</b> Unplug connector from M13.	2 – 4 Ω	M13.

#### Electrical Test Program – Test





Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 15.0 51 52 53 54	<b>Duovalve (Y21)</b>		Connector N22 on right connector (2). Ignition: <b>ON</b> Press pushbutton: ▲ to display "HI" ▼ to display "LO"	11 – 14 V < 1 V	Wires, ⇒ 15.1, A/C pushbutton control module (N22).
⇒ 15.1	Duovalve (Y21)		Ignition: <b>OFF</b> Disconnect N22 from connector.	10 – 18 Ω	Y21.
⇒ 16.0	<b>Blower regulator (A32n1) control</b>		Connector N22 on right connector (2). Ignition: <b>ON</b> [Icon]	Stage 1 0.8 – 1.2 V 2 1.8 – 2.2 V 3 2.7 – 3.3 V 4 > 5 V	A/C system blower unit (A32).







Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 17.0	 <b>A/C compressor (A9) activation</b>	 19 —( —( ⊖ ⊕ )— )— 25	 on right connector (2). Engine: <b>At Idle</b> A/C compressor:  A/C compressor: 	< 1 V 11 – 14 V	Wires, ⇒ 17.1, A/C pushbutton control module (N22).
⇒ 17.1	A/C compressor cut-out	 25 —( —( — )— )— 9	 on right connector (2). Engine: <b>At Idle</b> Reading Sensor Values 12 LED display: "22"	> 720 rpm (>  2)	Wires, ⇒ 17.2
⇒ 17.2	A/C compressor rpm sensor (A9I1)	 27 —( —( ⊖ ⊕ )— )— 26	Disconnect N22 from  .  on left connector (1).	200 – 350 Ω	Wires, A/C compressor rpm sensor (A9I1).





#### Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 18.0	<i>Not applicable for U.S. version vehicles</i>				
⇒ 19.0 75 76 77 78	<b>Switchover valve block (Y11/3), diverter flap</b>		 on right connector (2). Ignition: <b>ON</b> Display "Hl"	< 1 V	Wires, ⇒ 19.1
⇒ 19.1	Switchover valve block (Y11/3), diverter flap		Disconnect N22 from  .	45 – 65 Ω	Wires, A/C pushbutton control module (N22).
⇒ 20.0 79 80 81 82	<b>Switchover valve block (Y11/3), tempering flap</b>		 on right connector (2). Ignition: <b>ON</b> Display "LU"	11 – 14 V	Wires, ⇒ 20.1
⇒ 20.1	Switchover valve block (Y11/3), valve for blend air flap		Disconnect N22 from  .	45 – 65 Ω	Wires, N22.

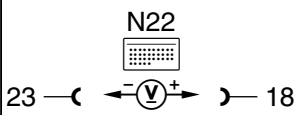

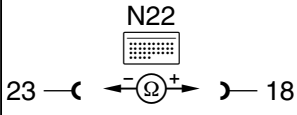

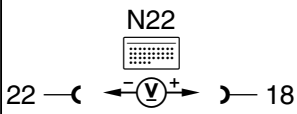

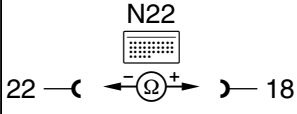

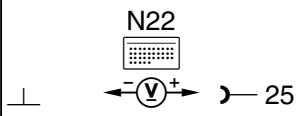

#### Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 21.0 83 84 85 86	<b>Switchover valve block (Y11/3), fresh/recirculating air flap, long stroke (80%)</b>		 on right connector (2). Ignition: <b>ON</b>	< 1 V	Wires, ⇒ 21.1
⇒ 21.1	Switchover valve block (Y11/3), fresh/recirculating air flap, long stroke (80%)		Disconnect N22 from  .	45 – 65 Ω	Wires, A/C pushbutton control module (N22).
⇒ 22.0 87 88 89 90	<b>Switchover valve block (Y11/3), fresh/recirculating air flap, short stroke (20%)</b>		 on right connector (2). Ignition: <b>ON</b>	< 1 V	Wires, ⇒ 22.1
⇒ 22.1	Switchover valve block (Y11/3), fresh/recirculating air flap, short stroke (20%)		Disconnect N22 from  .	45 – 65 Ω	Wires, N22.

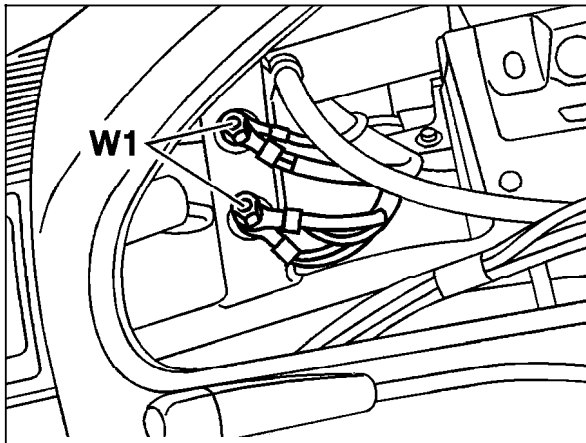
#### Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 23.0 99 100 101 102	<b>Switchover valve block (Y11/3), footwell flap, long stroke (80%)</b>		 on right connector (2). Ignition: <b>ON</b>	11 – 14 V	Wires, ⇒ 23.1
⇒ 23.1	Switchover valve block (Y11/3), footwell flap, long stroke (80%)		Disconnect N22 from  .	45 – 65 Ω	Wires, A/C pushbutton control module (N22).
⇒ 24.0 103 104 105 106	<b>Switchover valve block (Y11/3), footwell flap, short stroke (20%)</b>		 on right connector (2). Ignition: <b>ON</b>	11 – 14 V	Wires, ⇒ 24.1
⇒ 24.1	Switchover valve block (Y11/3), footwell flap, short stroke (20%)		Disconnect N22 from  .	45 – 65 Ω	Wires, N22.

#### Electrical Test Program – Test

Test step DTC	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
⇒ 25.0 91 92 93 94	<b>Switchover valve block (Y11/3), defroster flap, long stroke (80%)</b>		 on right connector (2). Ignition: <b>ON</b>	11 – 14 V	Wires, ⇒ 25.1
⇒ 25.1	Switchover valve block (Y11/3), defroster flap, long stroke (80%)		Disconnect N22 from  .	45 – 65 Ω	Wires, A/C pushbutton control module (N22).
⇒ 26.0 95 96 97 98	<b>Switchover valve block (8 connections, Y11/3), defroster flap, short stroke (20%)</b>		 on right connector (2). Ignition: <b>ON</b>	< 1 V	Wires, ⇒ 26.1
⇒ 26.1	Switchover valve block (Y11/3), defroster flap, short stroke (20%)		Disconnect N22 from  .	45 – 65 Ω	Wires, N22.
⇒ 27.0	<b>Engine speed signal (TN)</b>		 on left connector (1). Engine: <b>at Idle</b>	5 – 7.5 V	Wires.

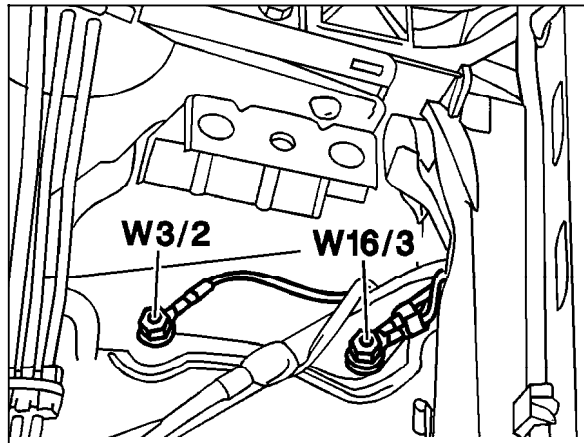
Electrical Test Program – Test



P83-5605-13

Figure 1

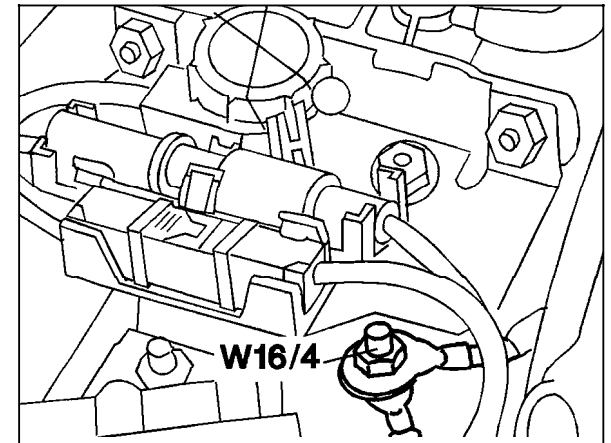
W1 Main ground (behind instrument cluster)



P83-5684-13

Figure 2

W16/3 Ground (component compartment - left)

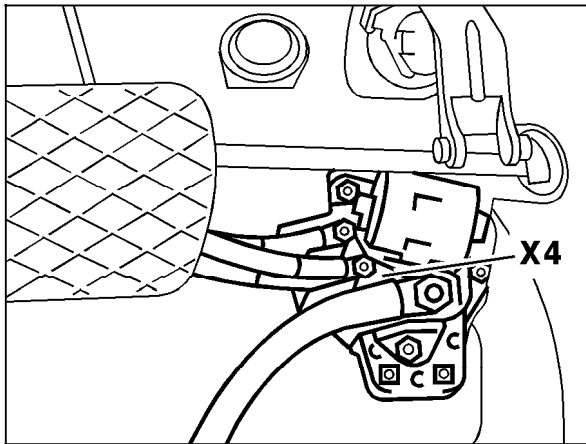


P83-5685-13

Figure 3

W16/4 Ground (component compartment - right)

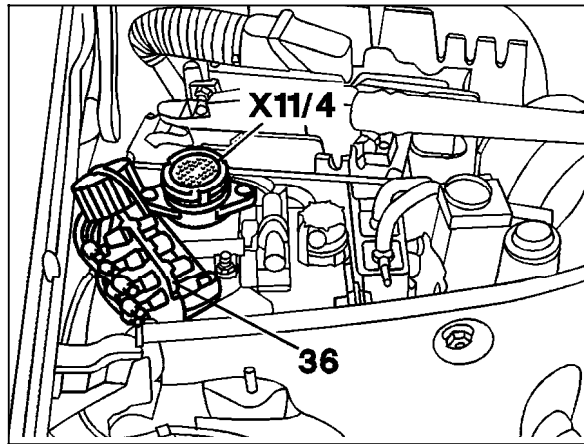
Electrical Test Program – Test



P83.30-0232-01

Figure 4

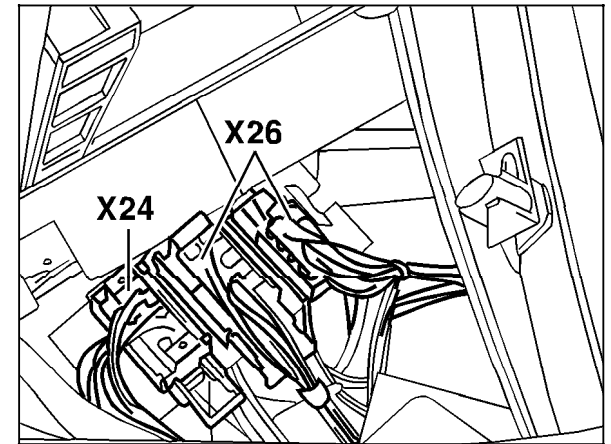
X4 Terminal block (circuit 30, left footwell)



P83-5600-13

Figure 5

X11/4 Data link connector (DTC readout)

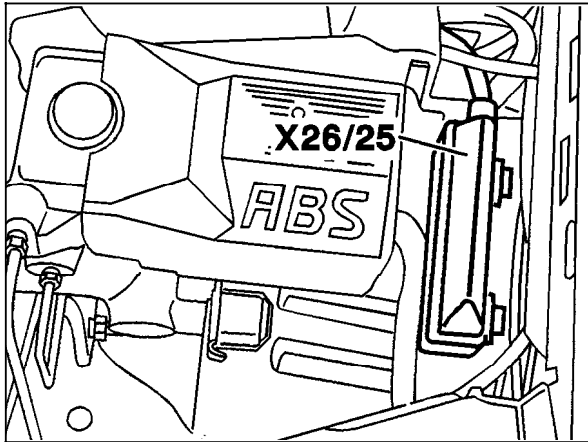


P54-6480-13

Figure 6

X24 Headlamp harness connector  
X26 Interior/engine connector

Electrical Test Program – Test



P83-5674-13

Figure 7

X26/25 Engine/chassis connector (24-pole)



Pneumatic Test Program – Component Locations

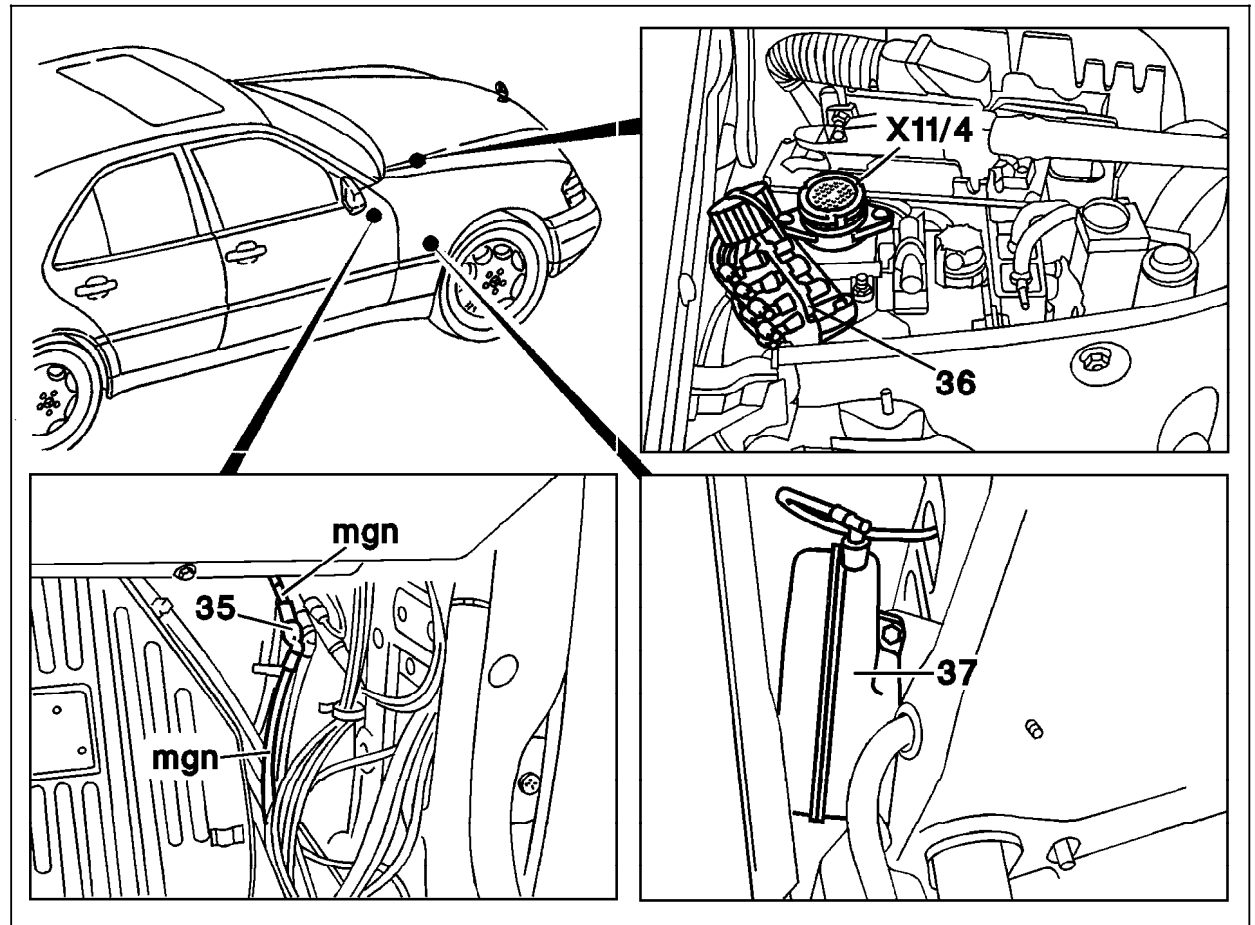


Figure 1

- 35 Separation fitting (right front footwell)
- 36 Vacuum distributor block
- 37 Vacuum reservoir

mgn medium green

P83-5663-57

Pneumatic Test Program – Component Locations

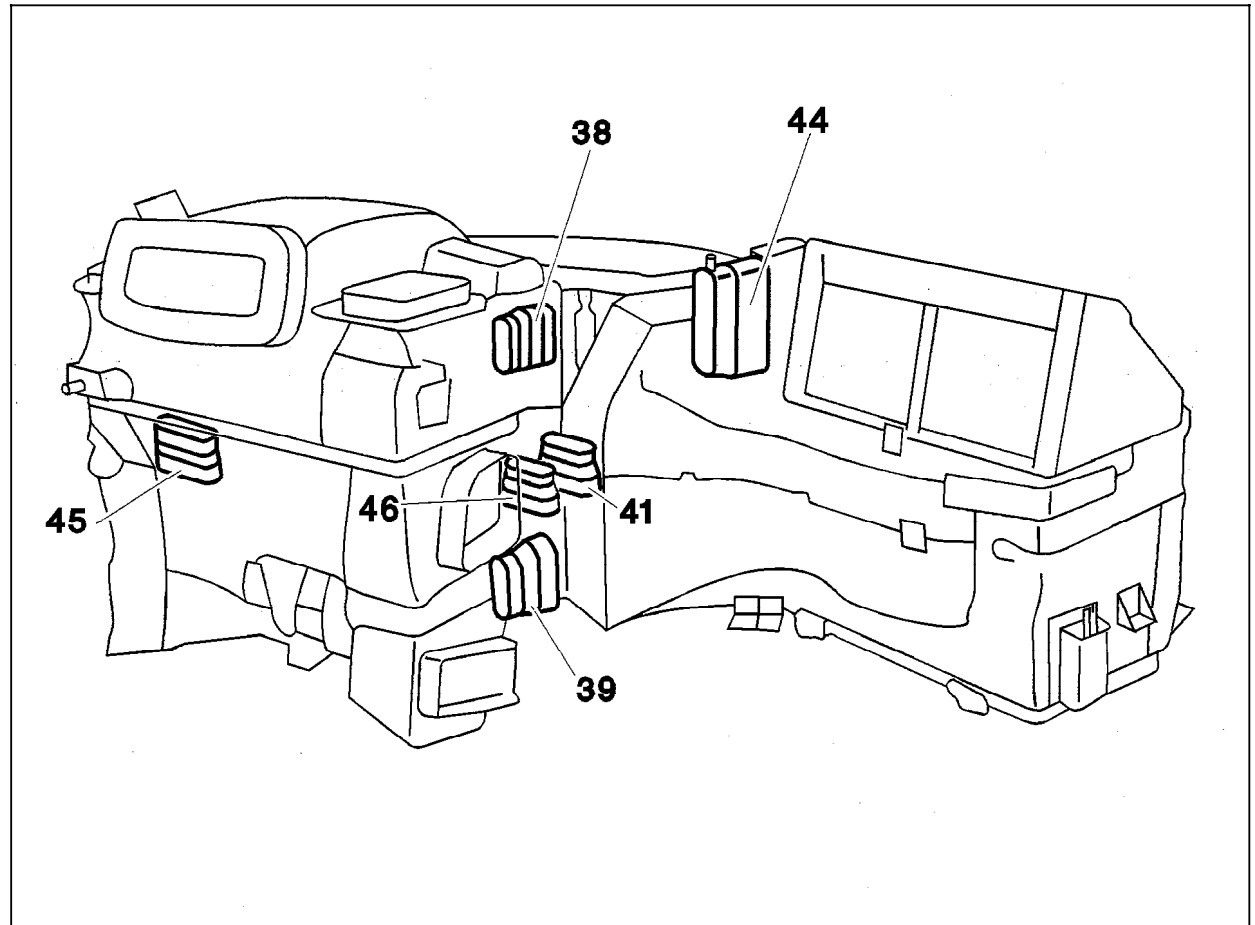


Figure 2

- 38 Defroster flap vacuum element
- 39 Footwell flap vacuum element
- 41 Diverter flap vacuum element
- 44 Fresh/recirculating air flap vacuum element
- 45 Left center outlet tempering flap vacuum element
- 46 Right center outlet tempering flap vacuum element

P83-5639-57

Pneumatic Test Program – Component Locations

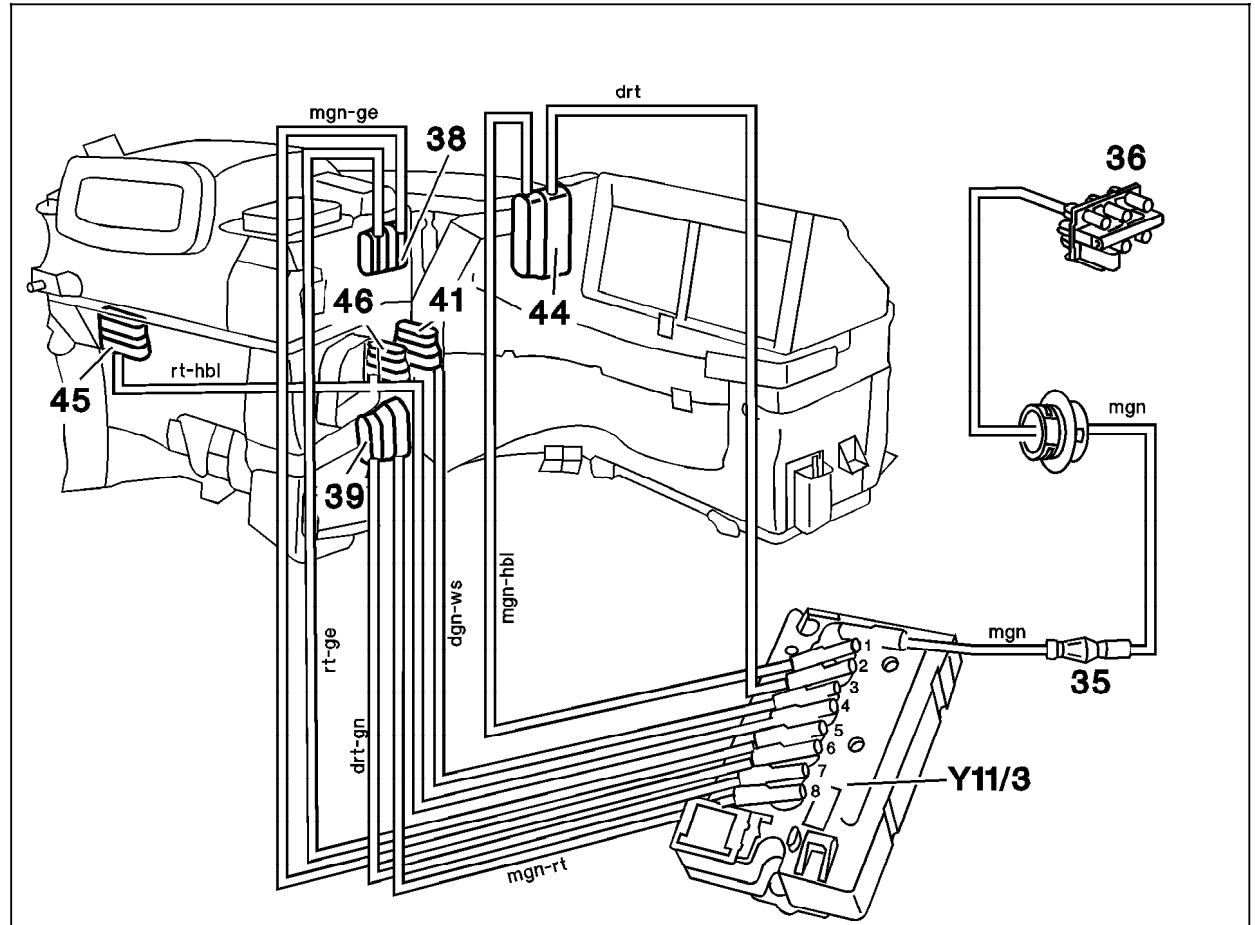


Figure 3

- Y11/3 Switchover valve block (8 connections)
- 35 Separation fitting (right front footwell)
- 36 Vacuum distributor block
- 38 Defroster flap vacuum element
- 39 Footwell flap vacuum element
- 41 Diverter flap vacuum element
- 44 Fresh/recirculating air flap vacuum element
- 45 Left center outlet tempering flap vacuum element
- 46 Right center outlet tempering flap vacuum element

hbl	light blue	rt	red
drt	dark red	ws	white
ge	yellow	dgn	dark green
mgn	medium green		

P83-6165-57

Pneumatic Test Program – Test

Preparation for Test

- A. Vacuum Distributor Block, Vacuum Reservoir, Switchover Valve Block (Y11/3)

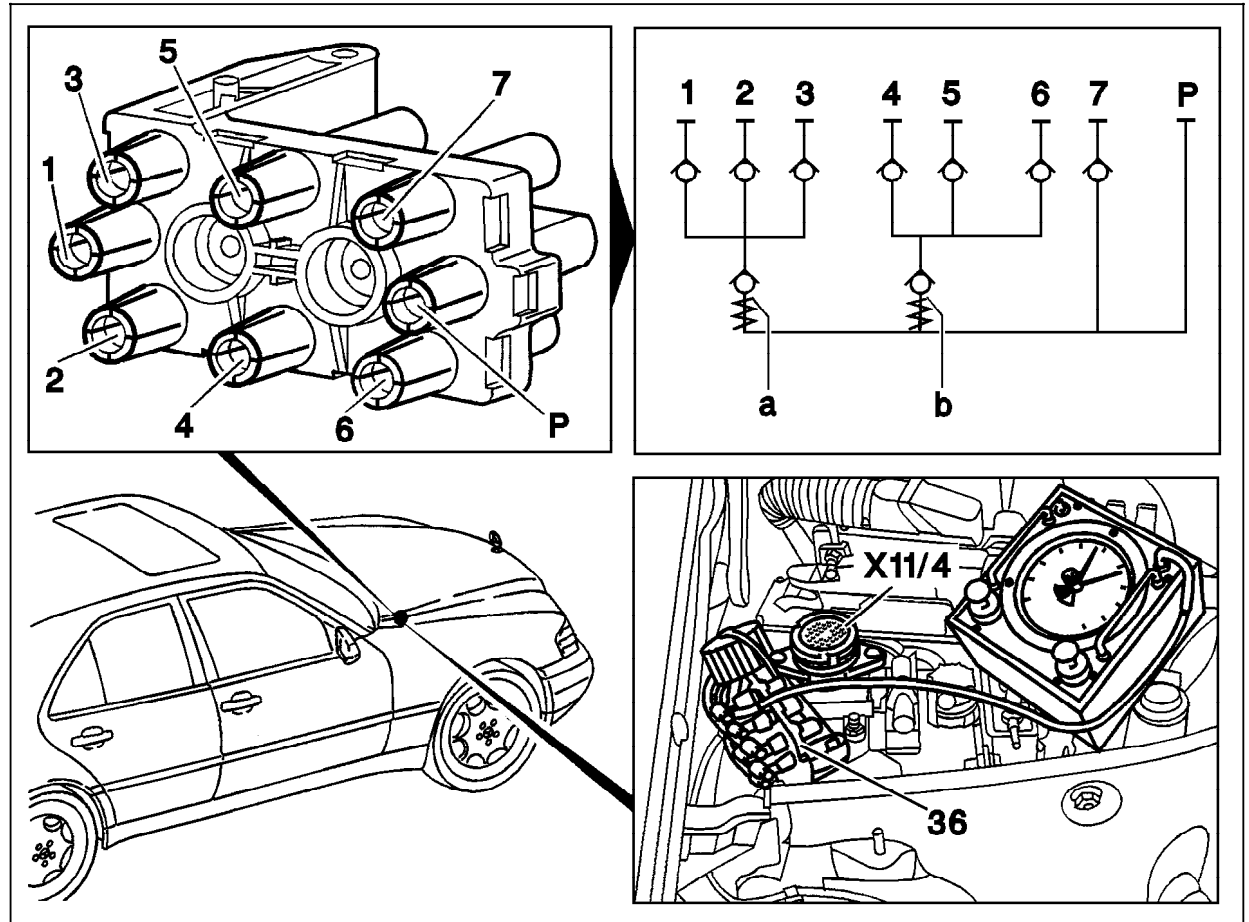


Figure 1

36 Vacuum distributor block

P83-5664-57

#### Pneumatic Test Program - Test

##### Preparation for Test

1. Disconnect all vacuum lines at vacuum distributor block (36).
2. Check gray vacuum line to intake manifold for leaks.

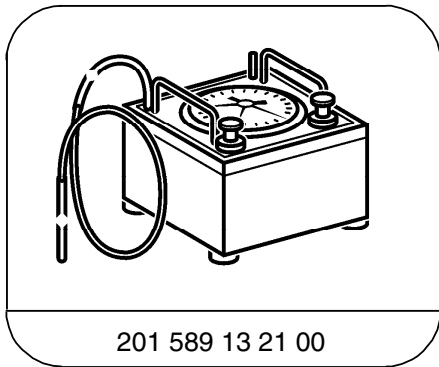
**Note:**

Permissible leakage of the elements with vacuum lines at 400 mbar vacuum per minute is 30 mbar.

##### Conventional tools, test equipment

Description	Brand, model, etc.
Connector	129 805 04 44

##### Special Tools



201 589 13 21 00

Tester

Pneumatic Test Program – Test


A. Vacuum Distributor Block, Vacuum Reservoir, Switchover Valve Block (Y11/3) Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	Entire vacuum distributor block	Connection “P” <b>on</b> vacuum tester.	Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum distributor block, ⇒ 1.1
1.1	Vacuum distributor block, check valve “a”	Connection “1” <b>on</b> vacuum tester.	Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum distributor block, ⇒ 1.2
1.2	Vacuum distributor block, check valve “b”	Connection “4” <b>on</b> vacuum tester.	Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum distributor block.
2.0	Vacuum reservoir with vacuum line	Red/gray vacuum line (connection 4) on vacuum tester	Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum lines, Vacuum reservoir.
3.0	Switchover valve block (Y11/3)	Ignition: <b>OFF</b> medium green line (connection 5) on vacuum tester	Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Y11/3.

#### Pneumatic Test Program – Test

##### Preparation for Test

##### B. Vacuum system

1. Ignition: **ON**
2. Press  stage 1.
3. "53" in display window, see 13.
4. Medium green line (connection "5") on vacuum tester.

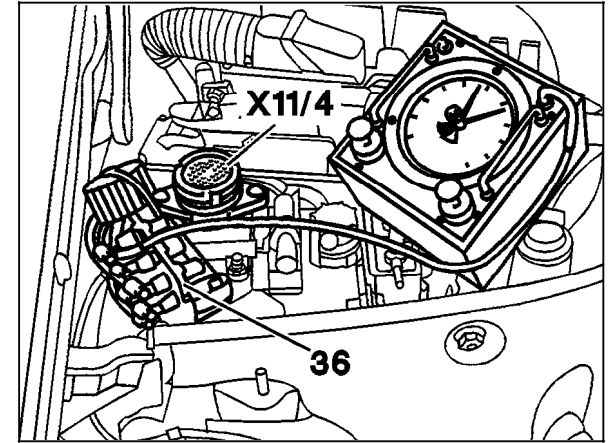






Figure 2

36 Vacuum distribution block

Pneumatic Test Program – Test






B. Vacuum system Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0	Defroster flap vacuum element, long stroke (80%)		Press  Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Defroster flap vacuum element.
2.0	Defroster flap vacuum element, short stroke (20%) <sup>1)</sup>		Press  Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Defroster flap vacuum element.
3.0	Left and right center outlet tempering flap vacuum element		Press  Evacuate with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Left and right center outlet tempering flap vacuum element.
4.0	Center outlet diverter flap vacuum element		Press  Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Center outlet diverter flap vacuum element.

1) Before activating the short stroke (20%), the long stroke (80%) must be activated.



#### Pneumatic Test Program – Test

⇒		Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0		Fresh/recirculating air flap vacuum element, long stroke (80%)		Press  Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Fresh/recirculating air flap vacuum element.
6.0		Fresh/recirculating air flap vacuum element, short stroke (20%) <sup>1)</sup>		Press  Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Fresh/recirculating air flap vacuum element.
7.0		Footwell flap vacuum element, long stroke (80%)		Press  Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Footwell flap vacuum element.
8.0		Footwell flap vacuum element, short stroke (20%) <sup>1)</sup>		Press  Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Footwell flap vacuum element.

<sup>1)</sup> Before activating the short stroke (20%), the long stroke (80%) must be activated.

#### Refrigeration System Test Program – Component Locations

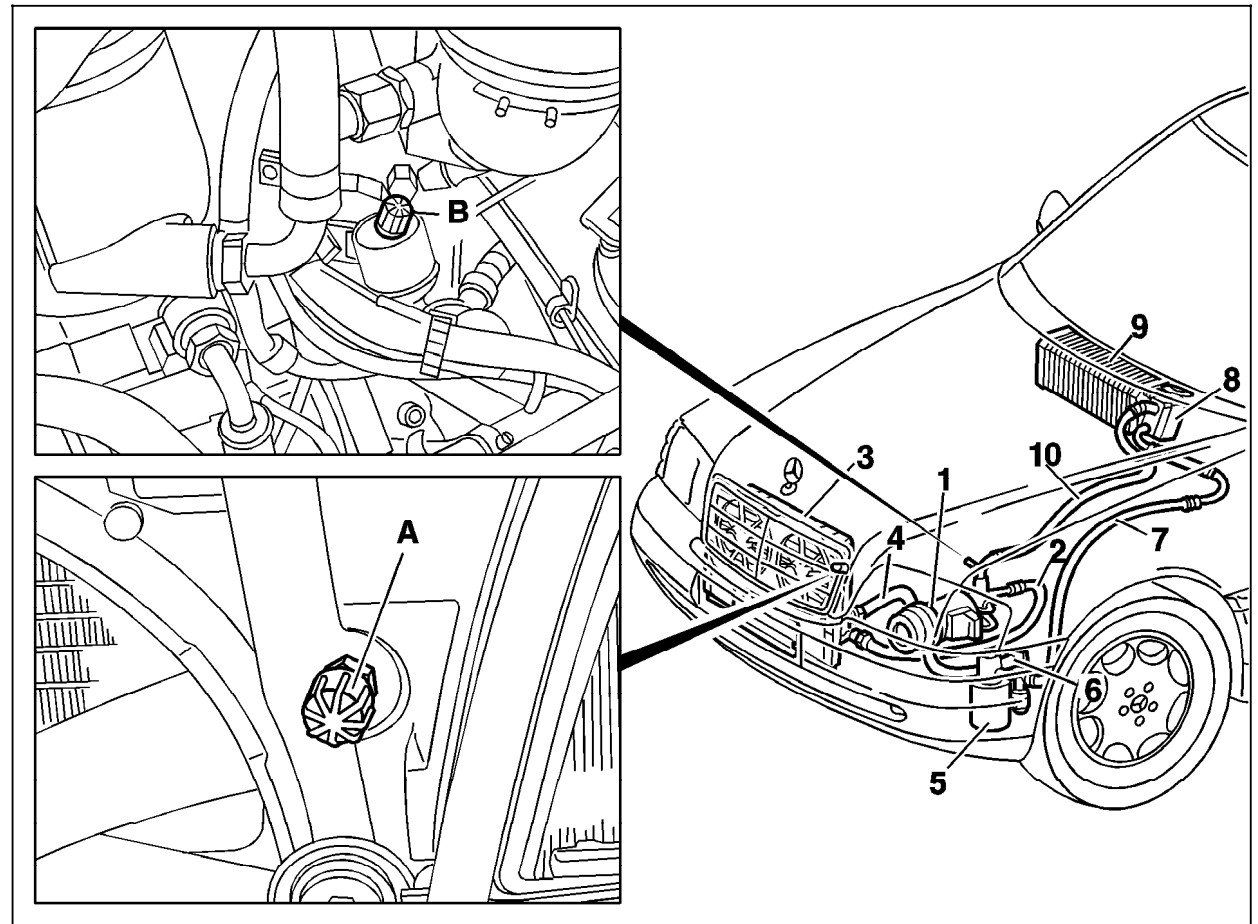


Figure 1

- A High pressure connection
- B Low pressure connection
- 1 A/C compressor
- 2 High pressure vapor line to condenser
- 3 Condenser
- 4 High pressure liquid line to receiver/dryer
- 5 Receiver/dryer
- 6 Refrigerant pressure sensor (B12)
- 7 Low pressure line to evaporator
- 8 Expansion valve
- 9 Evaporator
- 10 Low pressure line to A/C compressor

P83-6071-57

#### Refrigeration System Test Program – Test

- Perform Function Test 11/1.
- Charge system with 950 g of refrigerant R134a (test quantity).
- Connect gauges to low and high pressure test connections.
- Engine at operating temperature.
- Center and side air outlets open.
- Test period > 3 minutes.
- Press **AUTO**.
- Vehicle should not be parked in the sun before or during the test.

Electrical wiring diagrams :  
 Electrical Troubleshooting Manual, Model 202.

#### Conventional tools, test equipment

Description	Brand, model, etc.
Multimeter <sup>1)</sup>	Fluke models 23, 83, 85, 87 with thermocouple Module 80TK
Manifold gauge set (for R134a only)	Local purchase
R134a Recovery/Recycling/Recharging Service Equipment	Local purchase

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

#### Refrigeration System Test Program – Test


- Display "LO"
- Blower in stage 4
- Press .
- Engine speed 1500 rpm.
- Read diagram.

Figure 1

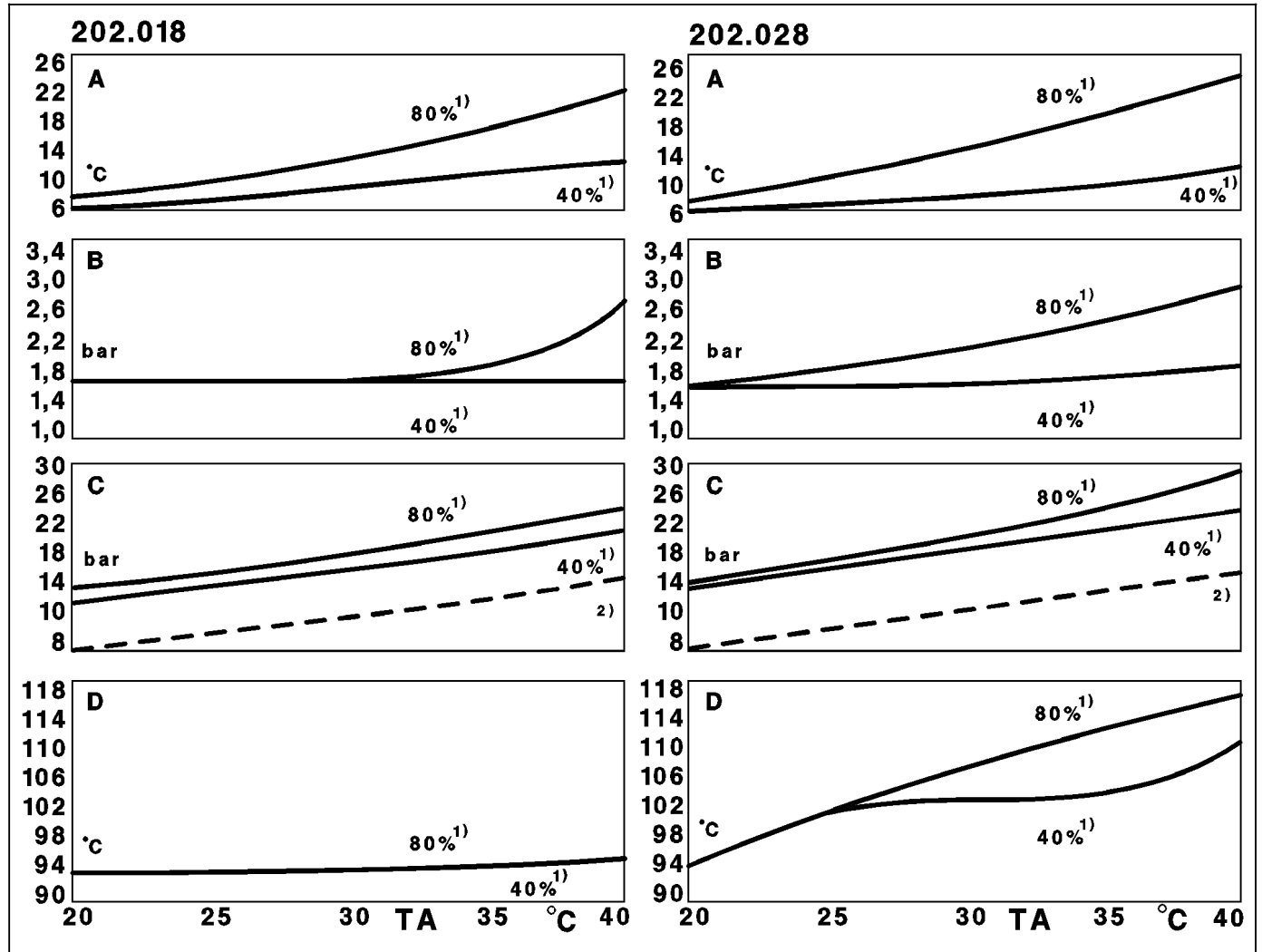
- 1) Relative humidity
- TA Ambient temperature (°C)
- A Center air outlet temperature (°C)
- B Low pressure
- C High pressure
- C<sup>2)</sup> 42/3 test step 2 high pressure (bar)
- D Refrigerant temperature (°C)

**Note:**

If the values such as




- Center air outlet temperature,
- Low refrigerant pressure,
- High refrigerant pressure,
- Refrigerant temperature

are obtained, the system is in order. Tolerances of ± 20% are permissible. If the deviations are larger, continue with the test program 42/3.



P83.30-0231-06

Refrigeration System Test Program – Test

Test condition	Low pressure (bar, B)	High pressure (bar, C)	Center air outlet temperature	Auxiliary fan	Damaged component (cause of failure)	Remedy
Display "LO", Blower stage 4, Center and side air outlets open, Engine speed 3000 rpm	1 bar higher as in diagram 42/2	As in diagram 42/2	> as in diagram 42/2	Possibly for a short period	A/C compressor (Insufficient delivery capacity)	AR83.30-5301E AR83.30-5302E
Display "LO", Blower stage 2, Press  Engine speed 1500 rpm	> as in diagram 42/2	17 – 22 bar	Starting at 5 – 8 °C then increasing depending on ambient temp.	I or II stage depending on pressure and temperature	Expansion valve (continuously open)	23 ⇒ 10.0 AR83.30-5520E
Display "HI", Blower stage 3, Press  Press  Engine speed 1500 rpm	As in diagram 42/2	< as in diagram 42/2	Heated air	Only via engine coolant temperature	Expansion valve (continuously closed) Low pressure lines (insufficient flow)	AR83.30-5520E

Note:  
Bubbles can appear occasionally in the sight glass.