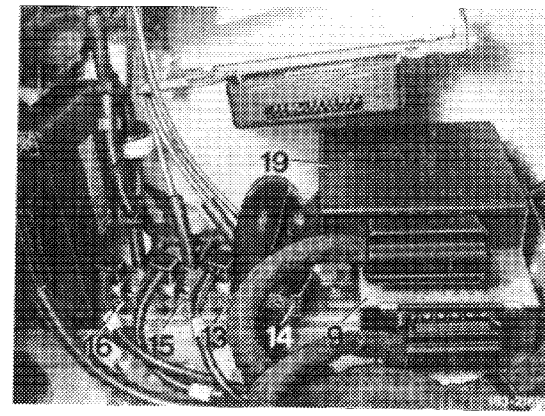
Note

Perform test programm in the event of unkown causes of trouble, customer complaints which are not clearly expressed and following repairs for guaranteeing all functions.

Prior to starting the following test, check all fuses for automatic climate control, auxiliary fan and blower motor. It is additionally recommended to perform a manual and optical function test of air flaps according to 83–601.

During electric test on 2-pole coupling of monovalve (with voltmeter, test lamp) be sure to avoid a short, since this may destroy the electronic switching unit for temperature control.



9 Electronic control unit for temperature control
19 Electronic switching unit for blower control

Test

Testing voltage supply and connecting lines 1 and 6

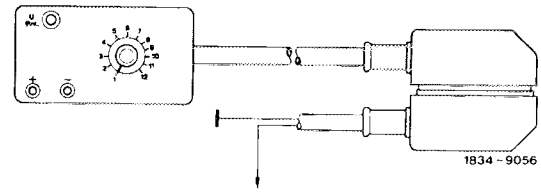
Switch on ignition.

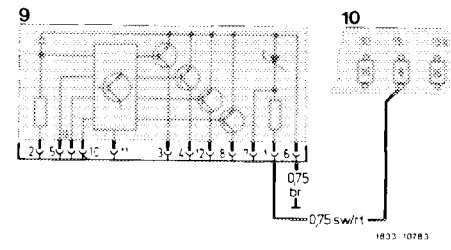
Position of adapter switch	Nominal value
1	> 11 V

Nominal value correct	Nominal value wrong

1. Test electric lines and fuses for correct connection and interruption.

2. Test battery for state of charge.





Wiring diagram for test step 1 with adapter

9 Electronic switching unit for temperature control
10 Fuse box

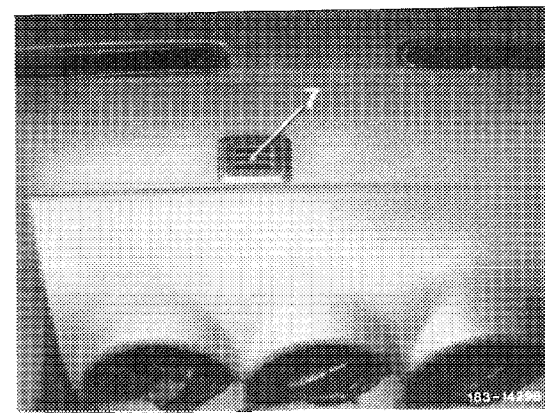
Testing in-car temperature sensor (7)

Remove 2-pole coupler from in-car temperature sensor (7) and connect additional line from adapter to in-car temperature sensor and to multimeter (volt-ohmmeter).

Battery disconnected, ignition switched on.

Ambient temperature	Nominal value ± 0.5 kΩ
15 °C	15.7 kΩ
25 °C	10.0 kΩ
35 °C	6.5 kΩ
60 °C	2.5 kΩ

Nominal value correct	Nominal value wrong



Renew in-car temperature sensor.

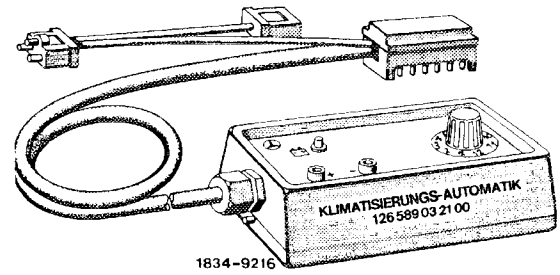
Testing connecting lines 6 and 10

Disconnect 2-pole coupler of auxiliary harness from in-car temperature sensor. Connect plug of additional line/adapter to 2-pole coupler of harness and bridge 2-pole coupler of auxiliary harness.

Battery disconnected, ignition switched on.

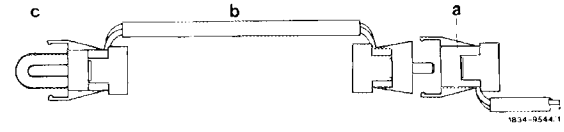
Position of adapter switch	Nominal value
2	0 Ω

Nominal value correct	Nominal value wrong

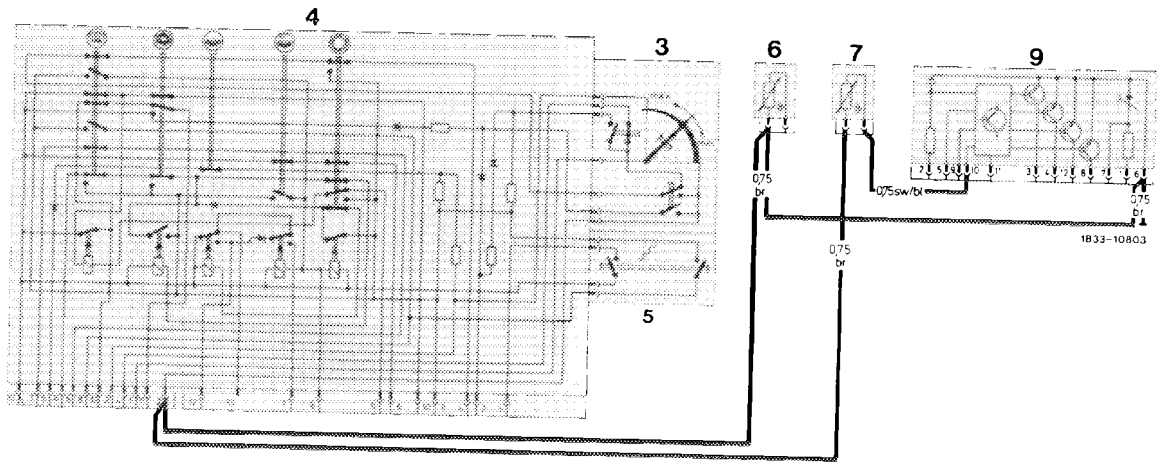


1. Check electric lines for correct connection.

2. Renew control unit.



a Coupler of harness in-car sensor
b Additional line of adapter
c Bridge



Wiring diagram for test step 2 with adapter

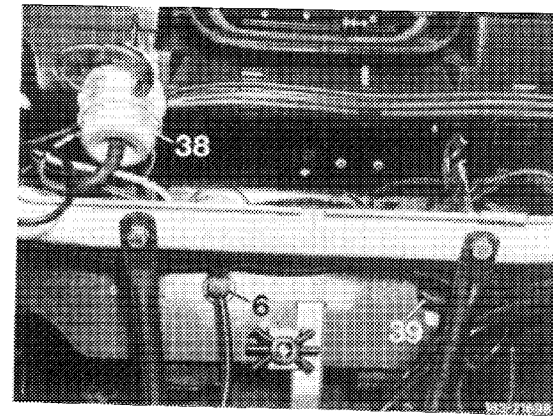
4 Pushbutton switching unit
6 Temperature sensor for heat exchanger
7 In-car temperature sensor
9 Electronic switching unit for temperature control

Testing temperature sensor (6) for heat exchanger and connecting lines 6 and 9

Disconnect additional line/adapter and plug back 2-pole coupler for in-car temperature sensor.

Battery disconnected, ignition switched on.

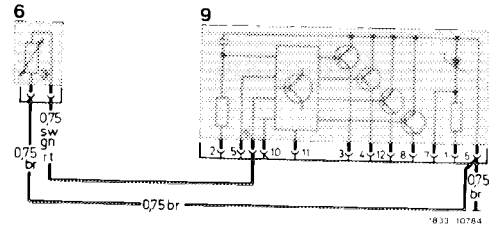
Position of adapter switch	Ambient temperature heat exchanger	Nominal value ± 0.5 kΩ
3	15 °C	15.7 kΩ
	25 °C	10.0 kΩ
	35 °C	6.5 kΩ
	80 °C Operating temperature	1.5 kΩ



Nominal value correct	Nominal value wrong

1. Check electric lines for correct connection.

2. Renew temperature sensor for heat exchanger.



Wiring diagram for test step 3 with adapter

6 Temperature sensor for heat exchanger
9 Electronic switching unit for temperature control

Testing temperature dial (3) and connecting lines 5 and 6

Battery disconnected, ignition switched on.
Function selection button „c" pushed.

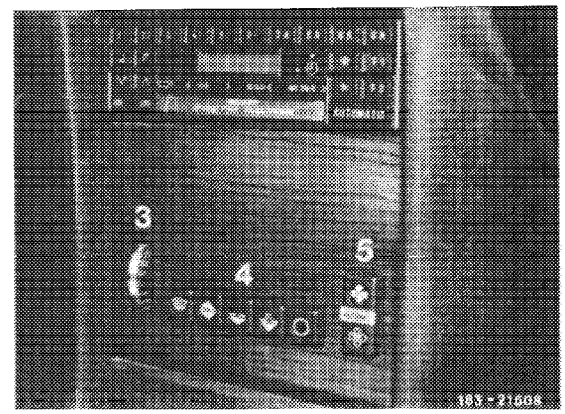
Position of adapter switch	Position of temperature dial	Nominal value ± 0.5 kΩ
4	„MIN" (engaged)	1.6 kΩ
	22 °C	3.15 kΩ
	„MAX" (engaged)	1.6 kΩ

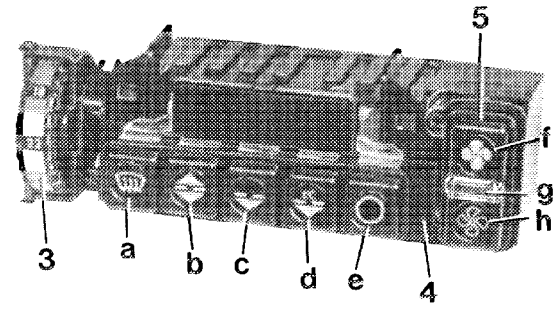
Nominal value correct	Nominal value wrong

1. Check electric lines for correct connection.

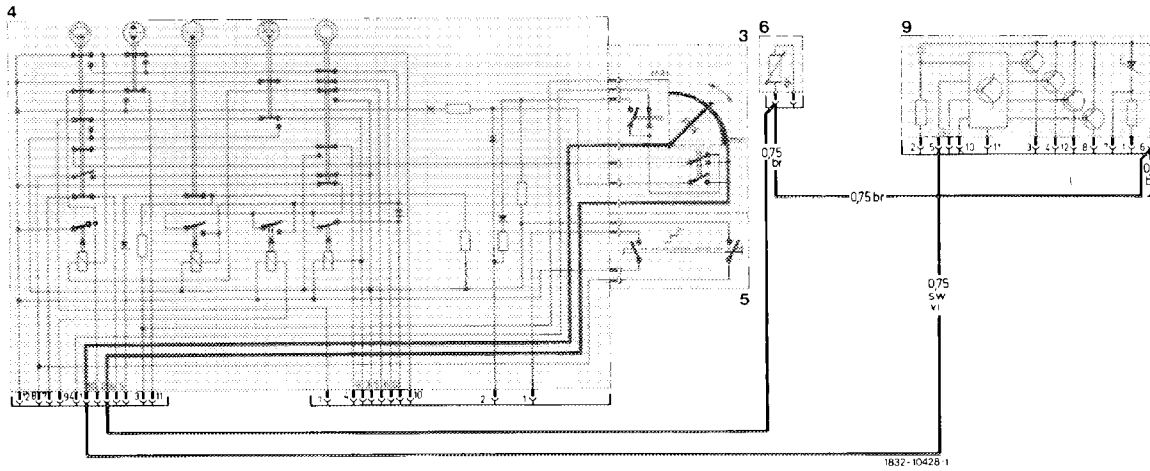
2. Connect new temperature dial if test step 7 also shows deviating values.

3. Renew pushbutton switching unit.





183-17660/1



Wiring diagram for test step 4 with adapter

3 Temperature dial
4 Pushbutton switching unit
6 Temperature sensor for heat exchanger
9 Electronic switching unit for temperature control

Electromagnetic clutch (26) and connecting lines 2 and 6.

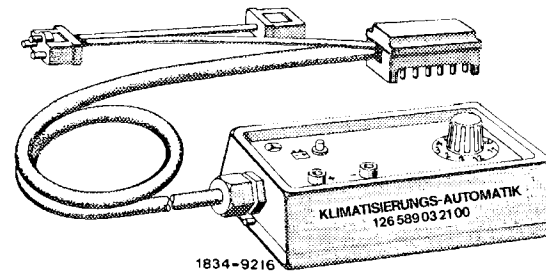
Battery disconnected, ignition switched on.

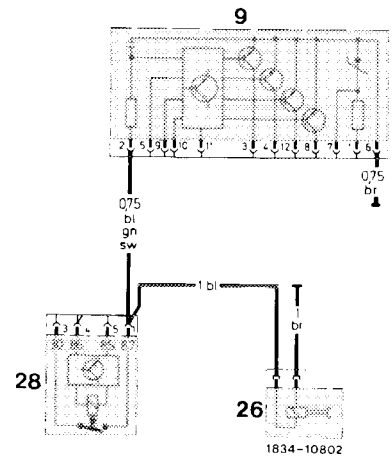
Position of adapter switch	Nominal value ± 1 Ω
5	4 Ω

Nominal value correct	Nominal value wrong

1. Check electric lines for correct connection.

2. Renew electromagnetic clutch.





Wiring diagram for test step 5 with adapter

9 Electronic switching unit for temperature control
26 Electromagnetic clutch – refrigerant compressor
28 Relay refrigerant compressor

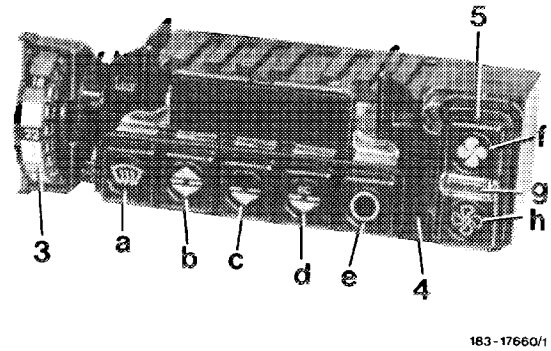
Checking function selection „c" or „e", as well as connecting lines 1 and 3

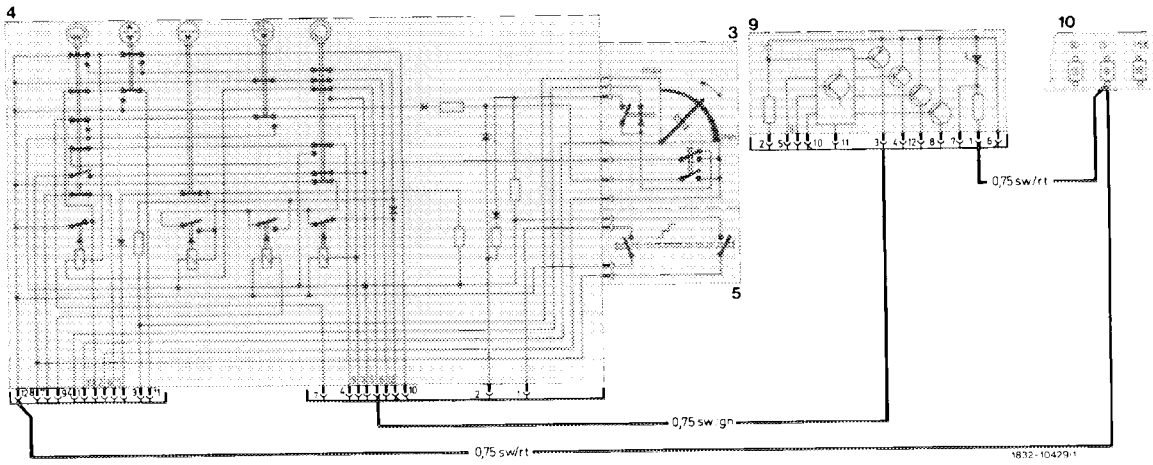
Battery disconnected, ignition switched on.

Position of adapter switch	Function selection	Nominal value ± 30 Ω
6	„c" pushed	80 Ω
	„e" pushed	∞

1. Check electric lines for correct connection.

2. Renew pushbutton switching unit.





Wiring diagram for test step 6 with adapter

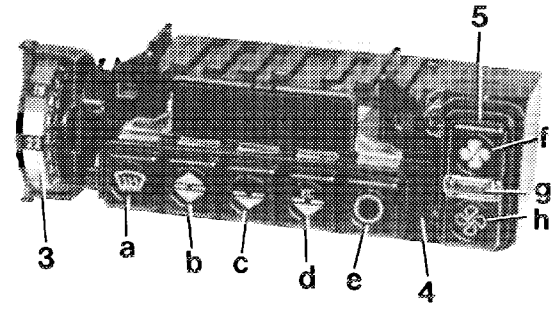
4 Pushbutton switching unit
9 Electronic switching unit for temperature control
10 Fuse box

Testing temperature dial and connecting lines 5 and 7

Battery disconnected, ignition switched on.
Push function selection button „c".

Position of adapter switch	Position of temperature dial	Nominal value ± 1.5 kΩ
7	„MIN" (engaged)	2.0 kΩ
	22 °C	3.5 kΩ
	„MAX" (engaged)	2.0 kΩ

Nominal value correct	Nominal value wrong

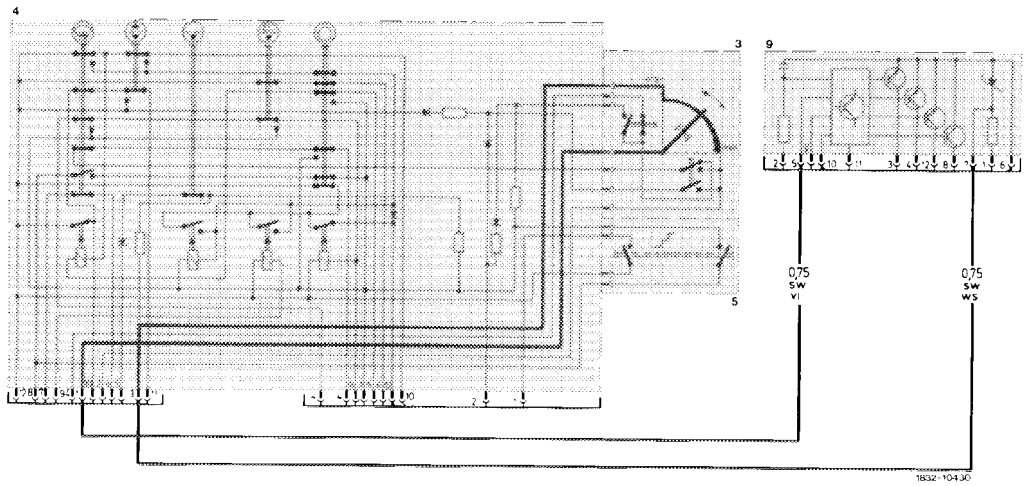


183-17660/1

1. Check electric lines for correct connection.

2. Renew temperature dial (potentiometer).

3. Renew pushbutton switching unit.



Wiring diagram for test step 7 with adapter

3 Temperature dial
4 Pushbutton switching unit
9 Electronic switching unit for temperature control

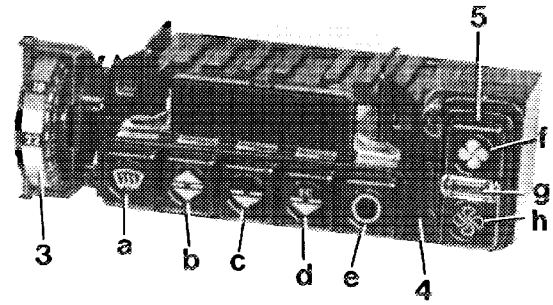
Testing control line recirculating air and connecting lines 1 and 12

Battery disconnected, ignition switched on.
Push function selection button „c".

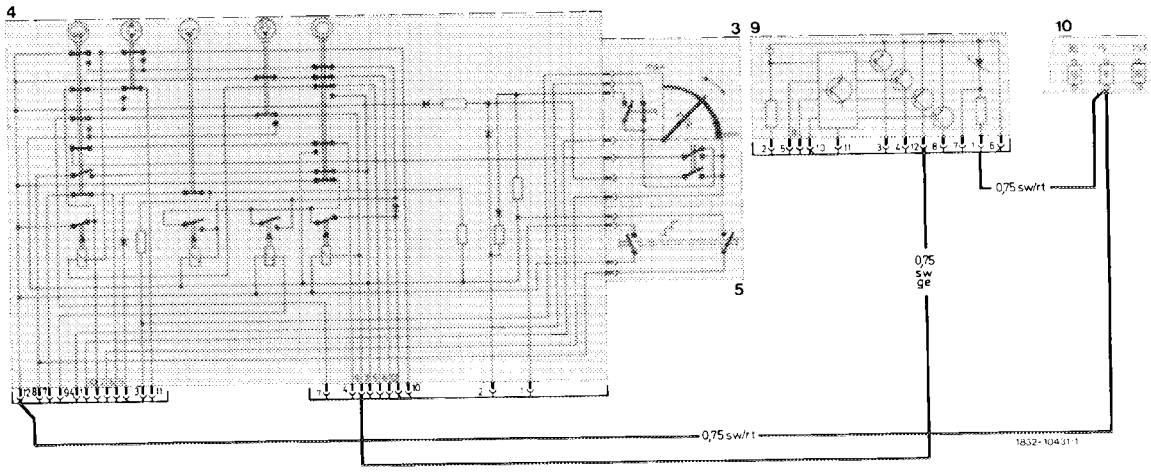
Position of adapter switch	Nominal value ± 20 Ω
8	45 Ω

Nominal value correct	Nominal value wrong

1. Check electric lines for correct connection.
2. Pushbutton switching unit defective.
3. Switchover valve defective.



183-17660/1



Wiring diagram for test step 8 with adapter

4 Pushbutton switching unit
9 Electronic switching unit for temperature control
10 Fuse box

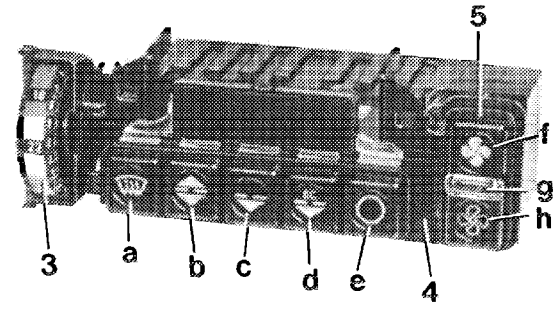
Testing switchover valve for center nozzle flap and connecting lines 1 and 4

Battery disconnected, ignition switched on.
Push function selection button „c".

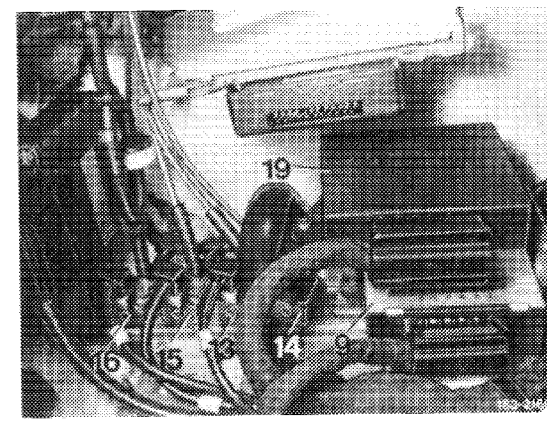
Position of adapter switch	Nominal value ± 20 Ω
9	45 Ω

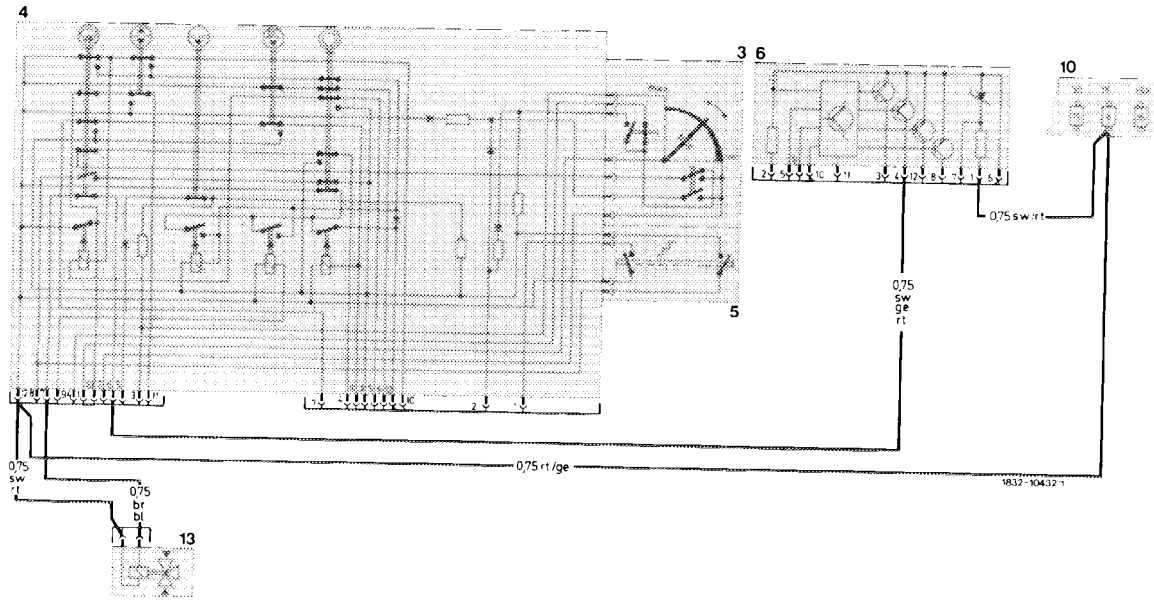
Nominal value correct	Nominal value wrong

1. Check electric lines for correct connection.
2. Check switchover valve for center nozzle flap and renew, if required.
3. Renew pushbutton switching unit.



183-17660/1





Wiring diagram for test step 9 with adapter

4 Pushbutton switching unit
9 Electronic switching unit for temperature control
10 Fuse box
13 Switchover valve for defroster nozzle flaps (short stroke) as well as on (J) (USA) for center nozzle flap

Testing function selection „c", connecting lines 6 and 11, as well as electronic switching unit for blower control

Connect battery, switch on ignition.

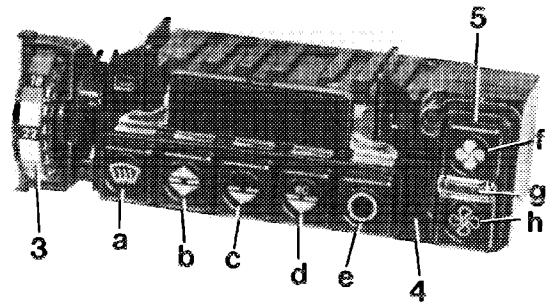
Position of adapter switch	Function selection	Nominal value ± 0.3 V
10	„c" pushed and „h" pushed	0.6 V

Nominal value correct	Nominal value wrong

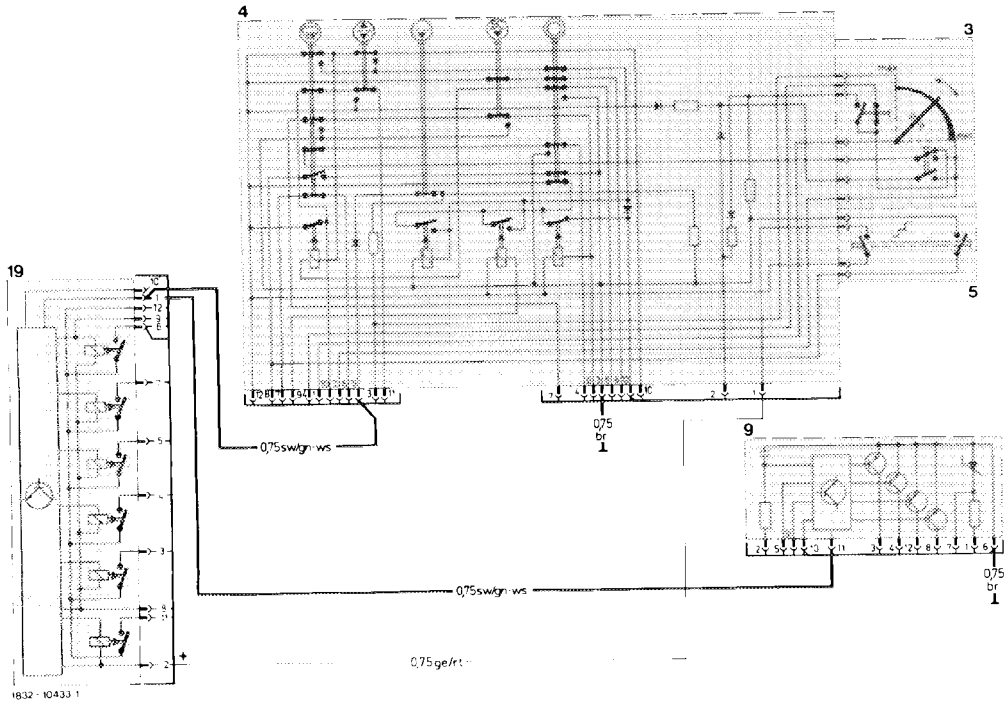
1. Check electric lines for correct connection.

2. Electronic switching unit for blower control defective.

3. Renew pushbutton switching unit.



183-17660/1



Wiring diagram for test step 10 with adapter

3 Temperature dial
4 Pushbutton switching unit
9 Electronic switching unit for temperature control
19 Electronic switching unit for blower control

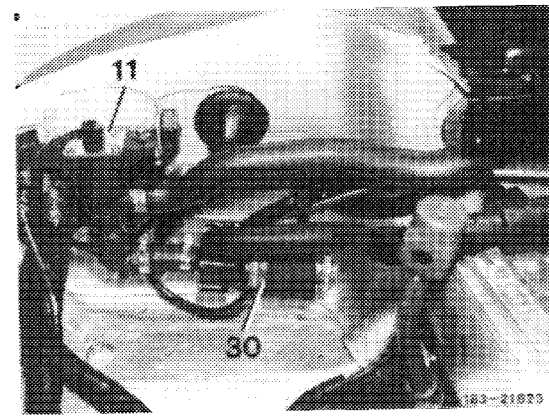
Testing monovalve, function selection „c" and connecting lines 1 and 8

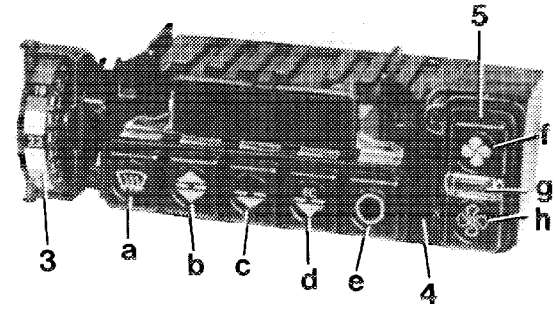
Battery **connected,** ignition **switched on.**
Push function selection button „c".

Position of adapter switch	Position of temperature dial	Nominal value ± 4 Ω
11	„MIN" (engaged)	∞
	22 °C	15 Ω
	„MAX" (engaged)	∞

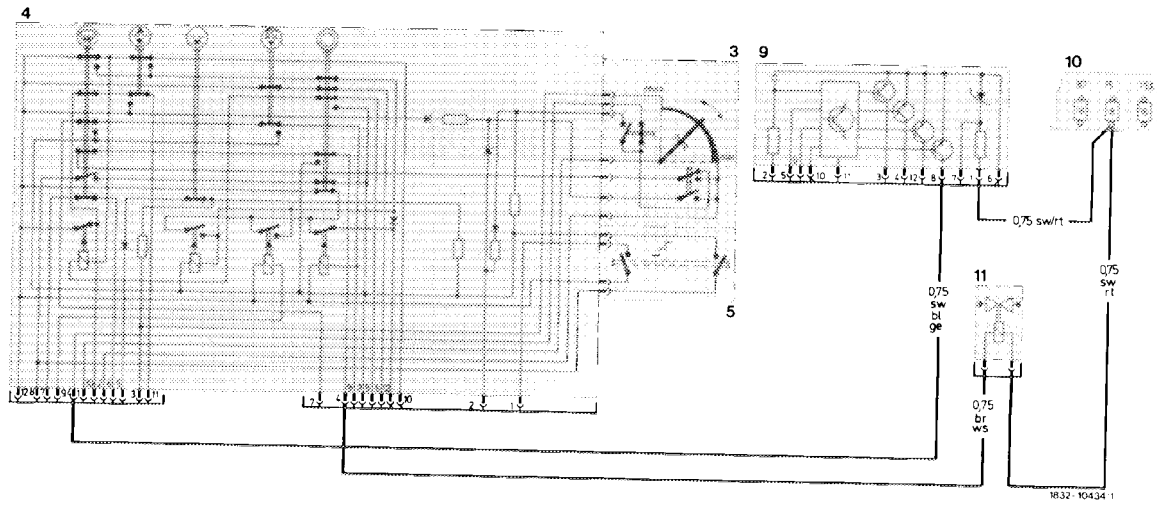
Nominal value correct	Nominal value wrong

1. Check electric lines for correct connection.
2. Check monovalve, renew if required.
3. Renew pushbutton switching unit.





183-17660/1



Wiring diagram for test step 11 with adapter

3 Temperature dial
4 Pushbutton switching unit
5 Blower switch
9 Electronic switching unit for temperature control
10 Fuse box
11 Monovalve

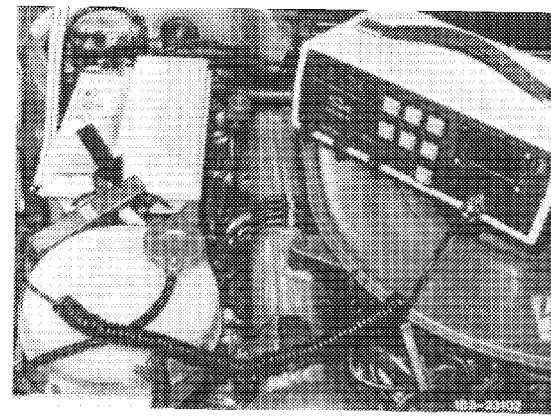
12 Testing blower motor and electronic unit for blower control.

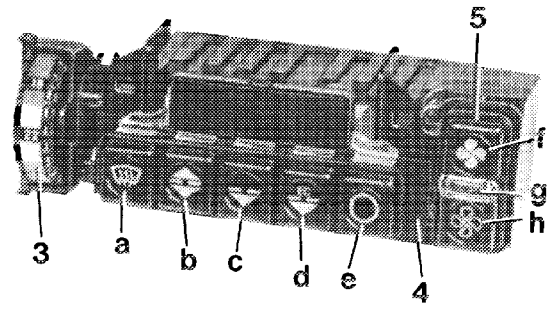
Plug back coupler of electronic switching unit for temperature control. Place clip-on probe of digital multimeter over + battery cable (arrow).

Pull off 1-pole coupler of 33 °C switch (2) and bridge with ground. Pull plug from pressure switch on receiver dehydrator.

Switch on ignition, push button „h" and „e", read current input on multimeter.

Attention!
This value is the starting value for checking the individual blower stages (approx. 5 amps through fuel pump). Power input of 1st blower stage is determined by switching from button „e" to „c". Blower starts after approx. 10 seconds. Button „c" remains pushed for checking additional blower stages.

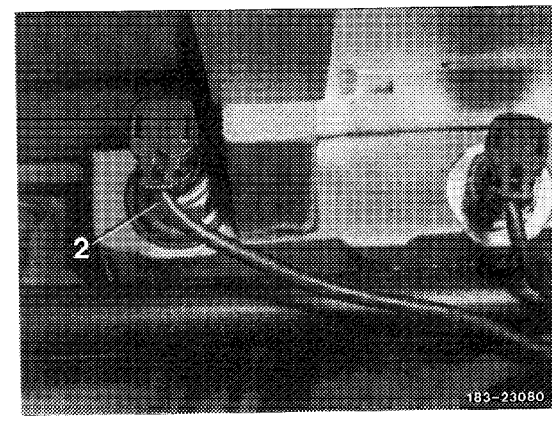


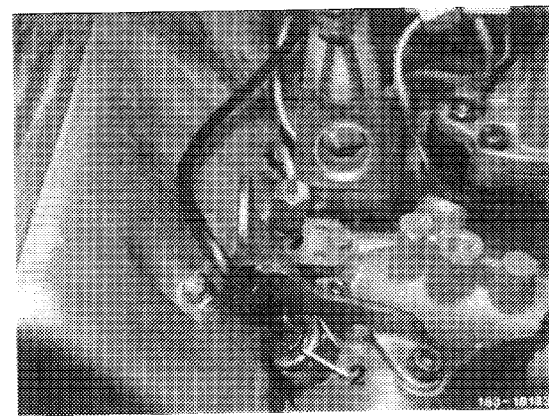


183-17660/1

Position pushbuttons	Blower stage	Nominal value ± 0.2 A Total power input blower (e.g. 9.6 A)
„h" pushed	Fixed stage slow	
	1	2.4 A
„g" pushed [1])	2	0.4 A (2.8 A)
	3	0.7 A (3.5 A)
	4	1.1 A (4.6 A)
	5	2.1 A (6.7 A)
„f" pushed	Fixed stage fast	
	6	2.8 A (9.6 A)

[1]) In warm surroundings (interior) set temperature dial up to stop in front of stop before „MIN", or in cool surroundings set temperature dial before „MAX".





Nominal value correct	Nominal value wrong

1. Check all electric lines for correct connection.
2. Connect new electronic switching unit for blower control for tryout.
3. Connect new blower switch for tryout.
4. Renew blower motor.
5. Renew series resistance group.

Checking switchover valves for main air, center nozzle, defroster nozzle and legroom flaps:

Plug 2-pole coupler of harness on in-car temperature sensor. Connect battery.
Switch on ignition. Run engine at idle.

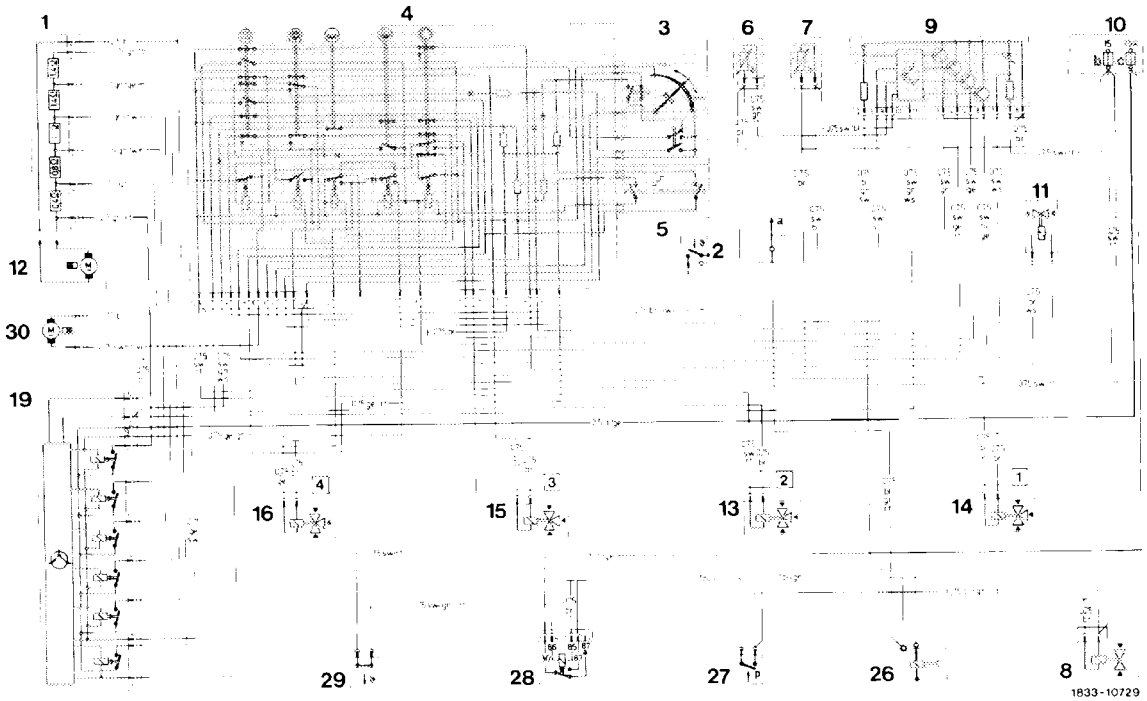
Function selection	Mode	Main air flaps Fresh air data in %	Center nozzle flap Only (J) (USA) (vacuum element)	Defroster nozzle flaps	Legroom flaps
a	Heating mode	100	closed	open	open
b	Heating mode Cooling mode	100 20[1])	closed open	open open	open open
c	Heating mode Cooling mode	100 20[1])	closed open	leak air closed	open closed
d	Heating mode Cooling mode	100 100	closed open	leak air closed	open closed
e	Off	20	closed	open	closed

[1]) If the in-car temperature is more than 3 °C higher than the temperature set on temperature dial, the system operates in recirculating mode.

Flap position correct

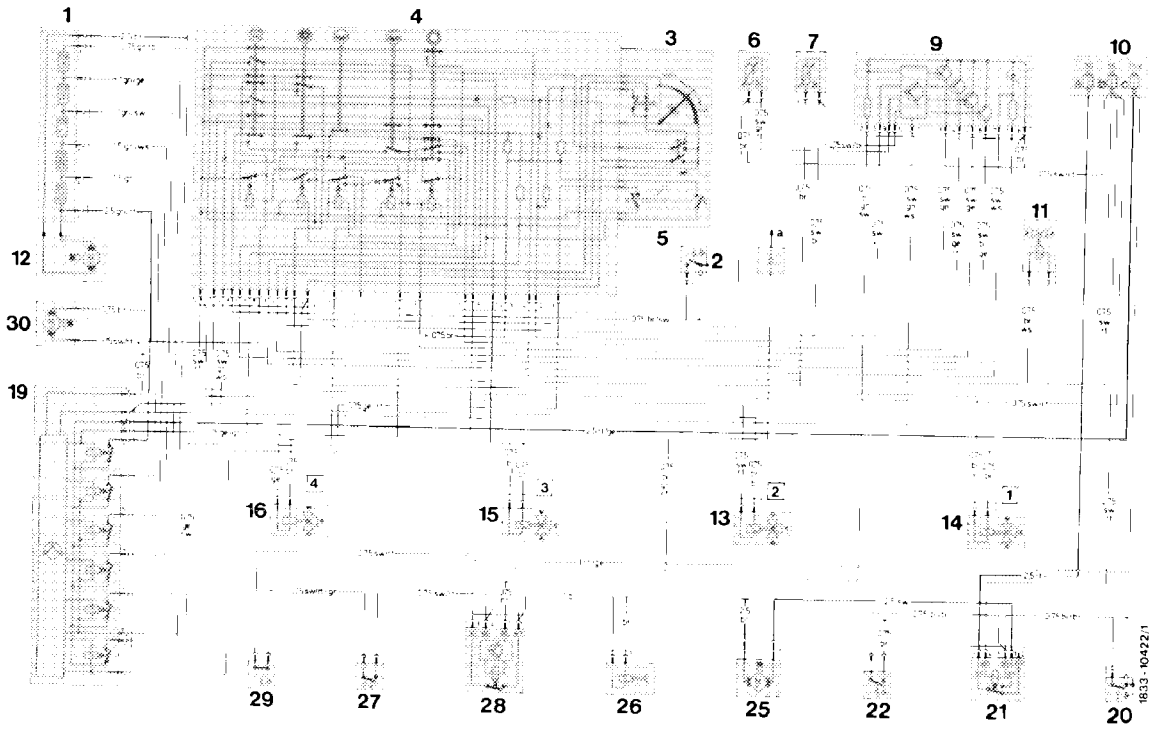
Flap position wrong

1. Check all electric lines for correct connection.
2. Check vacuum lines for correct assembly (refer to 83–604).
3. Check respective switchover valve and renew, if required (refer to 83–604).
4. Check respective vacuum element and renew, if required (refer to 83–604).



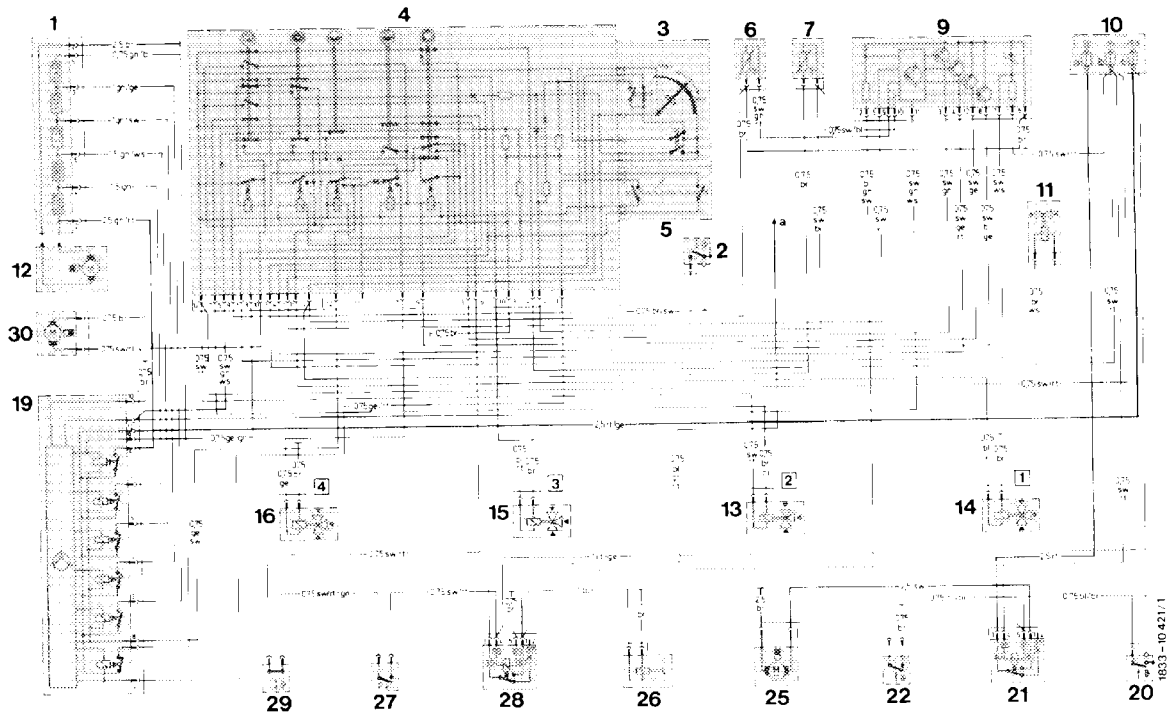
Electric wiring diagram automatic climate control on 6-cylinder engine

1 Series resistance group
2 Temperature switch (cold engine lock)
3 Temperature dial
4 Pushbutton switching unit
  a Defrosting
  b Top + bottom
  c Normal (air conditioning on)
  d EC (air conditioning off)
  e Off
5 Blower motor
6 Temperature sensor for heat exchanger
7 In-car temperature sensor
8 Switchover valve for rpm stabilization
9 Electronic switching unit for temperature control
10 Fuse box
  b Fuse 7: 8 amps
  c Fuse 6: 16 amps
11 Monovalve
12 Blower motor
13 Switchover valve for defroster nozzle flaps (short stroke)
14 Switchover valve for legroom flaps
15 Switchover valve for defroster nozzle flaps (long stroke)
16 Switchover valve for main air flaps
19 Electronic switching unit for blower control
26 Electromagnetic clutch refrigerant compressor
27 Pressure switch refrigerant compressor
28 Relay refrigerant compressor
29 ETR switch
30 Recirculating pump
  a Signal refrigerant compressor for decel shutoff



Electric wiring diagram automatic climate control on 8-cylinder engine and (J) (USA) starting model year 1983

1 Series resistance group
2 Temperature switch (cold engine lock)
3 Temperature dial
4 Pushbutton switching unit
  a Defroster
  b Top + bottom
  c Normal (air conditioning on)
  d EC (air conditioning off)
  e Off
5 Blower switch
6 Temperature sensor for heat exchanger
7 In-car temperature sensor
9 Electronic switching unit for temperature control
10 Fuse box
  a Fuse 2: 16 amps
    Fuse 12: 16 amps starting 09/82
  b Fuse 7: 8 amps
  c Fuse 6: 16 amps
11 Monovalve
12 Blower motor
13 Switchover valve for defroster nozzle flaps (short stroke)
14 Switchover valve for legroom flaps
15 Switchover valve for defroster nozzle flaps (long stroke)
16 Switchover valve for main air flaps
19 Electronic switching unit for blower control
20 Temperature switch 100 °C for auxiliary fan
21 Relay auxiliary fan
22 Temperature switch 52 °C for auxiliary fan
25 Auxiliary fan
26 Electromagnetic clutch refrigerant compressor
27 Pressure switch refrigerant compressor
28 Relay refrigerant compressor with time delay
29 ETR switch
30 Recirculating pump
  a Signal refrigerant compressor for idle speed control



Electric wiring diagram automatic climate control, (J) (USA) up to model year 1982

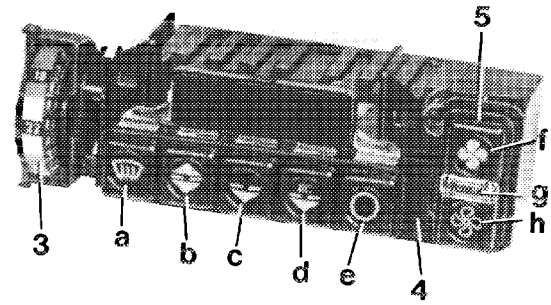
1 Series resistance group
2 Temperature switch (cold engine lock)
3 Temperature dial
4 Pushbutton switching unit
  a Defrosting
  b Top + bottom
  c Normal (air conditioning on)
  d EC (air conditioning off)
  e Off
5 Blower switch
6 Temperature sensor for heat exchanger
7 In-car temperature sensor
9 Electronic switching unit for temperature control
10 Fuse box
  a Fuse 2: 16 amps
  b Fuse 7: 8 amps
  c Fuse 6: 16 amps
11 Monovalve
12 Blower motor
13 Switchover valve for center and defroster nozzle flaps (short stroke)
14 Switchover valve for legroom flaps
15 Switchover valve for defroster nozzle flaps (long stroke)
16 Switchover valve for main air flaps
19 Electronic switching unit blower control
20 Temperature switch 100 °C for auxiliary fan
21 Relay auxiliary fan
22 Temperature switch 52 °C for auxiliary fan
25 Auxiliary fan
26 Electromagnetic clutch refrigerant compressor
27 Pressure switch refrigerant compressor
28 Relay refrigerant compressor
29 ETR switch
30 Recirculating pump
  a Line not connected

Checking cold engine lock
(engine temperature below 33 °C)

Switch on ignition, push function button „c", pull electric connecting coupler from cold engine lock and bridge (ground).

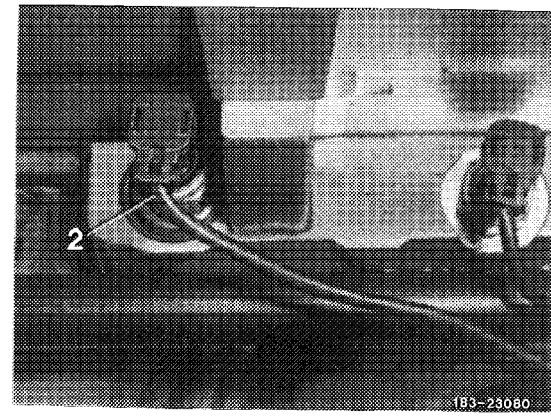
Heater blower must start.

Heater blower starting	Heater blower not starting



183-17660/1

1. Check electric lines for correct connection.
2. Check blower control (test step 12).
3. Change pushbutton switching unit.



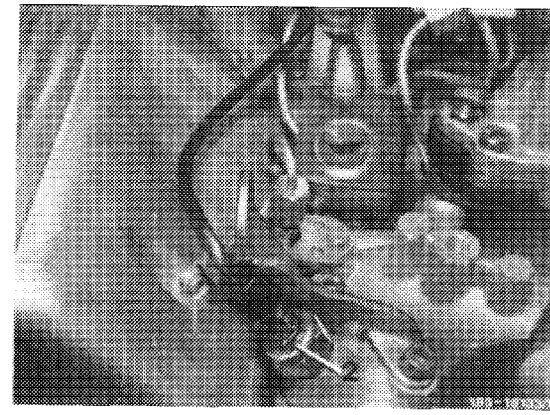
183-23080

2 Temperature switch (cold engine lock) engine 110

Plug coupler on cold engine lock and run engine warm at approx. 2000 rpm. Push function selection button „c".
(Engine temperature > 33 °C).

Heater blower must start.

Heater blower starting	Heater blower not starting



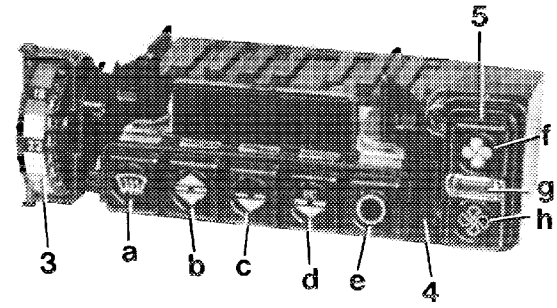
2 Temperature switch (cold engine lock) engine 116/117

Renew cold engine lock.

Checking monovalve for leaks

Set temperature dial to „MIN", push function selection „b", Run engine to operating temperature (function dynamometer). Heat exchanger should remain cold, that is no heated air should flow out.

Heated air not flowing out	Heated air flowing out

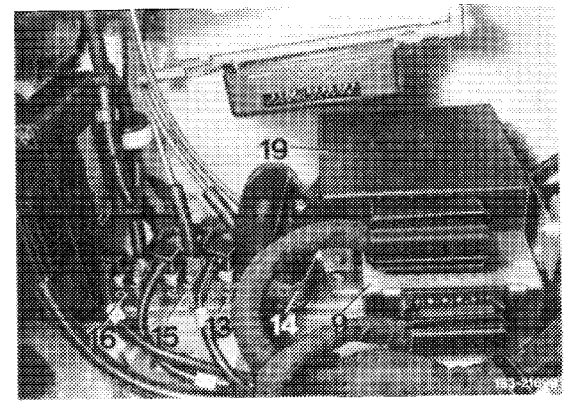


183-17660/1

1. Check whether positive and negative are available on double coupler for monovalve (sleeves in double coupler may be widened, rebend sleeves). Caution: short-circuit risk!

2. Connect electronic switching unit for temperature control (9) for tryout.

3. Renew monovalve (11).



End of test