3.8   Model 129 as of M.Y. 1997

Diagnosis – Function Test

Preparation for Test

1.   Check condition of fuses.

2.   Check in-car temperature sensor aspirator blower by placing a small piece of paper (arrow) approximately " square over in-car temperature sensor (B10/4) vent grille 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 idle 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.   Outside air temperature is > 15 °C.

5.   EC button [EC] is not illuminated.

4.   Manually open the center and side air outlets.
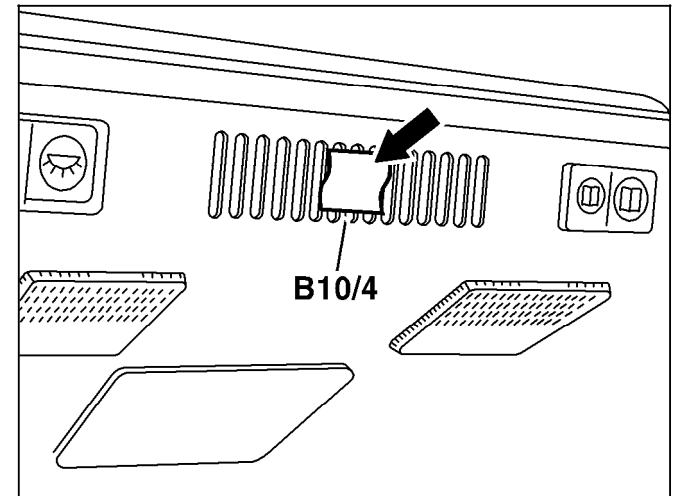
5.   Ensure that the [⟷] button is not depressed.

Figure 1   P83.40-2045-01

B10/4   In-car temperature sensor

Diagnosis – Function Test

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 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 ⇒ 8.0, 10.0, 18.0, 19.0, 20.0, 21.0, 22.0
⇒ 2.0 Ventilation in cooling mode	Press AUTO Temperature selection "LO"	Blower runs with increased speed. Air venting from center and side outlets. A/C compressor engaged, no heat output.	23 ⇒ 8.0, 14.0, 19.0, 20.0, 21.0, 22.0 32 ⇒ 3.0
⇒ 3.0 Normal setting in regulating mode	Press AUTO 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 ⇒ 18.0, 19.0, 20.0, 21.0, 22.0, 32 ⇒ 1.0, 4.0
⇒ 4.0 Economy not in heating mode	Temperature selection "LO" Press EC Press 🔲	Air venting from dash outlets (ambient temperature) A/C compressor OFF.	23 ⇒ 19.0, 20.0, 21.0 32 ⇒ 5.0

[1]   Observe Preparation for Test, see   22.

Diagnosis – Function Test

Test step/Test sequence	Test condition	Nominal value	Possible cause/Remedy [1]
⇒ 5.0 Economy in heating mode	Temperature selection ″HI″ Press **EC**	Air venting from footwell and side outlets left/right. Leak air from defroster outlets. Maximum heat output.	23 ⇒ 17.0, 18.0, 19.0, 20.0, 21.0, 22.0 32 ⇒ 1.0
⇒ 6.0 Residual engine heat utilization	Ignition: **OFF** Press **REST** Selected temperature > 79 °F (26 °C)	Heated air from footwell and side outlets, leak air from defroster outlets. Blower runs at low speed.	23 ⇒ 17.0, 18.0, 21.0, 22.0 32 ⇒ 1.0

[1]   Observe Preparation for Test, see 22.

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

☒ⓘ

1. The display window will show in sequence the current data from the A/C pushbutton control module (N22).

2. The temperature control is maintained during the duration of the test.
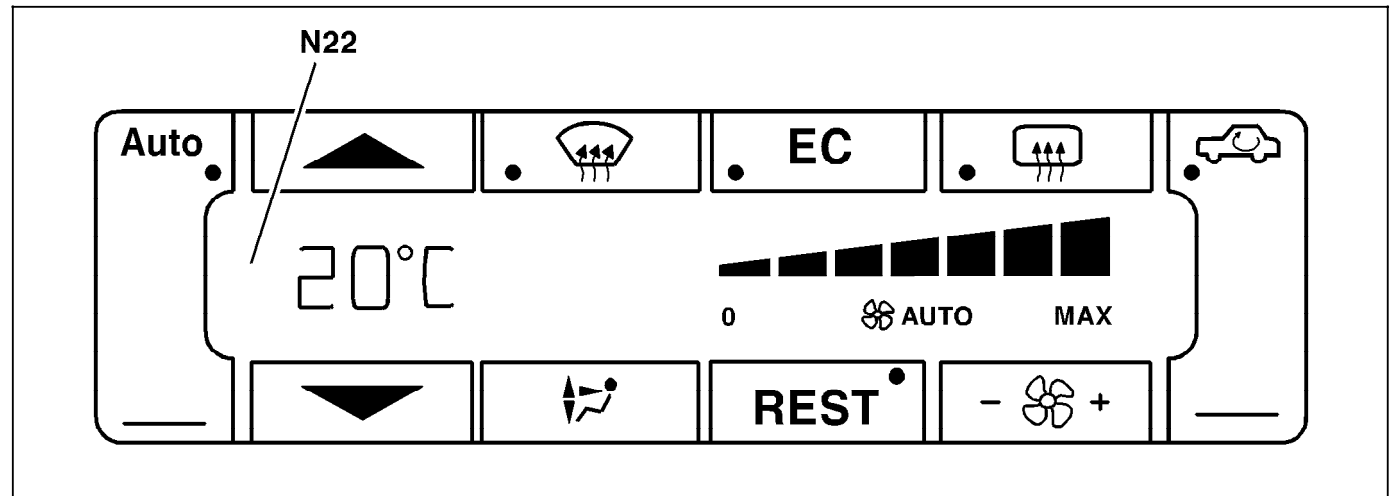

Figure 1

P83.40-2028-04

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

Preparation for Test

1.   Ignition: **ON**

2.   Set temperature selection to 72 °F.

3.   Press REST for more than 6 seconds.

4.   The left side of the display window will alternately display the number
      "01" and the in-car temperature (e.g. 72 °F)

5.   By pressing � + the next highest test step is displayed (see table).

6.   Press REST to end test program.

Note:

The display will, or "OP E" if there is an open circuit, "CL 0" if there is a
short circuit.

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

Display code in 🖩 N22 window		Possible cause	Test step/Remedy [1]
01	01	In-car temperature sensor (B10/4)	23 ⟹ 4.0
02	02	Outside temperature indicator temperature sensor (B14)	23 ⟹ 10.0
03	03	Left heater core temperature sensor (B10/2)	23 ⟹ 7.0
05	05	Evaporator temperature sensor (B10/6)	23 ⟹ 5.0
06	05	ECT sensor (DFI, IFI) (B11/4)	23 ⟹ 10.0
07	07	Refrigerant pressure in bar, e.g. 06 °4 corresponds to 6.4 bar (B12)	23 ⟹ 8.0
08	08	Refrigerant temperature sensor (B12/1), e.g, 73 °4 corresponds to 73.4 °F	23 ⟹ 6.0
09	- [2]	Not used	-
10	13	Blower control voltage, e.g. 08 °0 (min) - 60 °0 (max) corresponds to 0.8 - 6.0 volts	23 ⟹ 20.0
20	- [2]	Control current for auxliary fan e.g. 7 corresponds to 7 mA	23 ⟹ 16.0
21	12	Engine speed, e.g. 00 .. 99 (x 100) corresponds to 9900 rpm	23 ⟹ 10.0
22	11	Vehicle speed 155 (km/h)	23 ⟹ 10.0
23	14	Terminal 58d e.g. 99 corresponds to 99 % battery voltage	-
24	-	Battery voltage e.g. 12.5 = 12.5V	23 ⟹ 1.0
40	[3]	Software status e.g. 02	-

[1]   Observe Preparation for Test.
[2]   Activate menu
[3]   Control module identification

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

Display code in 🖩 N22 window		Possible cause	Test step/Remedy [1]
41	[3]	Hardware status e.g. 08	-
42	[2]	Version code 1. number code e.g. 03	-
43	[2]	Version code 2. number code e.g. b – C = benzin (gasoline)	-
50	-	not used	-
51	-	not used	-
52	-	Nominal value (temperature selection)	-
54	15	A/C compressor emergency shut off e.g. OFF	23 ⟹ 23.0
60	[2]	Roof e.g. OPE = open, CLO = closed	23 ⟹ 13.0
61	[2]	Left air outlet, potentiometer voltage e.g. 2.9 V	23 ⟹ 27.0
62	[2]	Vacuum actuator 46, feedback potentiometer voltage e.g. 0.9 V	23 ⟹ 24.0
63	[2]	Center air outlet, potentiometer voltage e.g. 2.9 V	23 ⟹ 28.0
64	[2]	Vacuum actuator 47, feedback potentiometer voltage e.g. 0.9 V	23 ⟹ 25.0
65	[2]	Right air outlet, potentiometer voltage e.g. 2.9 V	23 ⟹ 29.0
66	[2]	Vacuum actuator 48, feedback potentiometer voltage e.g. 0.9 V	23 ⟹ 26.0

[1]   Observe Preparation for Test.
[2]   Activate menu.
[3]   Control module identification.
[4]   Version coding menu.

Version Coding

Reading Version Code

1. Turn ignition **ON**.

2. Press **REST** > 6 secs, press ❄ + to set display to "42".

3. The the version code will appear in the display window.
   If the version code is not correct for the vehicle, the version code must be reprogrammed (see table).
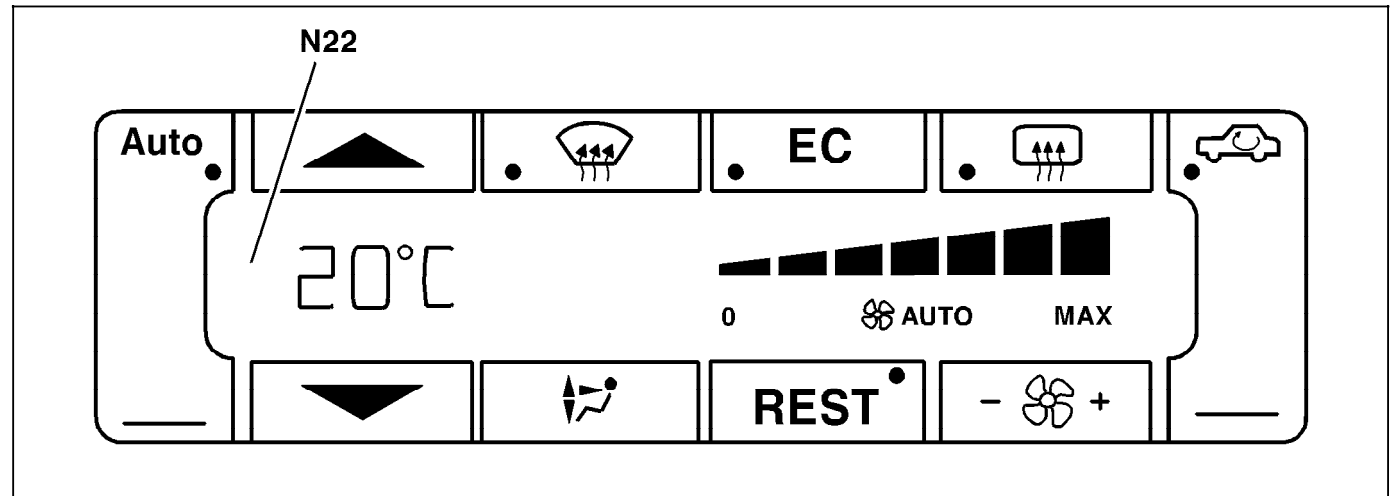
4. To end press **REST**.

Figure 1

P83.40-2028-04

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] flashes at one cycle per minute.
   - 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" (thereafter, the programming mode is blocked).

6.   Enter version code by pressing [EC]. A previously stored version code is thereby erased.

7.   Turn ignition: **OFF** to end version code programming.

Version Coding

1. Numerical Value	🖳	Preliminary setting
COD	COD	New, not yet programmed control module.
00	0	Delivery status, model 202
03	3	Serial interface K1 and K2, model 129

Diagnosis – Diagnostic Trouble Code (DTC) Memory

|i|

- 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. The stored DTC's will remain in memory even with the vehicle battery disconnected.
- The DTC memory differentiates between current and intermittent faults.
- All DTC's can also be read with the Hand-Held Tester (HHT).
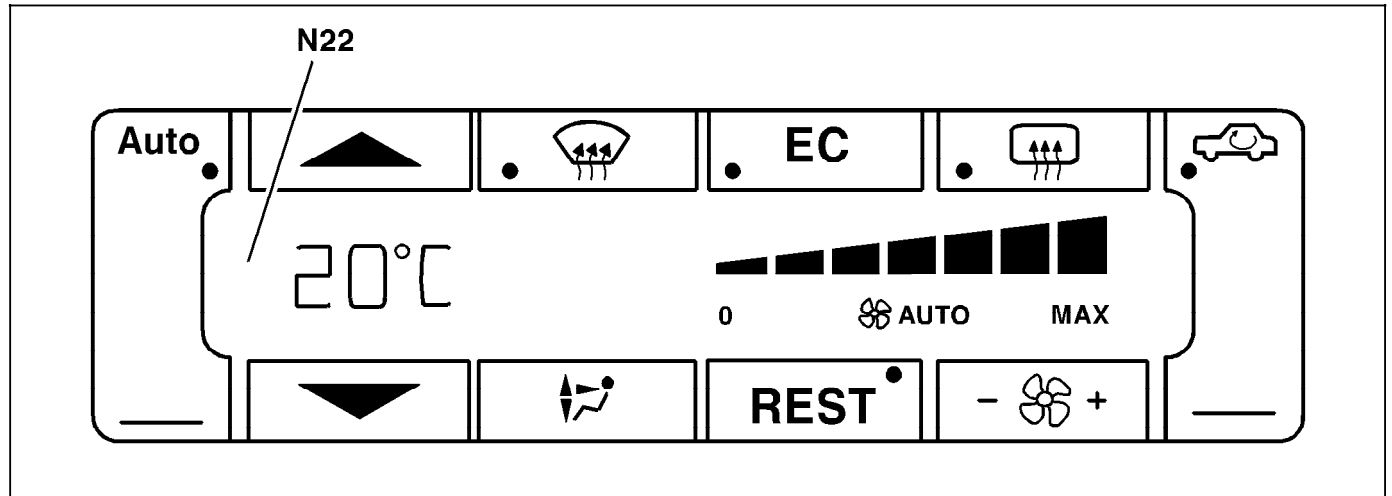
Figure 1

P83.40-2028-04

Diagnosis – Diagnostic Trouble Code (DTC) Memory

Preparations for DTC Readout

1. Review 11, 12, 14, 15, 20, 21, 22, 31, 32, 41

2. Ignition: **ON**

3. Temperature selector ″LO″.

4. Within 20 seconds press ▦ and ▦ simultaneously for more than 5 seconds.

5. The LED in ▦ flashes and the display reads ″di A″.

6. Press **AUTO** repeatedly until all DTC's are displayed. Record each DTC as it is displayed. The current faults (refer to table) are displayed first, next, the intermittant failures (e.g. 45 °5) are displayed in the display window next to the ▦ symbol. End ° will apppear after the last DTC is displayed.
   Press **AUTO** again, dEl (delete, erase) will be displayed.

7. To erase: Press ▼ and simultaneously for more than 5 seconds and the display shows "-- -".
   To cancel erase: By pressing **AUTO** the current faults will appear again.

8. Turn ignition **OFF** to end test.

🛈

Due to instrument cluster (IC) serial interface K1, K2; DTC's may be stored in IC memory, therefore readout and erase DTC memory.
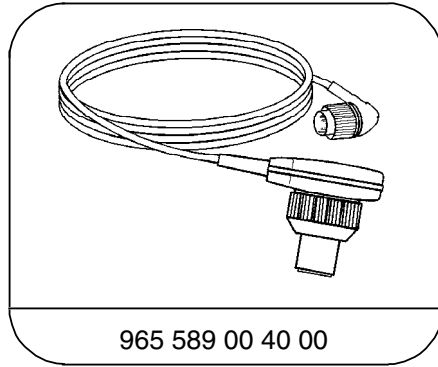
Diagnosis – Diagnostic Trouble Code (DTC) Memory

Special Tools
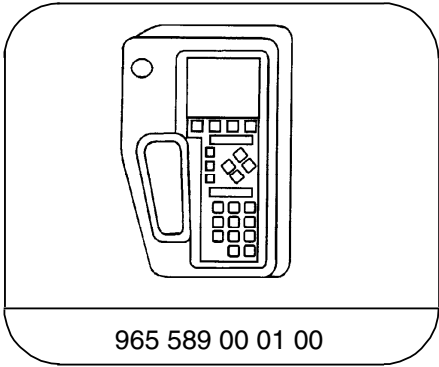
965 589 00 01 00	965 589 00 40 00
Hand-Held-Tester	Test cable

Diagnosis – Diagnostic Trouble Code (DTC) Memory

Diagnostic trouble code (DTC) N22		Possible cause	Test step/Remedy [1]
-	-	No malfunction in system	–
226	B1226	In-car temperature sensor (B10/4)	23⇒ 4.0
227	B1227	Outside temperature indicator temperature sensor (B14)	23⇒ 10.0
228	B1228	Left heater core temperature sensor (B10/2)	23⇒ 7.0
230	B1230	Evaporator temperature sensor (B10/6)	23⇒ 5.0
231	B1231	ECT sensor (B11/4)	23⇒ 10.0
232	B1232	Refrigerant pressure sensor (B12)	23⇒ 8.0
233	B1233	Refrigerant temperature sensor (B12/1)	23⇒ 6.0
241	B1241	Refrigerant fill	23⇒ 6.0, 8.0
416	B1416	Coolant circulation pump (M13)	23⇒ 18.0
417	B1417	Automatic A/C monovalve (Y19)	23⇒ 19.0

[1]   Observe Preparation for Test, see 22.

Diagnosis – Diagnostic Trouble Code (DTC) Memory

Diagnostic trouble code (DTC) N22	📟	Possible cause	Test step/Remedy [1]
419	B1419	Electromagnetic clutch (A9k1)	23⇒ 21.0
420	B1420	Idle speed increase	-
421	B1421	AIR control module (N65/1)	23⇒ 16.0
422	B1422	Serial interface K1	23⇒ 10.0
423	B1423	Switchover valve block (15 connection multiplex) (Y11)	23⇒ 22.0
459	B1459	Serial interface K2	23⇒ 23.0

[1]   Observe Preparation for Test, see 22.

Electrical Test Program – Component Locations
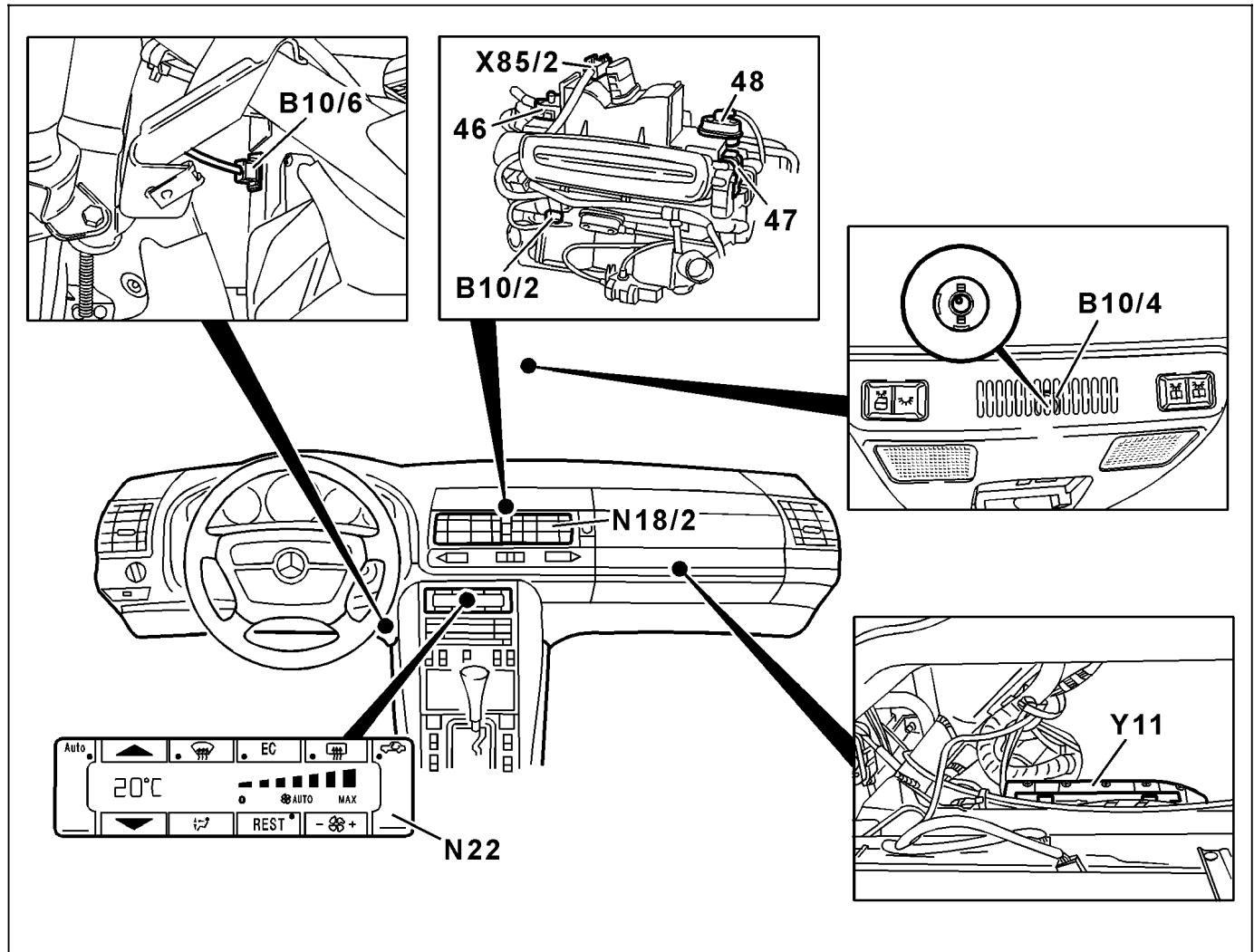
Component locations in passenger compartment

Figure 1

B10/2   Left heater core temperature sensor
B10/4   In-car temeprature sensor with aspirator
B10/6   Evaporator temperature sensor
N18/2   Center and side air outlet flap control module
         (Tempmatic A/C, automatic A/C)
N22   A/C pushbutton control module
Y11   Switchover valve block

P83.40-0360-06

Electrical Test Program – Component Locations
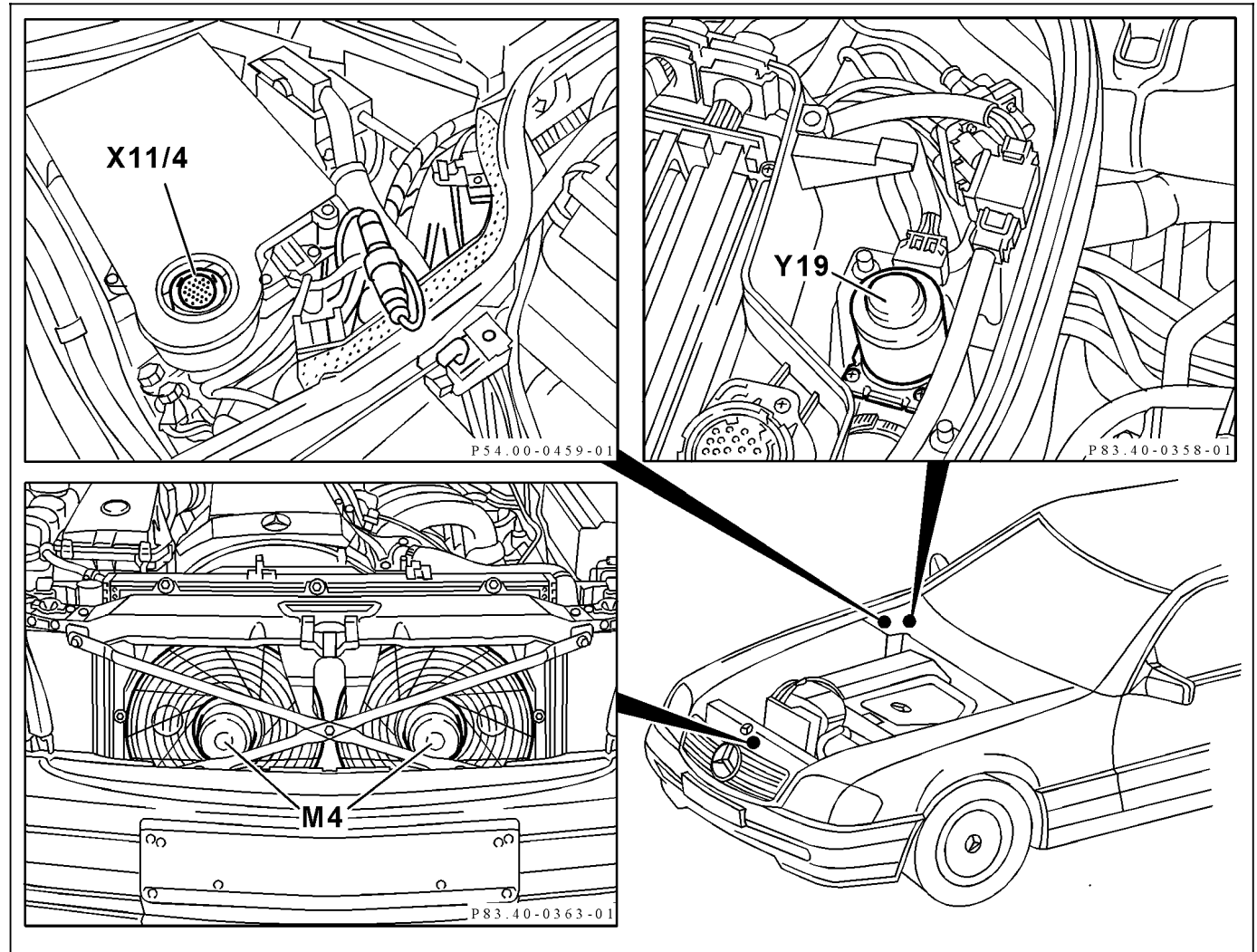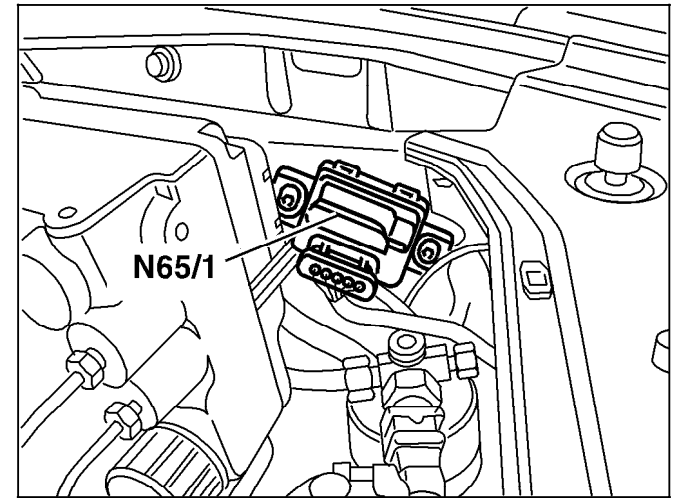
Component locations in engine compartment

Figure 2

M4   Auxiliary fan
X11/4   Data link connector (DTC readout)
Y19   Automatic A/C monovalve

P83.40-0361-06

Electrical Test Program – Component Locations

Component locations in engine compartment

P83.40-2046-01

Figure 3

N65/1   AIR control module

Electrical Test Program – Connection of Components

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The arrows (Figure 1) indicate the direction of the information or activation.

**The following signals are carried by the serial interface K1:**
Outside air temperature, engine coolant temperature, vehicle speed, engine speed (RPM), instrument cluster illumination (circuit 58d), °F/°C, acceleration recognition, A/C compressor emergency shut off.

The following signals are carried by the serial interface K2:
Idle speed stabilization
Refrigerant pressure

Figure 1

A1	Instrument cluster
A9	A/C compressor
B12	Refrigerant pressure sensor
B12/1	Refrigerant temperature sensor
B11/4	ECT sensor (DFI, IFI)
L5	CKP sensor
N3	Injection system control module
N47	Traction system control module
N10/2	Combination relay module
N22	A/C pushbuttonm control module
N65/1	AIR control module
M4	Auxiliary fan
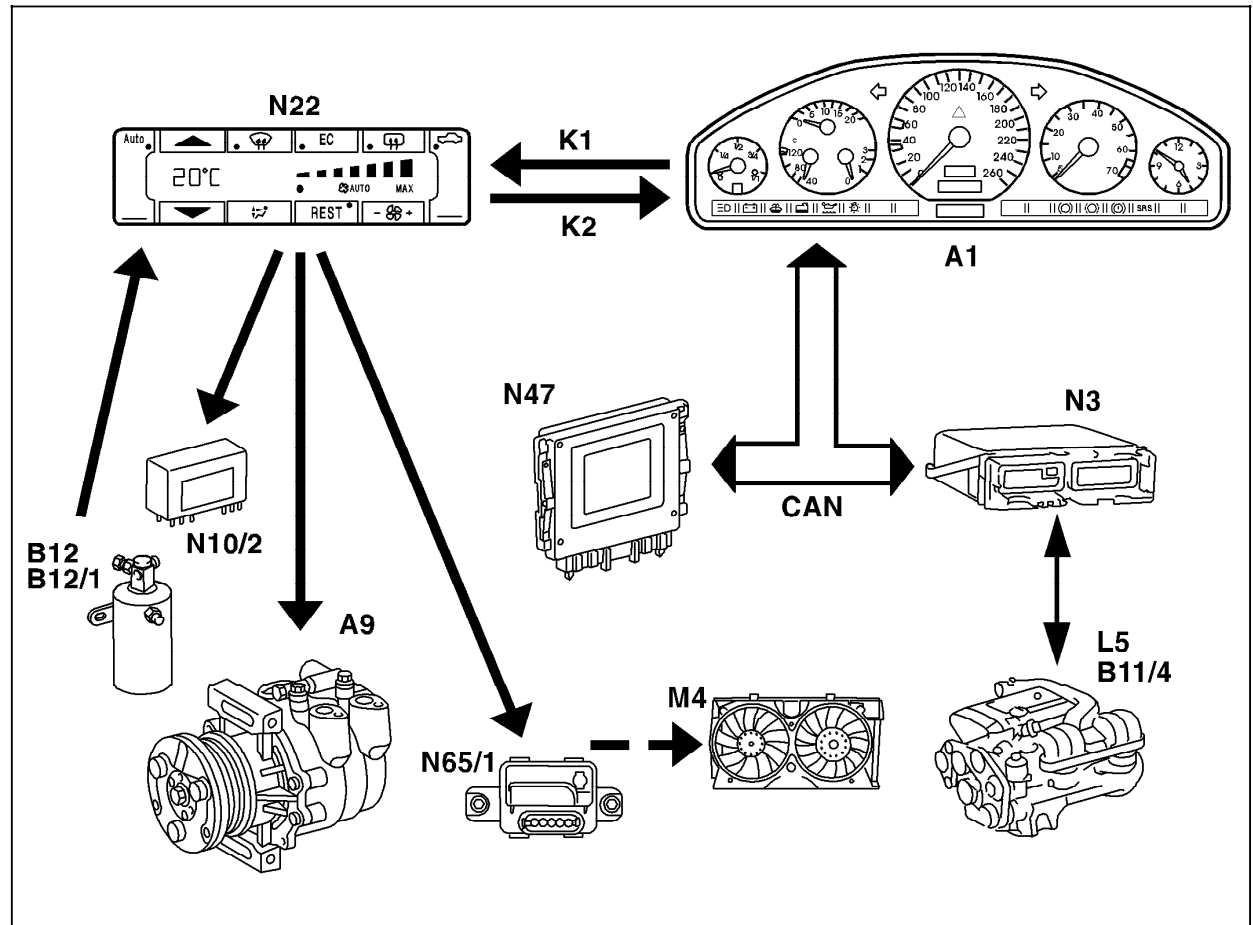
P83.40-2047-06

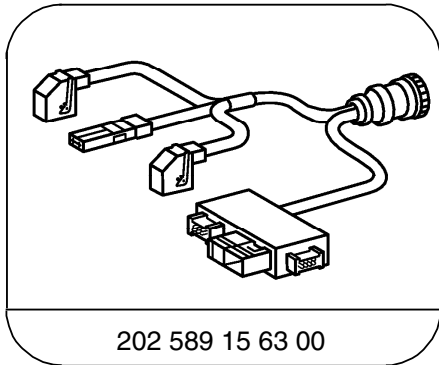**Electrical Test Program – Preparation for Test**

1.   Review 11, 12, 14, 15, 20, 21, 22, 31, 32,
       41

Electrical wiring diagrams :
Electrical Troubleshooting Manual, Model 129

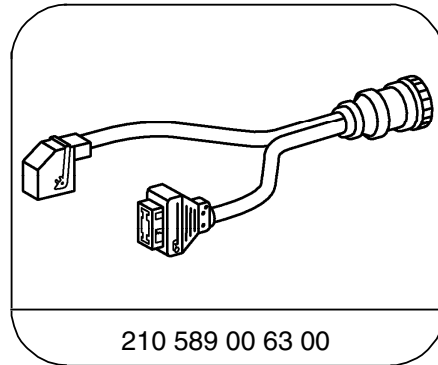2.   Remove A/C pushbutton control module (N22), see AR83.40-P-6350C.

| i |

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

Special Tools

| 202 589 15 63 00 | 210 589 00 63 00 | 124 589 00 21 00 |
| 18-pin and 12-pin CAN test cable | 29-pin test cable | 35-pin socket box |
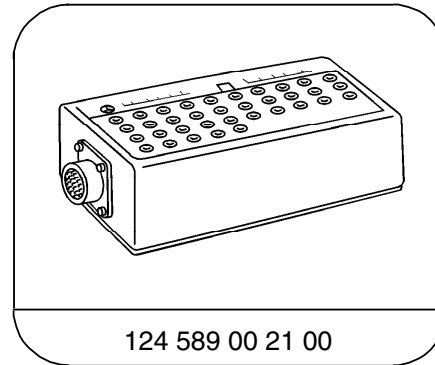
Test equipment; See MBUSA Standard Service Equipment Program

Description	Brand, model, etc.
Multimeter [1]	Fluke models 23, 77 III, 83, 85, 87

[1]   Available through the MBUSA Standard Equipment Program.

Electrical Test Program - Preparation for Test

Connection Diagram – Socket Box
Test Cable: 202 589 15 63 00
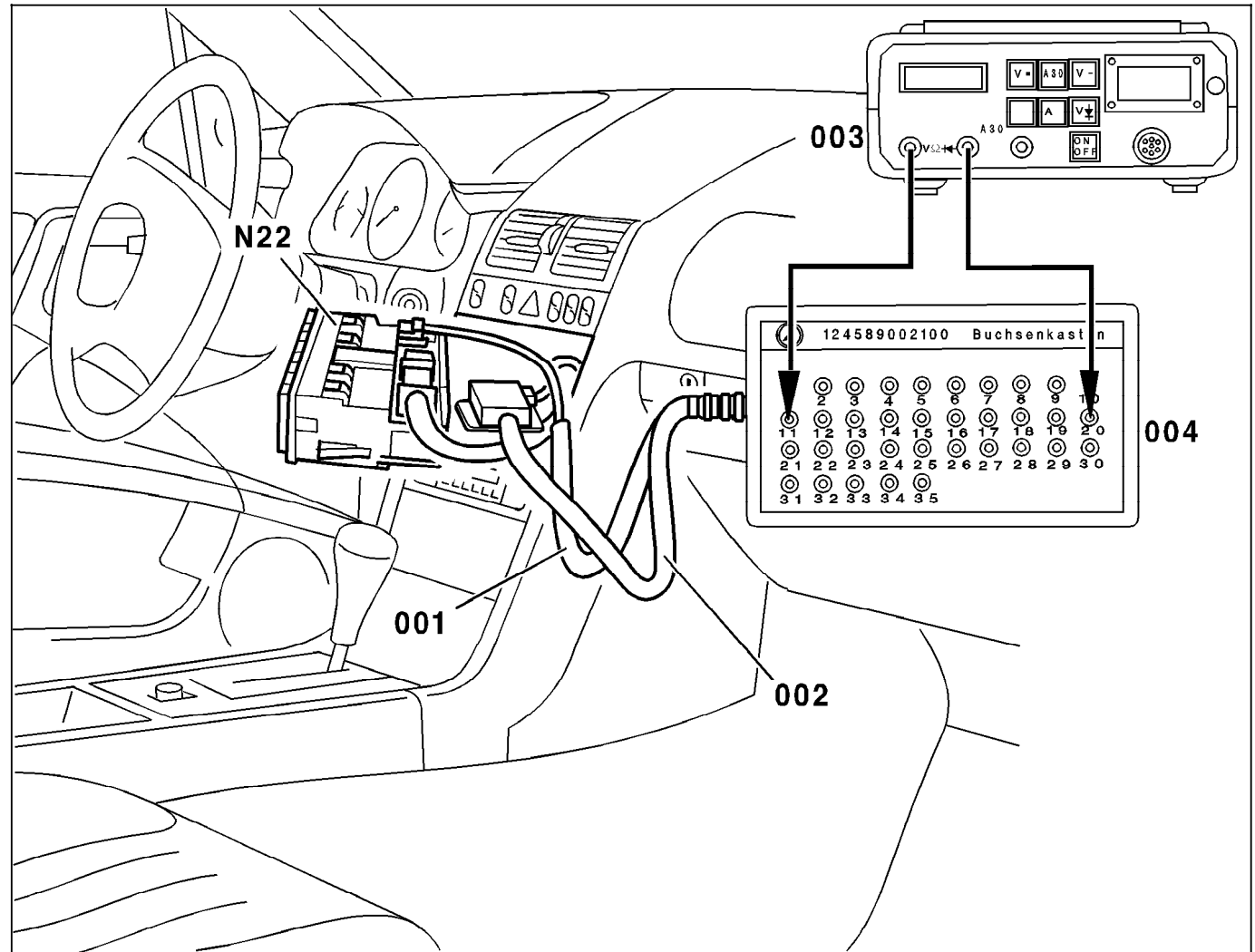
Figure 1

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

P83.40-0314-06

Electrical Test Program - Preparation for Test

Connection Diagram – Socket Box
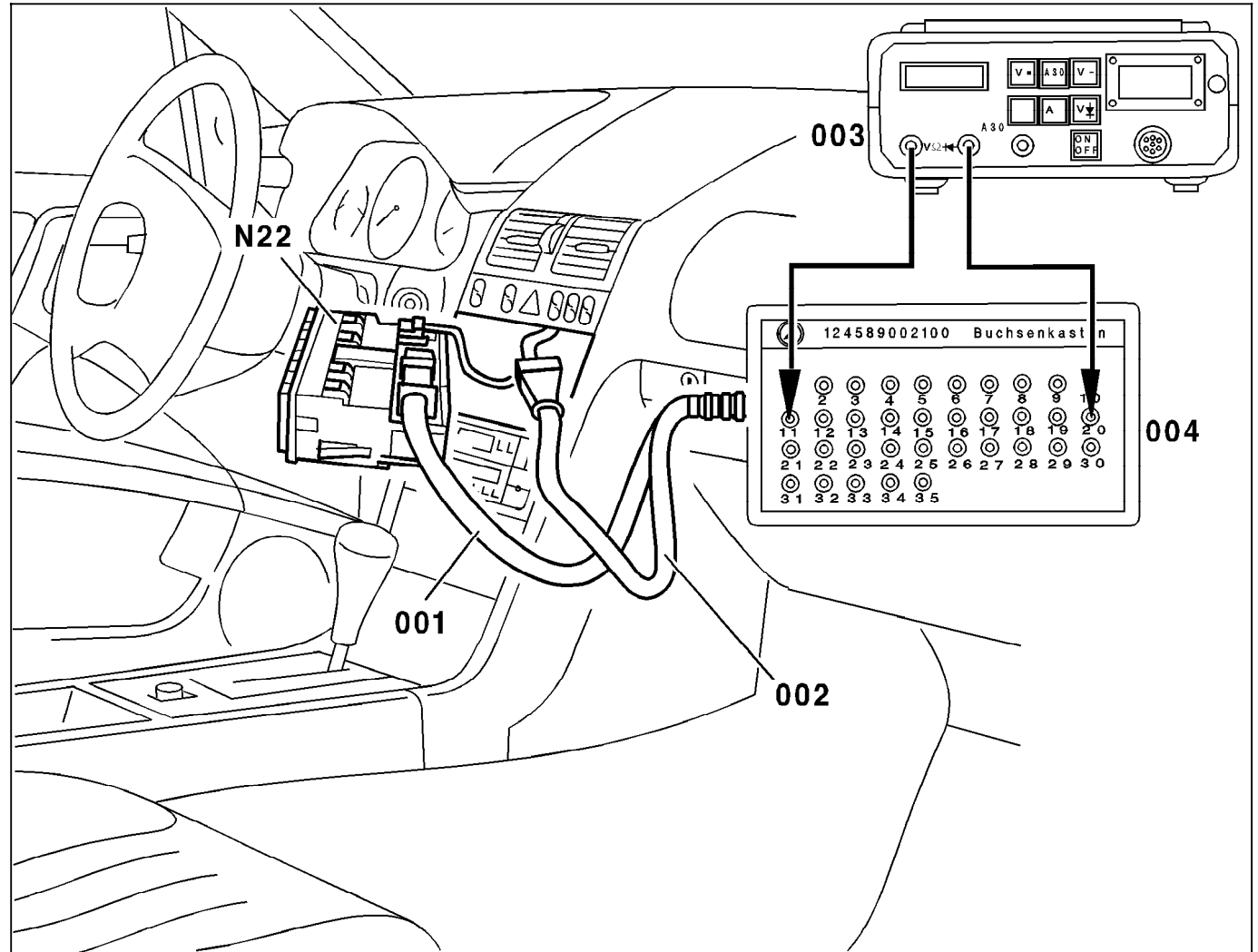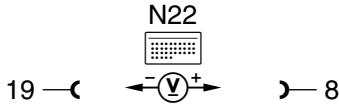**Test Cable: 202 589 00 63 00**
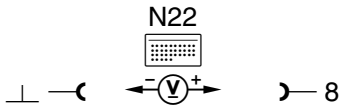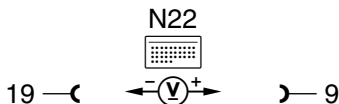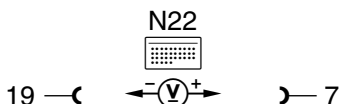
Figure 2

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

P83.40-0315-06
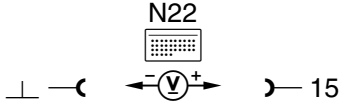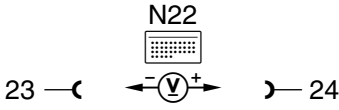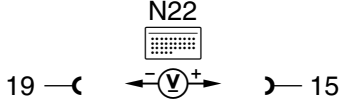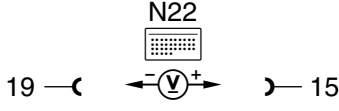
Electrical Test Program – Test

| ⇒	📟	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
1.0		**A/C pushbutton control module (N22)** Voltage supply Circuit 30	N22 19 —(⁻(V)⁺)— 8	🔲 on right connector see 22	11 – 14 V	Wiring, Circuit 31, ⇒ 1.1
1.1		**Circuit 30**	N22 ⊥ —(⁻(V)⁺)— 8		11 – 14 V	Wiring.
2.0		**Voltage supply Circuit 15**	N22 19 —(⁻(V)⁺)— 9	🔲 on right connector see 22 Ignition: **ON**	11 – 14 V	Wiring.
3.0		**Voltage supply Circuit 15x**	N22 19 —(⁻(V)⁺)— 7	🔲 on **right** connector see 22 Ignition: **ON**	11 – 14 V	Wiring.
4.0		**In-car temperature sensor (B10/4) with aspirator** Resistance	N22 23 —(⁻(Ω)⁺)— 16	Ignition: **OFF** 🔲 on left connector see 22 Disconnect N22 from 🔲.	°C ≙ kΩ 10≙19.0 – 21.0 20≙12.0 – 13.0 30≙7.5 – 8.5 45≙4.0 – 4.5	Wiring, B10/4
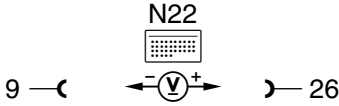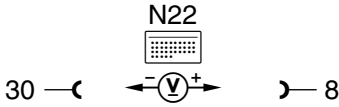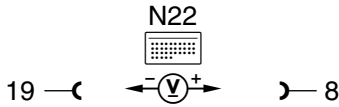
Electrical Test Program – Test

⇒	🖩	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
5.0	B1230	**Evaporator temperature sensor (B10/6)** Resistance	N22 23 —◖ ←⁻Ω⁺→ ◗— 19	Ignition: **OFF** ▦ on left connector see 22 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	Wiring, B10/6
6.0	B1233	**Refrigerant temperature sensor (B12/1)** Resistance	N22 23 —◖ ←⁻Ω⁺→ ◗— 19	Ignition: **OFF** ▦ on left connector see 22 Disconnect N22 from ▦.	° C ≙ k Ω 20 ≙ < 13 40 ≙ < 5.5 50 ≙ < 3.7 60 ≙ < 2.5 70 ≙ < 1.8	Wiring, B10/6
7.0	B1228	**Heater core temperature sensor (B10/2), left** Resistance	N22 23 —◖ ←⁻Ω⁺→ ◗— 17	Ignition: **OFF** ▦ on left connector see 22 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	Wiring, B10/2
8.0	B1232	**Refrigerant pressure sensor (B12)** Voltage supply	N22 23 —◖ ←⁻V⁺→ ◗— 31	▦ on left connector see 22 Ignition: **ON**	4.75 – 5.25 V	Wiring, B12, N22

Electrical Test Program – Test

⇒	🖩	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
9.0		**Diagnostic output** Voltage	N22 ▦ ⊥ —(←⁻Ⓥ⁺►)— 15	▦on left connector see 22 Ignition: **ON**	11 – 14 V	Wiring, N22
10.0	BI422	**Serial Interface (K1)** Voltage	N22 ▦ 23 —(←⁻Ⓥ⁺►)— 24	▦ on left connector see 22 Ignition: **ON**	> 4 V	Wiring, See 21
11.0		**"Cold" function indicator lamp (LED, blue) (N18/2)** Voltage	N22 ▦ 19 —(←⁻Ⓥ⁺►)— 15	▦ on left connector see 22 Ignition: **ON** **Blue LED** in button is illuminated	> 3.5 V	Wiring, N18/2
12.0		**"Warm" function indicator lamp (LED, red) (N18/2)** Voltage	N22 ▦ 19 —(←⁻Ⓥ⁺►)— 15	▦ on left connector see 22 Ignition: **ON** **Red LED** in button is illuminated	> 3.5 V	Wiring, N18/2

Electrical Test Program – Test

⇒	🗔	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
13.0		**Soft top activation** Voltage	N22 ▦ 9 —◖ ←⁻Ⓥ⁺→ ◗— 26	▦ on left connector see 22 Ignition: **ON** **Soft top closed** **Soft top open**	 > 0.1 V > 10 V	Wiring.
14.0		**"Cold" pushbutton (N18/2s1)** Voltage	N22 ▦ 30 —◖ ←⁻Ⓥ⁺→ ◗— 8	▦ on left connector see 22 Ignition: **ON** Press and hold **blue** pushbutton at center vent	10 V	Wiring, N18/2
15.0		**"Warm" pushbutton (N18/2s1)** Voltage	N22 ▦ 19 —◖ ←⁻Ⓥ⁺→ ◗— 8	▦ on left connector see 22 Ignition: **ON** Press and hold **red** pushbutton at center vent	8.5 V	Wiring, N18/2
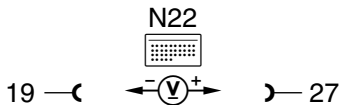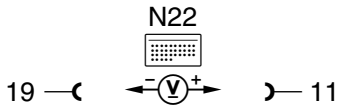
Electrical Test Program – Test

⇒	🖩	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
16.0	B1421	**Auxiliary fan (M4) Activation** Voltage	N22 19 —(←=ⓥ+→)— 16	🖳 on right connector see 22 Ignition: **ON** Press **AUTO** and 🔍 > 10 secs. **End test**: Press **AUTO** and 🔍 > 10 secs.	> 2 V Auxliary fan (M4) runs.	Wiring, N22, N65/1
17.0		**A/C Pushbutton control module (N22), 12 V output** Voltage	N22 19 —(←=ⓥ+→)— 18	🖳 on right connector see 22 Ignition: **ON**	11 - 14 V	Wiring, N22
18.0	B1416	**Coolant circulation pump (M13)** Amperes	M13 18 —(—■—)— 8 19—(←=Ⓐ+→)— 20	🖳 on right connector see 22 Ignition: **OFF** Disconnect N22 from 🖳.	< 1 A	Wiring, M13
19.0	B1417	**Automatic A/C monovalve (Y19)** Resistance	Y19 18 —(←=Ω+→)— 18	Ignition: **OFF** 🖳 on right connector see 22 Disconnect N22 from 🖳.	8- 15 Ω	Wiring, Y19
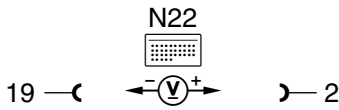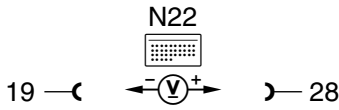
Electrical Test Program – Test

⇒	🖩	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
20.0		**Blower regulator (A32n1) Control** Voltage	N22 ⌨ 19 —❨ ←⁼Ⓥ⁺→ ❩— 1	⌨ on right connector see 22 Ignition: **ON** 🌀 MIN MA	 > 0.7 V > 0.5 V	Wiring, A32
21.0	B1419	**A/C compressor (A9) activation** Voltage	N22 ⌨ 19 —❨ ←⁼Ⓥ⁺→ ❩— 25	⌨ on right connector see 22 Engine: **At Idle** A/C compressor: EC A/C compressor: 🌫	 < 1 V 11 – 14 V	Wiring, N22
22.0	B1423	**Switchover valve block (Y11)**	N22 ⌨ 19 —❨ ←⁼Ⓥ⁺→ ❩— 23	⌨ on right connector see 22 Ignition: **ON**	> 8.0 V	Wiring, Y11
23.0		**Serial Interface (K2)** Voltage	N22 ⌨ 23 —❨ ←⁼Ⓥ⁺→ ❩— 24	⌨ on right connector see 22 Ignition: **ON**	> 1.5 V	Wiring, see 21
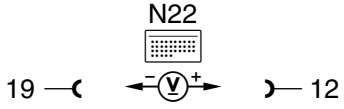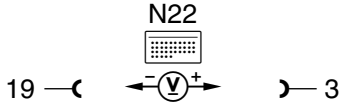
Electrical Test Program – Test

⇒	📟	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
24.0	B1452	**Left air outlet feedback potentiometer (R23/1)** Voltage	N22 19 —⟨ ←⁻(V)⁺→ ⟩— 27	▭ on right connector see 22 Ignition: **ON** Left adjustment wheel: End stop right (closed) End stop left (open)	0.7 – 1.1 V 3.5 – 4.8 V (infinitely variable)	Wiring, R23/1, Vacuum actuator 46
25.0	B1457	**Center air outlet feedback potentiometer (R23/3)** Voltage	N22 19 —⟨ ←⁻(V)⁺→ ⟩— 11	▭ on right connector see 22 Ignition: **ON** Center adjustment wheel: End stop right (closed) End stop left (open)	0.8 – 1.2 V 3.5 – 4.5 V (infinitely variable)	Wiring, R23/3, Vacuum actuator 47

Electrical Test Program – Test

⇒	📟	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
26.0	B1458	**Right air outlet feedback potentiometer (R23/2)** Voltage	N22 19 —(←−(V)+→)— 2	▦ on right connector see 22 Ignition: **ON** Right adjustment wheel: End stop right (closed) End stop left (open)	0.8 – 1.2 V 3.5 – 4.5 V (infinitely variable)	Wiring, R23/2, Vacuum actuator 48
27.0	B1453	**Left air outlet potentiometer** Voltage	N22 19 —(←−(V)+→)— 28	▦ on right connector see 22 Ignition: **ON** Left adjustment wheel: End stop right (closed) End stop left (open)	0.6 – 0.9 V 4.0 – 4.5 V (infinitely variable)	Wiring, N18/2

Electrical Test Program – Test

| ⇒	🖩	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
28.0	B1454	**Center air outlet potentiometer** Voltage	N22 ⬛ 19 —(←=(V)+→)— 12	⬛ on right connector see 22 Ignition: **ON** Center adjustment wheel: End stop right (closed) End stop left (open)	0.6 – 0.9 V 3.5 – 4.5 V (infinitely variable)	Wiring, N18/2
29.0		**Right air outlet potentiometer** Voltage	N22 ⬛ 19 —(←=(V)+→)— 3	⬛ on right connector see 22 Ignition: **ON** Right adjustment wheel: End stop right (closed) End stop left (open)	0.6 – 0.9 V 4.0 – 4.5 V (infinitely variable)	Wiring, N18/2

Pneumatic Test Program – Component Locations

P83.40-0354-13

P83.40-0365-13
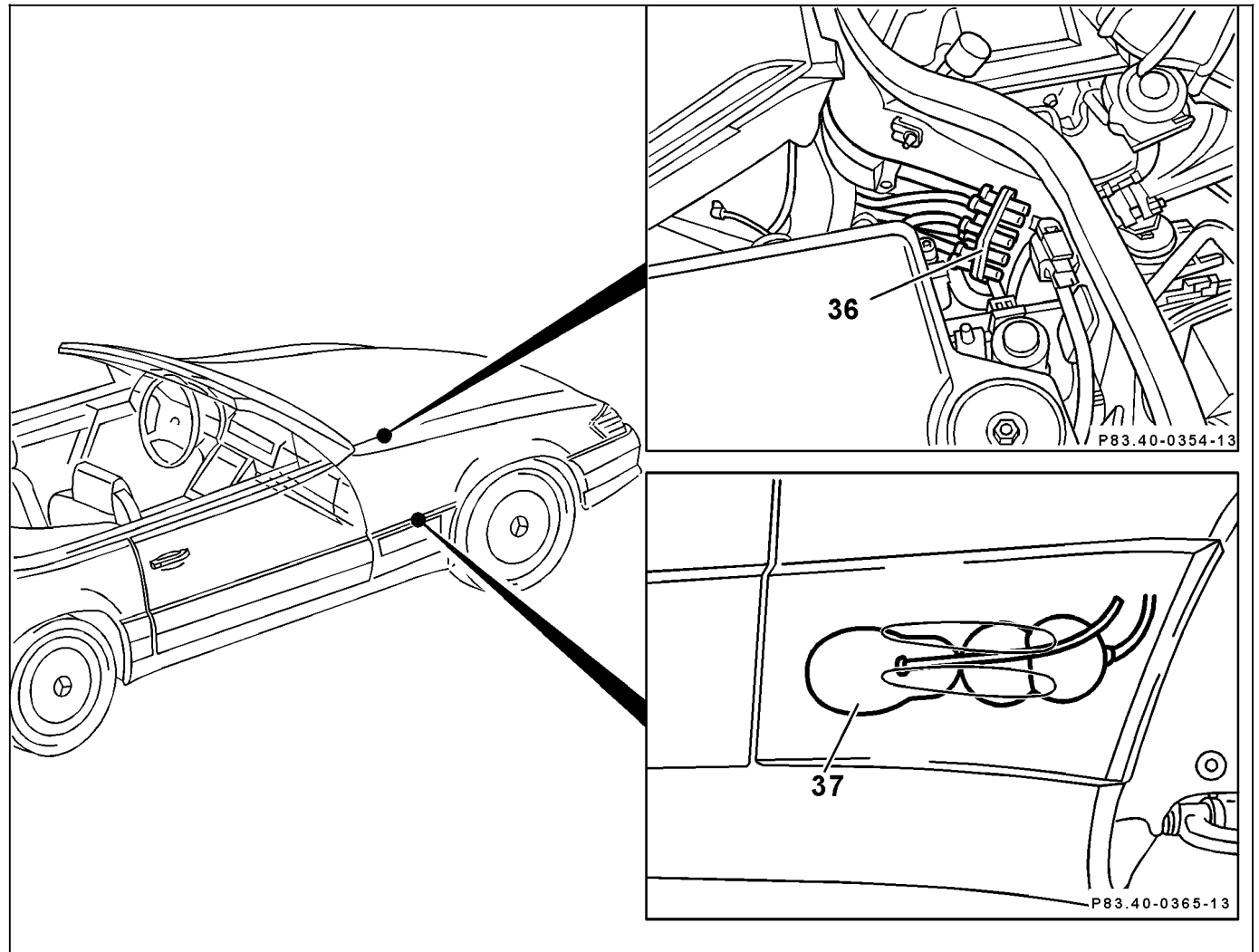
P83.40-0366-06

Figure 1

36   Vacuum distributor block
37   Vacuum reservoir

Pneumatic Test Program – Component Locations

Figure 2

36	Vacuum distributor block
38	Defroster flap vacuum actuator
39	Footwell flap vacuum actuator
41	Diverter flap vacuum actuator
42	Fresh/recirulating air flap vacuum actuator
43	Left main air flap vacuum actuator
44	Right main air flap vacuum actuator
45	Center air outlet blend air flap vacuum actuator
46	Left air outlet vacuum actuator (open-close)
47	Center air outlet vacuum actuator (open-close)
48	Right side air outlet vacuum actuator (open-close)
Y11	Valve block (15 connecter)

hbl	Light blue
drt	Dark red
ge	Yellow
gr	gray
mgn	Medium green
rt	Red
ws	White
dgn	Dark green
gt	gray
sw	schwarz
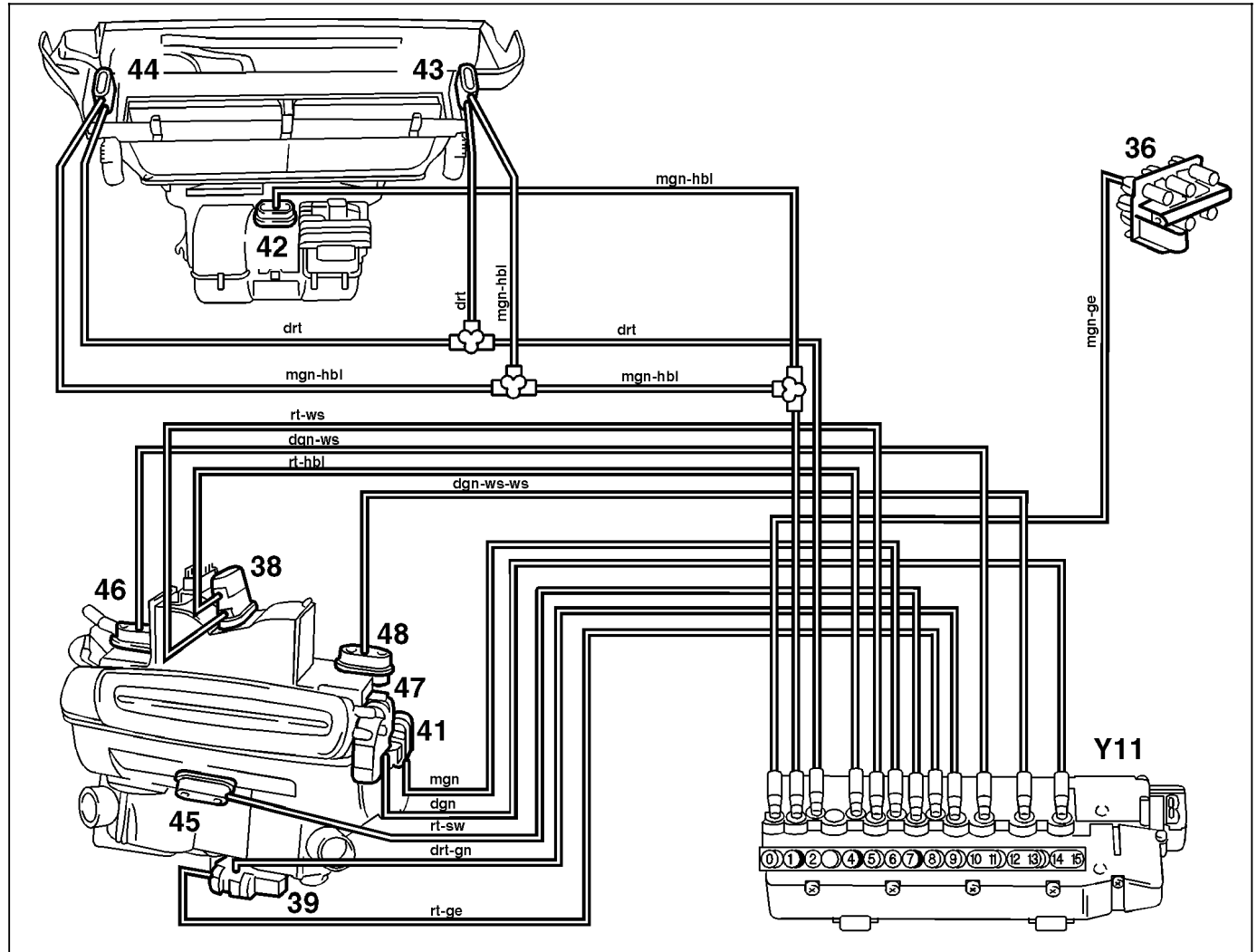
P83.40-0353-06

Pneumatic Test Program - Test

Preparation for Test

1. Review 11, 12, 14, 15, 20, 21, 22, 31, 32,
   41
2. Disconnect all vacuum lines at vacuum distributor block (36).

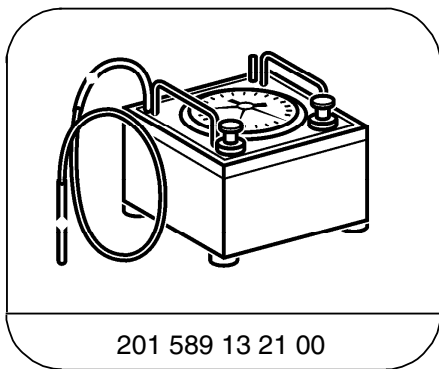3. Check gray vacuum line to intake manifold for leaks.

$\boxed{\mathbf{i}}$

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

Test equipment; See MBUSA Standard Service Equipment Program

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" **on** 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" **on** 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" **on** 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 3) 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)	Ignition: **OFF** medium green line (connection 5) on vacuum tester	Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum lines, Y11

Pneumatic Test Program – Test

Preparation for Test

B.   Vacuum system

1.   Ignition: **ON**

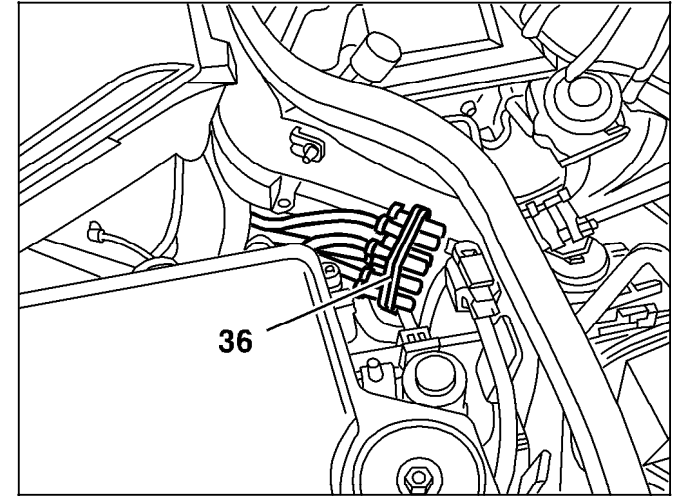2.   Medium green line (connection "5") on vacuum tester.

Figure 2   P83.40-2049-01

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 air outlet vacuum actuator, long stroke	Medium green line on vacuum tester	Ignition: **ON** Press 🔳 Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 38
1.1	Defroster air outlet vacuum actuator, long and short stroke	Medium green line on vacuum tester	Ignition: **ON** Press 🔳 Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 38
2.0	Diverter valve flap - center air outlet	Medium green line on vacuum tester	Ignition: **ON** Press 🔳 Temperature selector "⅃0" Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 41
3.0	Blend air flap - center air outlet	Medium green line on vacuum tester	Ignition: **ON** Press 🔳 Evacuate with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 45 and 46
4.0	Footwell flap, long stroke	Medium green line on vacuum tester	Ignition: **ON** Press 🔳 Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 39

Pneumatic Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
4.1	Footwell flap vacuum actuator, long and short stroke.	Medium green line on vacuum tester	Ignition: **ON** Press 🔲 Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 39
5.0	Fresh/recirculating air flap vacuum actuator.	Medium green line on vacuum tester	Ignition: **ON** 🔲 Illuminates Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 42
6.0	Left air outlet vacuum actuator.	Medium green line on vacuum tester	Ignition: **ON** Left side air outlet adjuster closed. Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 46
7.0	Center air outlet vacuum actuator.	Medium green line on vacuum tester	Ignition: **ON** Center air outlet adjuster closed. Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 47.

Pneumatic Test Program – Test

⇒	Test scope	Test connection	Test condition	Nominal value	Possible cause/Remedy
8.0	Right side air outlet vacuum actuator.	Medium green line on vacuum tester	Ignition: **ON** Right side air outlet adjuster closed. Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 48
9.0	Center air outlet, "Cold" pushbutton	Medium green line on vacuum tester	Ignition: **ON** "Cold" function indicator lamp in "cold" pushbutton (blue) illuminates. Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 41
10.0	Center air outlet, "Warm" pushbutton	Medium green line on vacuum tester	Ignition: **ON** "Warm" function indicator lamp in "warm" pushbutton (red) illuminates. Evacuate system with 300 mbar vacuum	30 mbar pressure increase in 1 minute	Vacuum line, Vacuum actuator 45

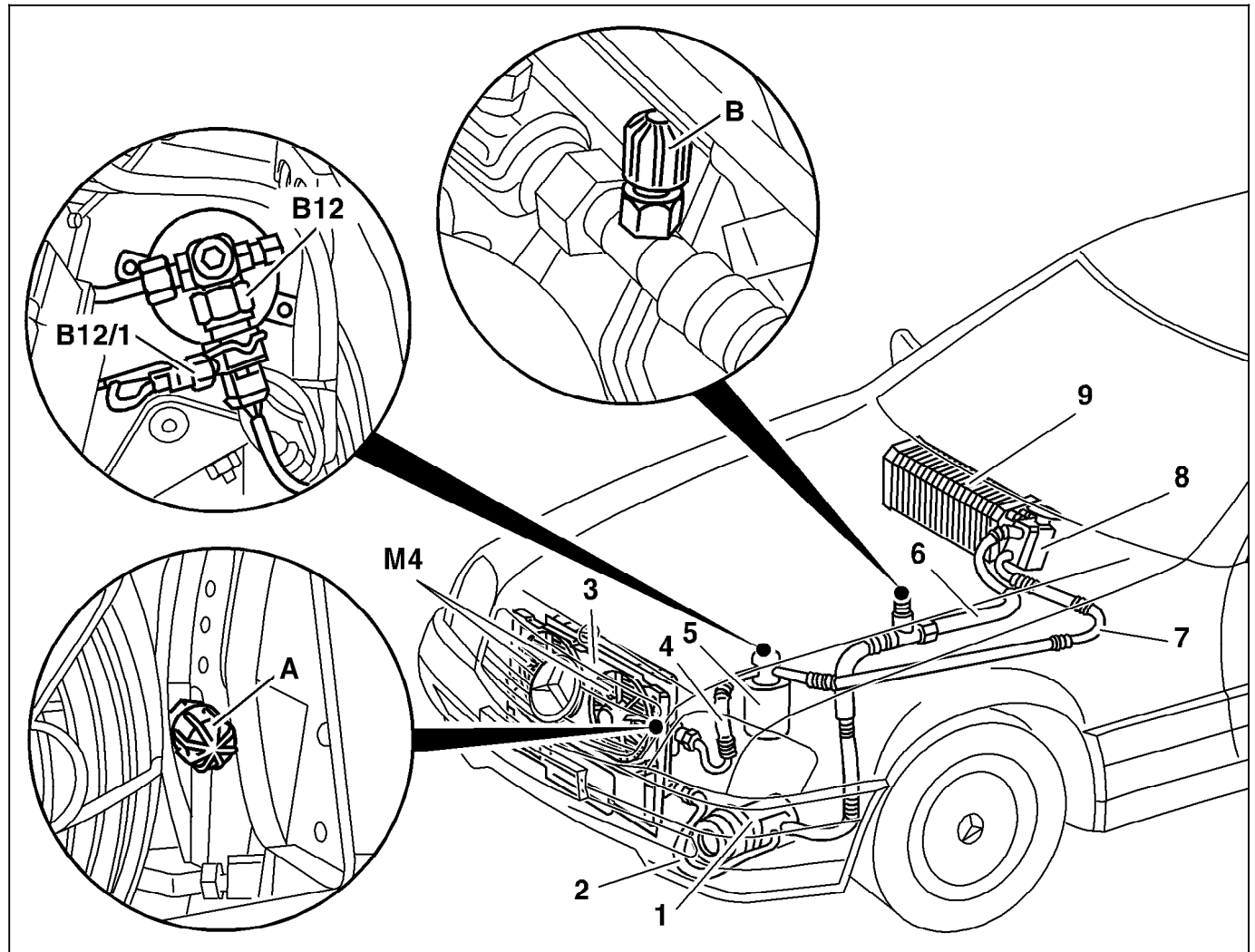## Refrigeration System Test Program – Component Locations

A/C Components locations

Figure 1

A	High pressure connection
B	Low pressure connection
B12	Refrigerant pressure sensor
B12/1	Refrigerant temperature sensor
M4	Auxiliary fan
1	A/C compressor
2	High pressure vapor line to condenser
3	Condenser
4	High pressure liquid line to receiver/dryer
5	Receiver/dryer
7	Low pressure line to evaporator
8	Expansion valve
9	Evaporator

P83.40-2048-06