

Technical Data for Air Conditioner

Refrigerant volume 930 grams of Frigen R 12

Refrigerant in compressor 100 ± 20 cc of Densoil

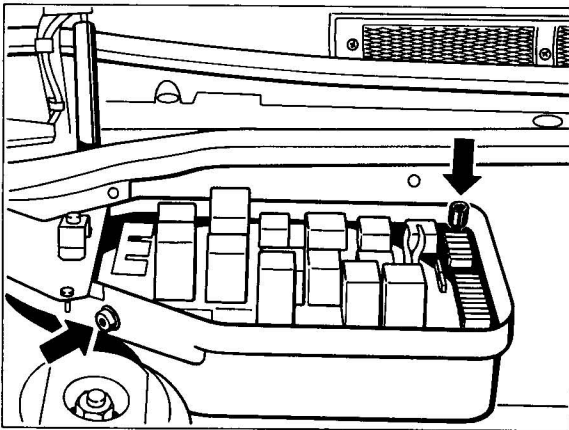
Tightening Torque for Refrigerant Pipes

Outside Thread Dia.	Pitch/Inch	Torque in Nm (Ft. Lbs.)
5/8"	18 UNF	17 ± 3 (12 ± 2)
3/4"	16 UNF	24 ± 4 (17 ± 3)
7/8"	14 UNF	33 ± 4 (24 ± 3)

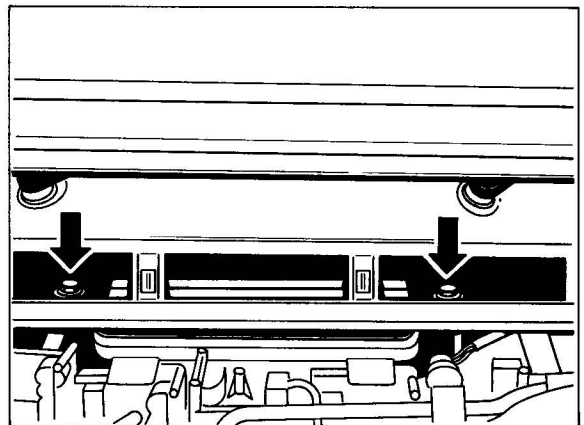
Hex. Head Bolts on	Threads	Torque in Nm (Ft. Lbs.)
Expansion valve	M 5	6 (4.3)
Expansion valve	M 6	9 (6.5)
Compressor	M 8	28 (20)

Removing and Installing Heater/Air Conditioner

1. Disconnect battery ground lead.
2. Remove tank (see page 20 - 3).
3. Remove upper cover of heater/air conditioner (two screws with washers).
4. Disconnect central electric.
5. Remove wire harness cover.
6. Lay central electric aside on a fender (use fender guard).
7. Pull off electric lead plug on blower final stage.
8. Remove firewall.
9. Remove fresh air inlet grill.
10. Unscrew mounting bolts.

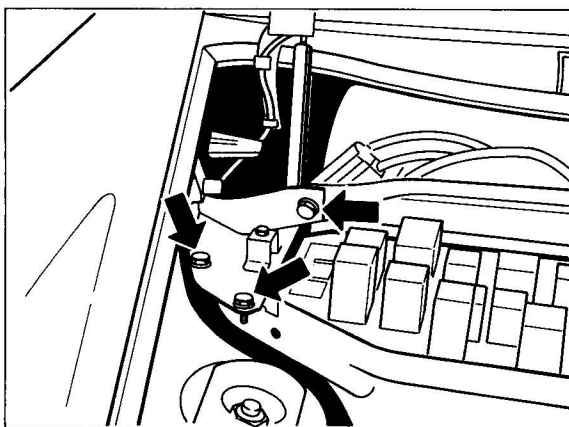


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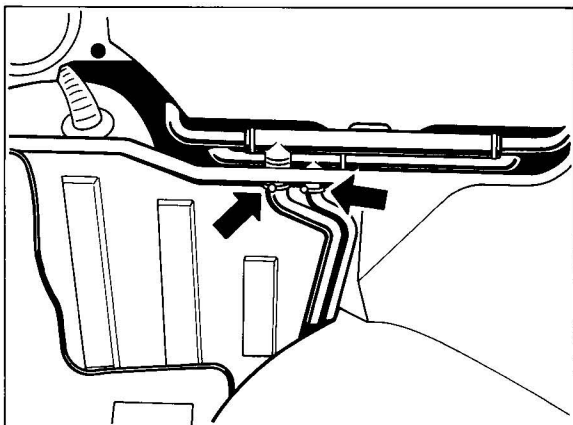
5. Remove wire harness cover.



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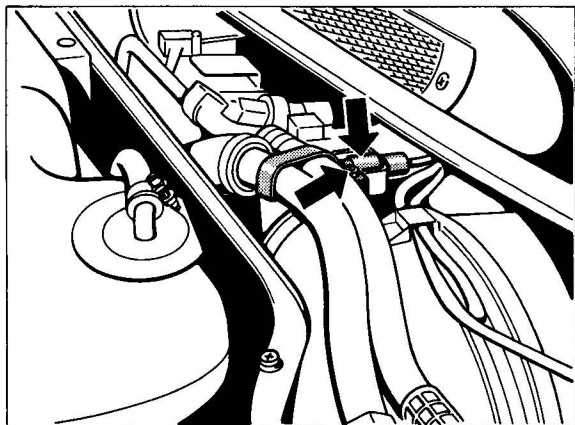
11. Disconnect plug T 34 (on heater/air conditioner at right top).

12. Pull off condensation and rain water drain hoses (cut off straps) and press out molded rubber grommets upward.



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13. Discharge the air conditioner (draw off refrigerant with a recycling machine),
14. Unscrew refrigerant pipes on expansion valve.
15. Disconnect Frigen switch plug.



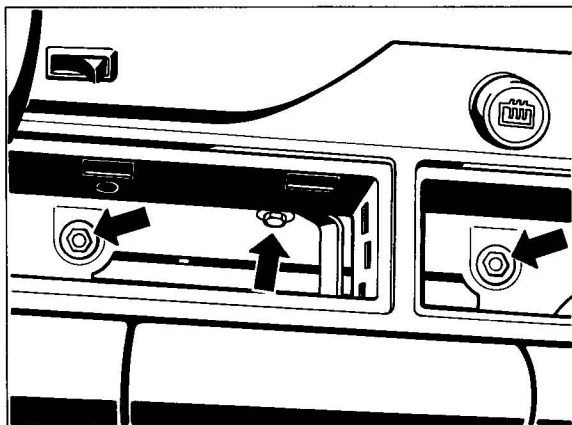
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16. Unscrew holder for refrigerant pipes.
17. Pull off air guides to the side nozzles.

Note

When installing, insert the right air guide prior to complete installation of the heater/air conditioner (better accessibility). The left air guide can be inserted with an installed heater/air conditioner after removal of the large instrument cluster dial.

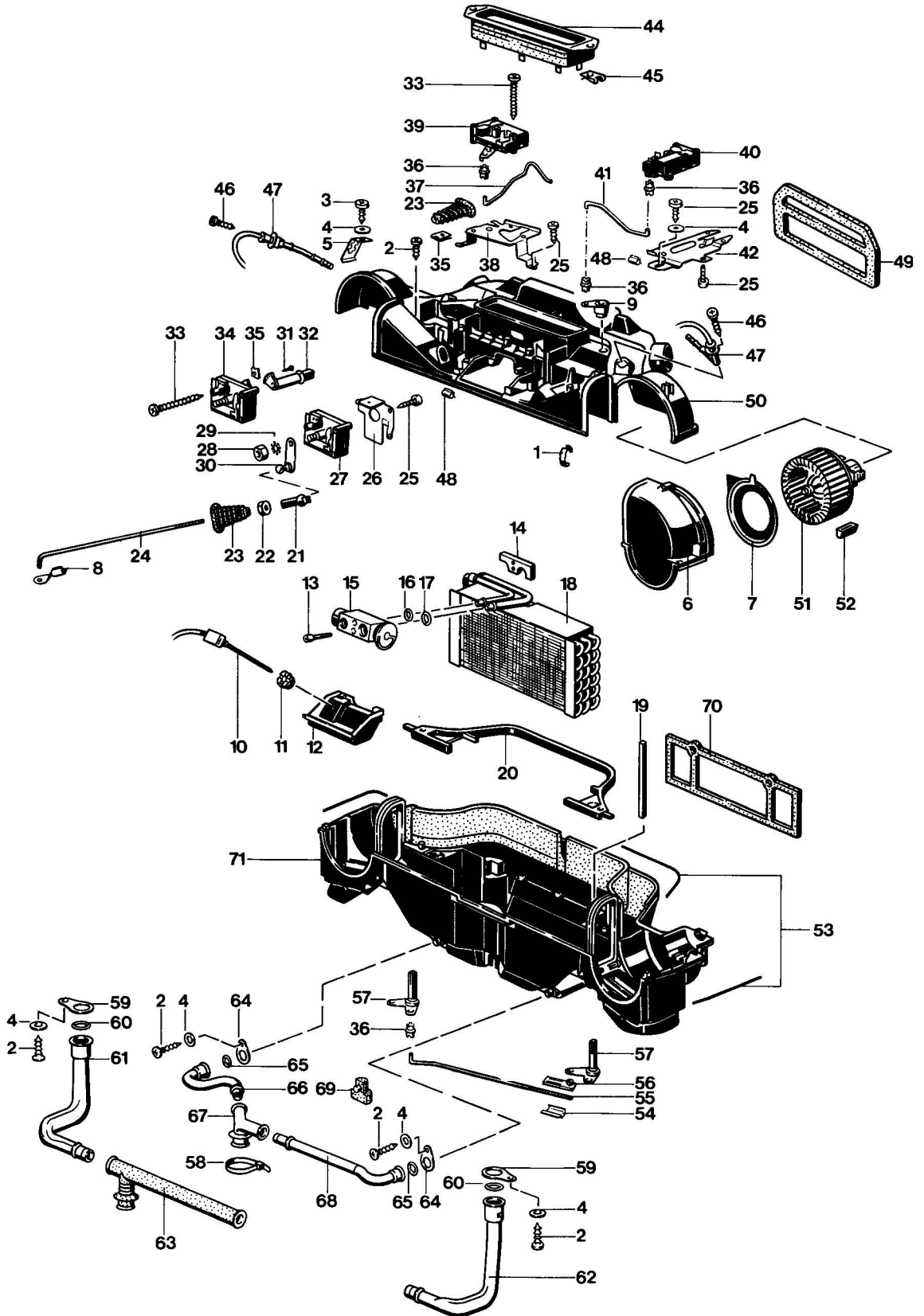
18. Remove radio.
19. Remove heater/air conditioner controls.
20. Pull off left and right warm air guide necks.
21. Disconnect wire harness no. 180 (is fastened on the passenger compartment wire harness).
22. Disconnect plug T 5 (underneath dashboard).
23. Unscrew mounting screws and nuts.



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Disassembling and Assembling Heater/Air Conditioner

Disassembling and Assembling Heater/Air Conditioner



No.	Description	Qty.	Note When:	
			Removing	Installing
1	Tension spring	32		
2	Screw	11		
3	Screw	9		
4	Washer	6		
5	Holder	1		
6	Housing cover, left	1		
-	Housing cover, right	1		
7	Liner, left	1		
-	Liner, right	1		
8	Retainer	2		
9	Lever	1		
10	Evaporator temp. sensor	1	Integrated in wire harness	Integrated in wire harness
11	Grommet	1		
12	Cover			
13	Hexagon socket head screw M 5	2		
14	Holding plate	1		
15	Expansion valve	1		
16	Gasket	1		Replace. Coat with refrigerating oil
17	Gasket	1		
18	Evaporator	1	Don't damage fins	Don't damage fins
19	Connecting rod	1		
20	Gasket	1		
21	Ball socket	2		
22	Nut M 5	2		
23	Dust cover	3		

No.	Description	Qty.	Note When:	
			Removing	Installing
24	Linkage	2		
25	Screw	7		
26	Holder	2		
27	Motor for temperature mixing flaps	2		Adjust—see page 87 - 9
28	Nut M 5	2		
29	Circlip	2		
30	Lever	2		
31	Screw	1		
32	Joint	1		
33	Screw	4		
34	Motor for defrost or center nozzle	1		Adjust—see page 87 - 9
35	Self-tapping nut	4		
36	Linkage clip	5		
37	Linkage	1		
38	Holder	1		
39	Motor for fresh air flap	1		
40	Motor for footwell flaps	1		Adjust—see page 87 - 10
41	Linkage	1		
42	Holder	1		
43	Clamp	3		
44	Sheet metal frame with rubber cover	1		
45	Self-tapping nut	2		
46	Screw	2		
47	Mixing chamber temperature sensor	2	Integrated in wire harness	Integrated in wire harness
48	Clamp	2		

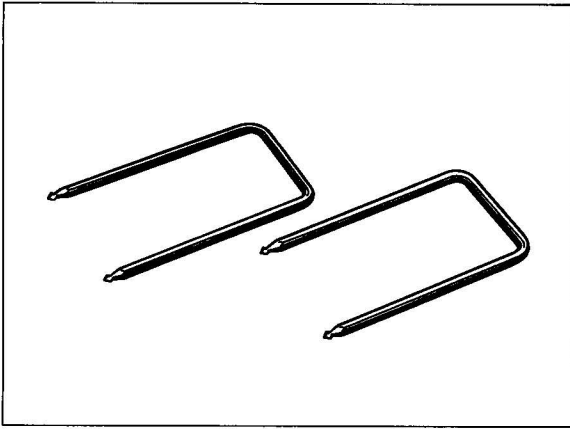
No.	Description	Qty.	Note When:	
			Removing	Installing
49	Gasket	1		
50	Upper housing section	1		
51	Blower, left	1		White plastic
-	Blower, right	1		Black plastic
52	Rubber mount	8		
53	Sealing cord	1		
54	Clampr	1		
55	Linkage	1		
56	Lever	1		
57	Drive	2		
58	Strap	2		
59	Holder	2		
60	Seal	2		
61	Water drain pipe	1		
62	Water drain pipe	1		
63	Connector	1		
64	Holder	2		
65	Seal	2		
66	Water drain pipe	1		
67	Connector	1		
68	Water drain pipe	1		
69	Rubber mount	1		
70	Gasket	1		
71	Lower housing section	1		

Removing and Installing Heater/Air Conditioner Regulator

Note

Special Tool V 160 (which is also the order number) is required for removal of the heater / air conditioner regulator.

Supplier: Matra Werke GmbH
Dieselstr. 30-40
D-6000 Frankfurt 11



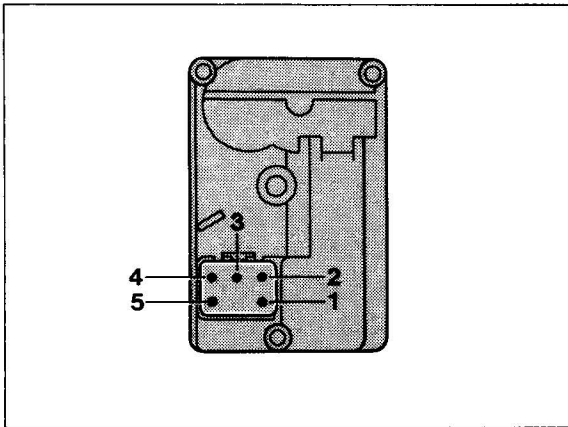
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1. Slide special tool into the openings provided on the heater/air conditioner regulator until it engages.
2. Press out heater/air conditioner regulator toward rear by hand from underneath.
3. Disconnect 25-pin and 35-pin plugs.

Adjusting Flaps on Heater/Air Conditioner

Adjusting Defrost/Center Nozzle Flap

1. Run motor to "defrost nozzle closed" final position by supplying 12 volts to pin 4 (positive) and pin 5 (negative) via two electric leads until the motor is in final position.



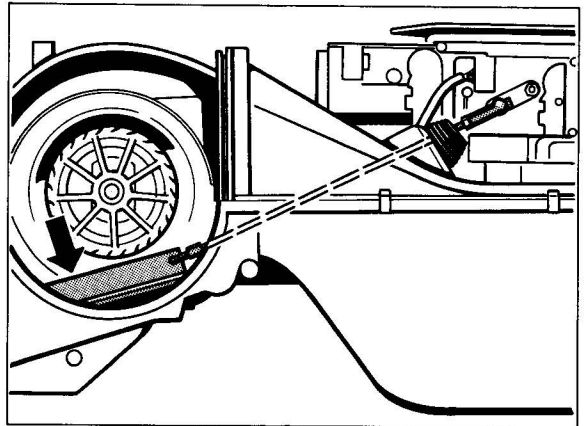
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2. Press defrost/center nozzle flap to "defrost nozzle closed" position (upper outlet closed).
3. Connect drive of motor on joint of flap and secure.

Adjusting Right Temperature Mixing Flap

1. Run motor to "max. cold" final position by supplying 12 volts to pin 4 (negative) and pin 5 (positive) via two electric leads until the motor is in final position.

2. Press temperature mixing flap to "max. cold" position. Linkage and lever must be in a straight line.



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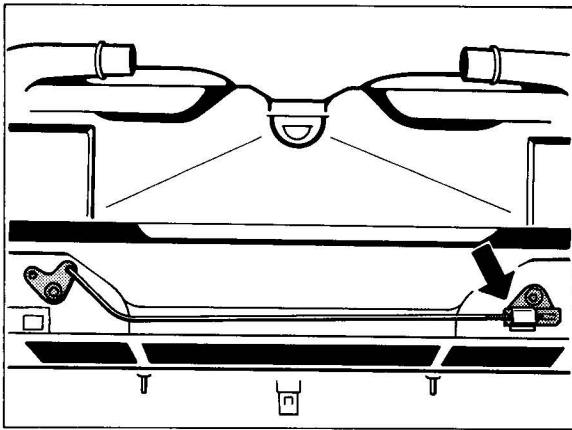
3. Correct deviation in length by turning the ball socket on the linkage.

Adjusting Left Temperature Mixing Flap

1. Run motor to "max. cold" final position by supplying 12 volts to pin 4 (positive) and pin 5 (negative) via two electric leads until the motor is in final position.
2. Press temperature mixing flap to "max. cold" position. Linkage and lever must be in a straight line.
3. Correct deviation in length by turning the ball socket on the linkage.

Adjusting Footwell Flaps

1. Run motor to "footwell flaps closed" final position by supplying 12 volts to pin 4 (negative) and pin 5 (positive) via two electric leads until the motor is in final position. Lever of drive faces in direction of fresh air inlet.
Lever of drive faces in direction of fresh air inlet.
2. Move both footwell flaps into closed position. Engage linkage on the lever and secure with a clamp.



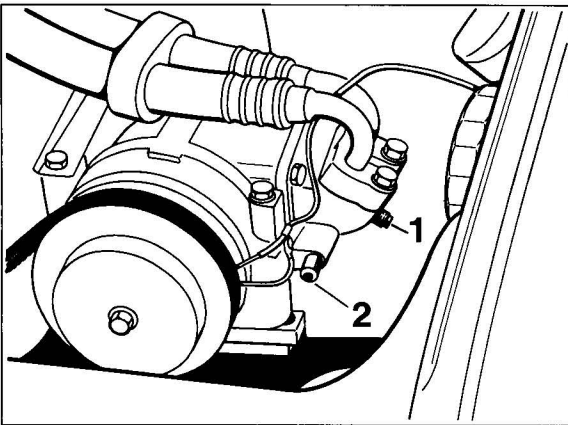
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Checking Refrigerating Capacity

Testing Conditions

- Park car where it is not subjected to sunshine.
- Clean the condenser.
- Close sun roof, doors and windows.
- Turn temperature control switch to "max. cold" final position (blue dot on scale).
- Slide defrost lever and footwell lever against the right stops (opened).
- Switch on blower to speed 4.
- Open all dashboard air outlets.
- Measure ambient temperature (outside of car).

Connect service tester on the air conditioner.



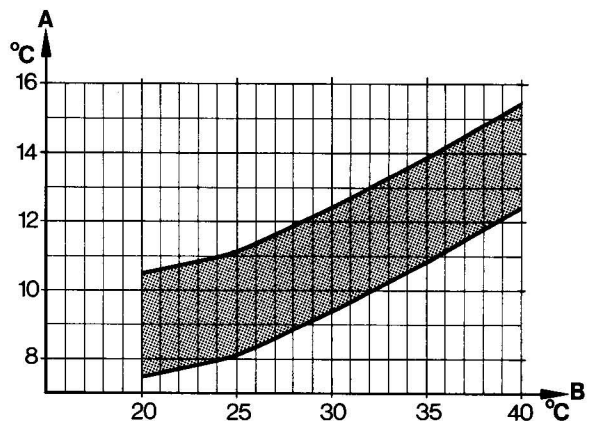
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Testing

1. Insert a thermometer (as recommended in the workshop manual) in the center nozzle outlet.
2. Start and run engine at speed of 2,000 rpm.
3. Switch on air conditioner.
4. Read the values for temperature on the center nozzle as well as high and low pressure with the compressor running after two minutes.

Values must be located in the shaded area of the following diagrams (read values in the diagrams according to the ambient temperature).

4.1 Temperature on center nozzle



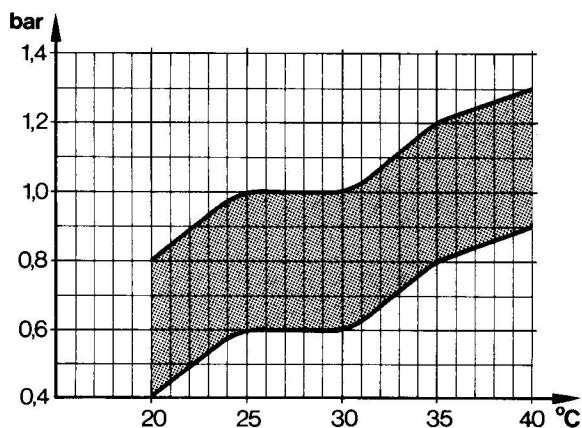
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A - Center nozzle temperature

B - Ambient temperature

- 1 - High pressure
- 2 - Low pressure

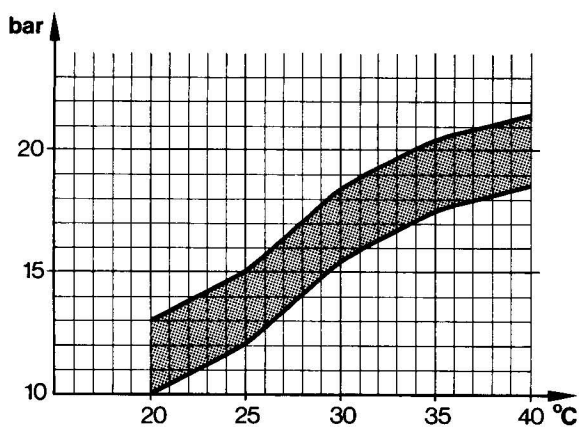
4.2 Low pressure



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- The condenser fan must switch to second speed with a refrigerant high pressure of approx. 19 bar (270 psi).

4.3 High pressure



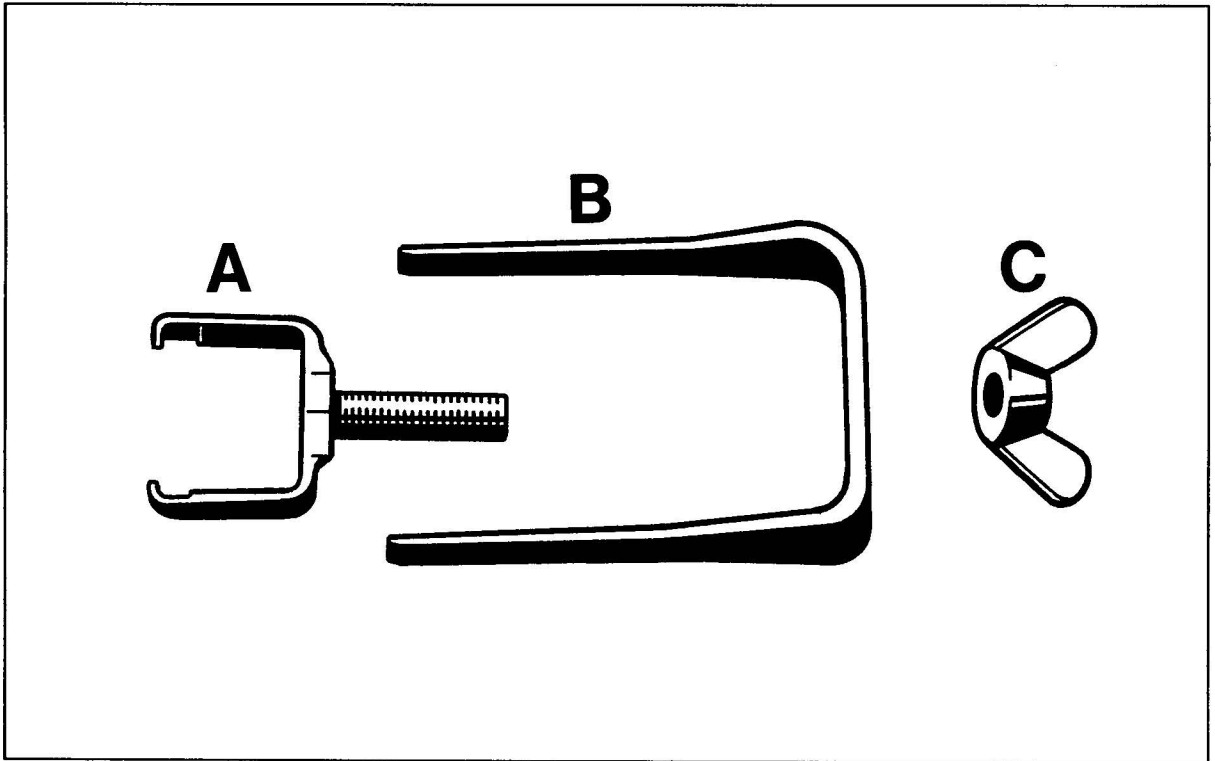
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Check the following if specified values are not reached.

- The temperature mixing flaps must be completely closed (warm air necks or sills must not be warm). Adjust if necessary.

Removing and Installing Heater Blower Motors of Installed Heater/Air Conditioner

Tools

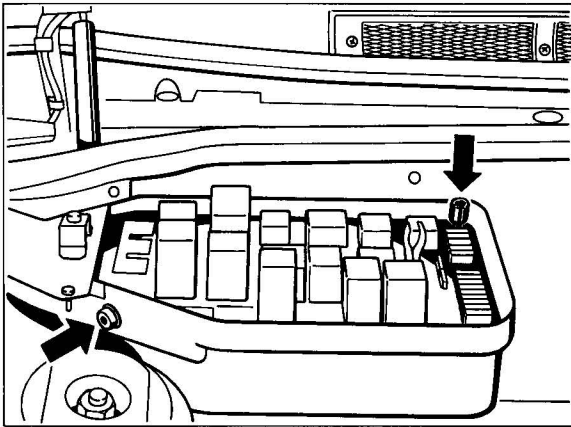


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No.	Description	Special Tool	Order Number	Remarks
	Puller	9512	000.721.951.20	Three-piece

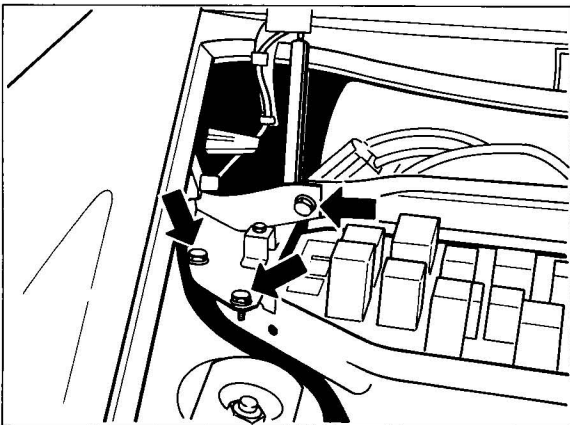
Removing and Installing Heater Blower Motors of Installed Heater/Air Conditioner

1. Disconnect battery ground lead.
2. Remove cover of heater/air conditioner (2 screws with washers).
3. Disconnect central electrics.
5. Lay central electrics aside on the fender (use a fender guard).
6. Pull off electric lead plug on blower final stage.
7. Remove firewall.



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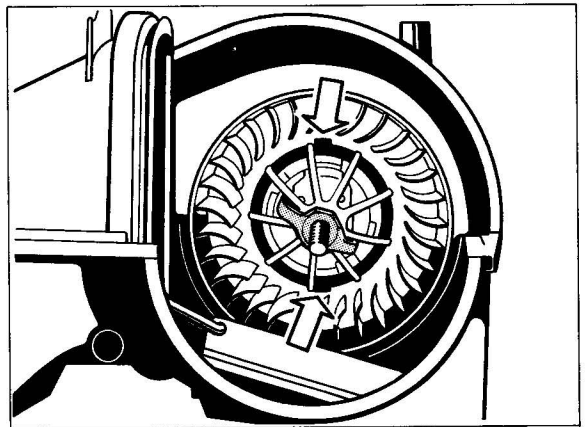
4. Remove wire harness cover.



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Right Blower

8. Disconnect plug T 34 and take plug out of holder.
9. Remove clamps of motor cover and take off cover from above.
10. Mount part A of Special Tool 9512 on the shaft and turn clockwise. Make sure that openings in blower wheel are aligned with openings in housing.

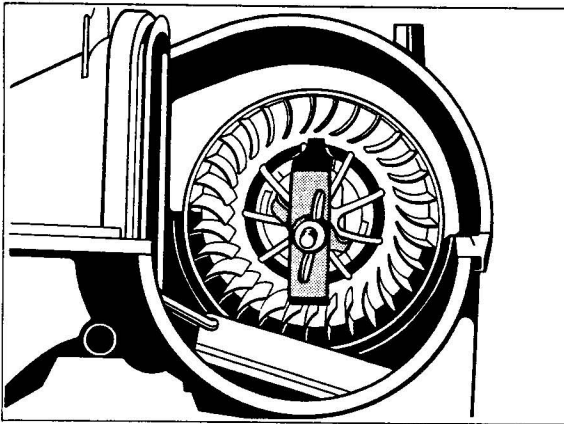


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Note

Observe installation position of part A of Special Tool 9512. Bore of fan wheel shaft is off-center (2 mm).

11. Slide part B into openings.



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12. Tighten wing screw (part C) until the blower motor disengages.

13. Pull off connecting leads.

Left Blower

14. Unscrew expansion tank on tank.
15. Unscrew refrigerating pipes in cars with an air conditioner.
16. Remaining procedures are the same as those described in points 9 through 13.

Note

When installing, make sure that the blower motor engages correctly and connecting leads are not pinched.

Check whether the blower wheel can be turned easily.

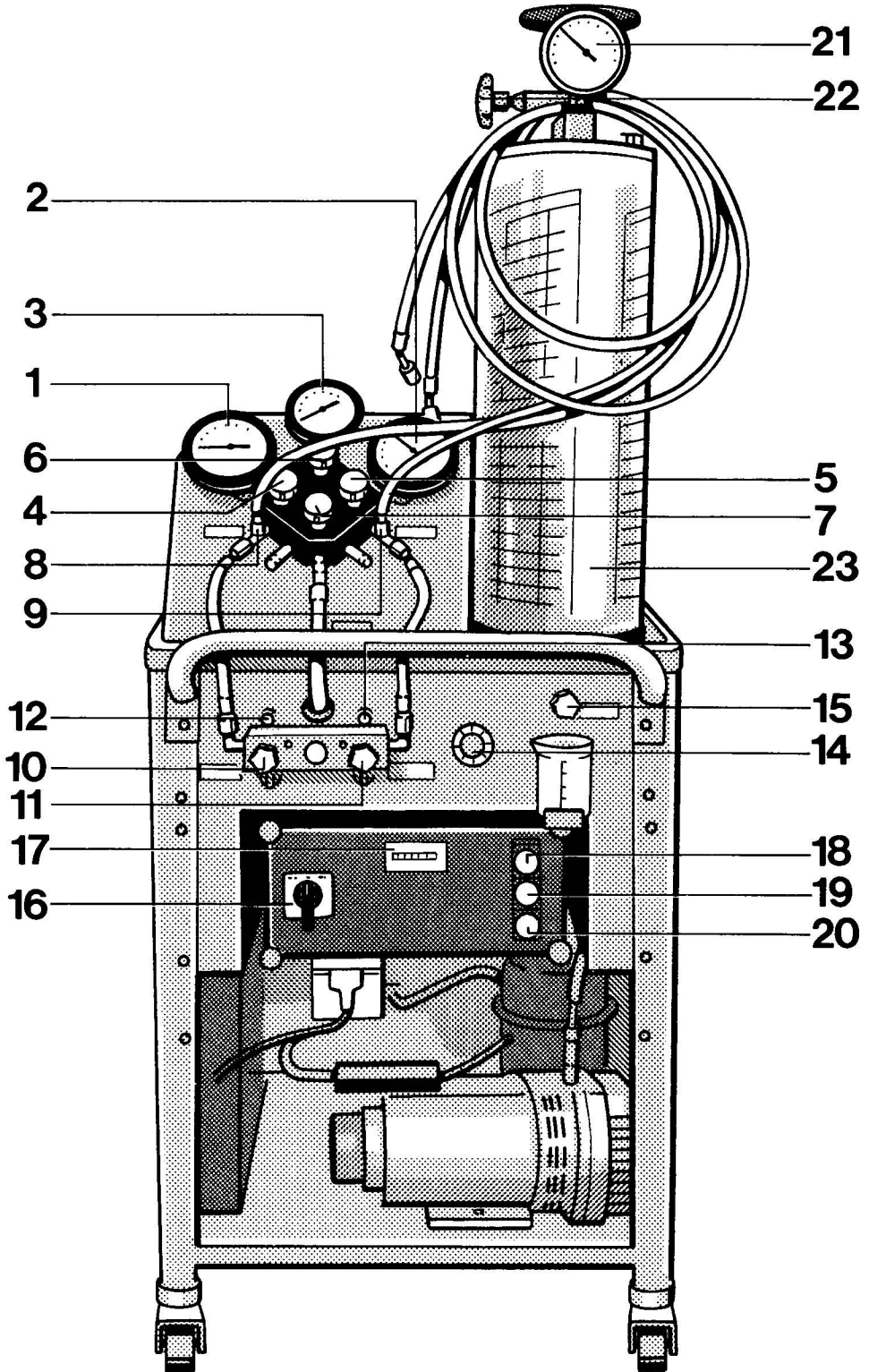
Safety regulations for handling the refrigerant R12

The refrigerant used R12 is known as a safety refrigerant. In other words, this refrigerant is non-combustible, non-explosive, non-toxic, non-irritating, odorless and tasteless. Nevertheless, you should observe the following points:

1. All contact with liquid or gaseous refrigerant must be avoided. Affected areas of the skin must be treated like frostbite; wash off immediately with cold water and then consult a physician. Protective goggles must be worn to protect the eyes. If refrigerant nevertheless enters the eyes, consult a physician immediately. Rubber gloves must be worn to protect the hands.
2. When performing repairs on the air-conditioning system, all refrigerant must be extracted from the system and the refrigerant cleaned. Refrigerant must not be allowed to escape into the environment, because it attacks the ozone layer of the earth.
3. Welding must not be performed on parts of the closed air-conditioning system or in its close proximity under any circumstances. Irrespective of whether the system is filled with refrigerant or not, a very high pressure is produced by heating up which may lead to damage to the system or even to an explosion. R 12 is completely non-toxic at normal temperatures, but decomposes into hydrogen chloride and hydrogen fluoride after contact with a flame or at high temperature. These decomposition products contain, among other things, chlorine and phosgene. Since these products are injurious to health, corresponding care must be taken.
4. Refrigerant bottles must not be thrown and must not be exposed to direct sun or other sources of heat for long periods. The maximum permitted temperature of a filled refrigerant bottle must not exceed 45 °C.

Installation work on the air-conditioning system

Service unit SECU



- 1 - Pressure gauge, low pressure
- 2 - Pressure, high pressure
- 3 - Torr meter
- 4 - Shut-off valve, low pressure (blue)
- 5 - Shut-off valve, high pressure (red)
- 6 - Shut-off valve, tormeter (black)
- 7 - Shut-off valve, vacuum pump (yellow)
- 8 - Connection piece, low pressure
- 9 - Connection piece, high pressure
- 10 - Shut-off valve, refrigerant inlet
- 11 - Shut-off valve, refrigerant outlet
- 12 - Connection piece, refrigerant inlet (from refrigerant bottle)
- 13 - Connection piece, refrigerant outlet (to refrigerant bottle)
- 14 - Moisture indicator
- 15 - Drain valve, refrigerating oil
- 16 - Main switch
- 17 - Operating hours counter
- 18 - Pilot lamp, yellow
- 19 - Pilot lamp, red
- 20 - Pilot lamp, green
- 21 - Pressure gauge, filling cylinder
- 22 - Shut-off valve, filling cylinder
- 23 - Filling cylinder with weight scale

Installation work with intervention in the refrigerant system

The content of the refrigerant system must be properly disposed of before all work on the air-conditioning system which necessitates opening of the refrigerant system. The safety regulations must be observed here.

Dirt and moisture must be kept away from the piping system of the air-conditioning system. For this reason, extreme cleanliness must be ensured during all work. No parts of the system must be cleaned internally with hot steam under any circumstances. Only nitrogen must be used for cleaning.

When a component is replaced, all openings must be sealed with suitable stoppers.

General work sequence

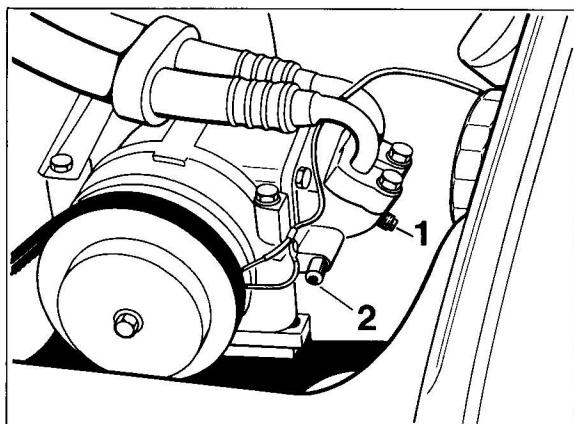
1. Extract refrigerant.
2. Remove faulty part.
3. Evacuate.
4. Check system for leaks.
5. Flush with refrigerant.
6. Perform extraction again.
7. Evacuate.
8. Fill.

Note

Pay attention to the sealing rings when disconnecting or connecting the hose connections.

Refrigerant extraction

1. Connect service unit to the system.



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- 1 - High pressure
- 2 - Low pressure

Note

Check at the liquid reservoir whether the sight glass is still transparent. If the sight glass shows signs of brown discoloration on the inside, the refrigerant should be pre-filtered by means of a cleaning drier installed in-between in the extraction hose. In this case, extract only via the high-pressure side.

2. Open the shut-off valve, low pressure (4), shut-off valve, high pressure (5) and shut-off valve, refrigerant inlet (8).
3. Turn the main switch (16) fully to the right. The green pilot lamp lights up.

Note

Extraction takes place automatically. The unit is switched off when all refrigerant has been extracted from the circuit. The red pilot lamp then lights up.

4. Close shut-off valves 4, 5 and 8.
5. Open the refrigerating oil drain cock (15) and drain extracted refrigerating oil.
6. Determine the volume of the refrigerating oil.

Note

No longer use extracted refrigerating oil.

7. Fill system with new refrigerating oil (extracted volume + 10 cm³)

Filling refrigerating oil

1. Unscrew the red hose on the service unit at connection piece 9 and hold in the container with new refrigerating oil.
2. Switch on vacuum pump.
3. Open shut-off valve for low pressure (4) and vacuum pump (7).

Note

The refrigerating oil is now sucked into the system via the high-pressure side.

4. After filling the refrigerating oil, close the shut-off valves and switch off the vacuum pump.

Evacuating the air-conditioning system

1. Extract any pressure still present.
2. Switch on vacuum pump (turn main switch to left).
3. Open shut-off valves for low pressure (4), high pressure (5), torr meter (6) and vacuum pump (7).
4. Leave vacuum pump switched on for at least 15 minutes.
5. Close shut-off valves 6 and 7 at a pressure of approx. 0.1 bar (absolute).
6. Switch off vacuum pump.

Note

If the vacuum cannot be attained or can be reached only after a very long time or if the pressure increases over 0.2 bar (absolute) approx. 10 minutes after the pump is switched off, there is a leak in the circuit and this must be sealed.

Flushing the air-conditioning system

Note

Flushing the air-conditioning system serves the purpose of drying the circuit.

1. Evacuate.
2. Open the shut-off valve for high pressure (5) and the refrigerant outlet (11).
3. Allow refrigerant to flow in until a pressure of approx. 2 bar (absolute) is indicated.
4. Close shut-off valves 5 and 11.
5. Extract refrigerant again.
6. Evacuate.

Filling the air-conditioning system

Note

The air-conditioning system must be evacuated and free of leaks. There must be sufficient refrigerant in the filling cylinder. Top up if necessary.

1. All valves on the service unit must be closed.
2. A pressure of approx. 7 bar is required to fill the system. If the pressure is lower, the pressure can be increased by cleaning the refrigerant (refer to Page 87 - 25). If the pressure is higher than 10 bar (end of the weight scale), the pressure in the filling cylinder can be lowered by opening the shut-off valve 22.

Note

The pressure increases by approx. 1.5 bar in 10 minutes.

3. In accordance with the value read off on the pressure gauge 21, adjust the rotating scale of the filling cylinder so that the value specified at the top edge of the scale is positioned over the sight glass.

Note

It must be noted that the rotating scale is designed for the use of different refrigerants. The refrigerant designations are specified at the bottom scale edge.

Only the scales for R12 are applicable for automobile air-conditioning systems.

4. Set the required refrigerant quantity on the filling cylinder with the rubber ring (difference to refrigerant level in filling cylinder).
5. Open the shut-off valves for high pressure (5) and the refrigerant outlet (11).
6. Observe the fluid level indication in the sight glass of the filling cylinder. When the filling level has reached the setting ring, close shut-off valves 11 and 5.
7. Check the refrigerating capacity (refer to Page 87-11).
8. Disconnect filling hoses at compressor.
9. Screw protective caps onto the valves.

Topping up the air-conditioning system

Note

If gas bubbles are visible in the sight glass of the fluid reservoir when the air-conditioning system is switched on, there is not sufficient refrigerant in the system.

1. Extract refrigerant from air-conditioning system.
2. Determine the volume of the refrigerating oil extracted as well.
3. Fill system with new refrigerating oil.
4. Evacuate.
5. Check system for leaks.
6. Fill system with prescribed filling quantity.

Filling service unit with refrigerant

1. Connect refrigerant bottle with the connection piece at the refrigerant inlet (12).
2. Open the valve on the refrigerant bottle and shut-off valve 10.
3. Switch on the service unit with the main switch (16). The green panel lamp lights up.
4. If there is sufficient refrigerant in the service unit, close the bottle valve. The system switches off automatically when the refrigerant is extracted up to the bottle valve.
5. Close the shut-off valve at the refrigerant inlet (10).

Emptying the service unit

Note

If the filling cylinder is full with refrigerant and it is still necessary to extract further refrigerant, the clean refrigerant can be filled into a refrigerant bottle. Pay attention to the maximum filling weight here. **The refrigerant bottle must not be overfilled.**

1. Connect the refrigerant bottle with the connection piece at the refrigerant outlet (13).
2. Increase the pressure in the filling cylinder to approx. 8 bar by cleaning the refrigerant.
3. Open the bottle valve and the shut-off valve at the refrigerant outlet (11).
4. After completing the emptying operation, close the bottle valve and shut-off valve.

Note

Do not completely empty the filling cylinder, otherwise moisture may enter the service unit.

Cleaning the refrigerant

Note

If the extracted refrigerant is heavily contaminated, it must be pumped through the filter systems several times.

The state of cleaning can be seen at the moisture indicator (14).

1. Open the shut-off valve for the filling cylinder (22).
2. Switch on the service unit. The green pilot lamp lights up.
3. After cleaning the refrigerant (state visible at the moisture indicator), close the shut-off valve.

Note

The unit switches off automatically when all refrigerant has been pumped into the filling cylinder (red pilot lamp lights up). The pressure then increases in the filling cylinder.

Modifying wiring loom of heater A/C unit

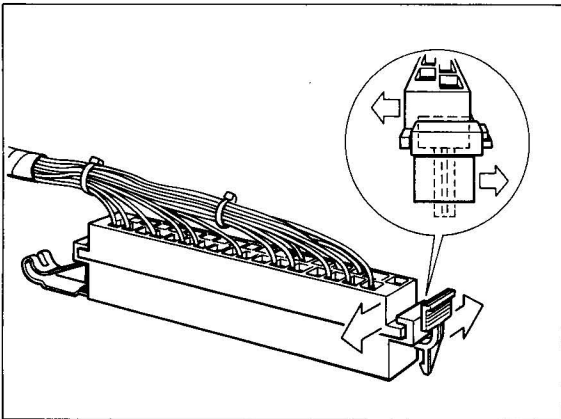
Note

On vehicles prior to Model '91, the heater A/C unit wiring loom must be modified if a new heating/air conditioning regulator with index 01 is fitted. A jumper that connects pin 19 of connector G to pin 1 must be fitted.

1. Remove heating/air conditioning regulator (refer to page 87 - 8).
2. Pull connector G (35-pin) apart.

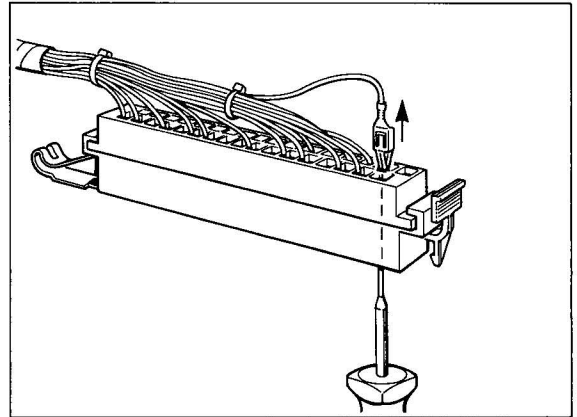
Note

The connector housing consists of 2 sections. With the connector housing clipped together, the connectors are protected additionally (apart from the protection offered by the retaining lug) against being pressed out.



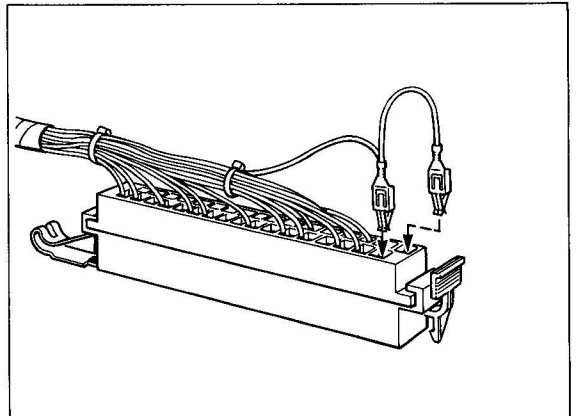
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3. Disengage connector terminal G 19.



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4. Cut off connector terminal and reconnect along with a second cable – cross-section 0.75 mm², length approx. 60 mm.



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5. Engage connector terminals into G 19 and G 1.
6. Clip connector housing together.

Note

If the jumper is missing, a fault (Fault Code 46 and 47) on the missing left-hand rear blower is detected and the left-hand heater blower will therefore operate at reduced speed while the heater is on.

Technical data of air conditioning system

As of MY '93

Refrigerant charge 840 g refrigerant R 134a

Refrigerant oil in compressor 140 ± 20 c.c. ND 8

Tightening torques for refrigerant lines

Outside thread dia.	TPI	Tightening torque, Nm (ftlb.)
5/8"	18 UNF	17 ±3 (13 ± 2)
3/4"	16 UNF	24 ±4 (18 ± 3)
7/8"	14 UNF	33 ±4 (24 ± 3)

Hexagon head bolts	Thread	Tightening torque, Nm (ftlb.)
Expansion valve	M 5	6 (4)
Expansion valve	M 6	9 (7)
Compressor	M 8	28 (21)

Note

When fitting the refrigerant lines, coat the fittings and the O-rings lightly with refrigerant oil.

The refrigerant oil has to be disposed of as hazardous waste.

Pressure and temperature specifications

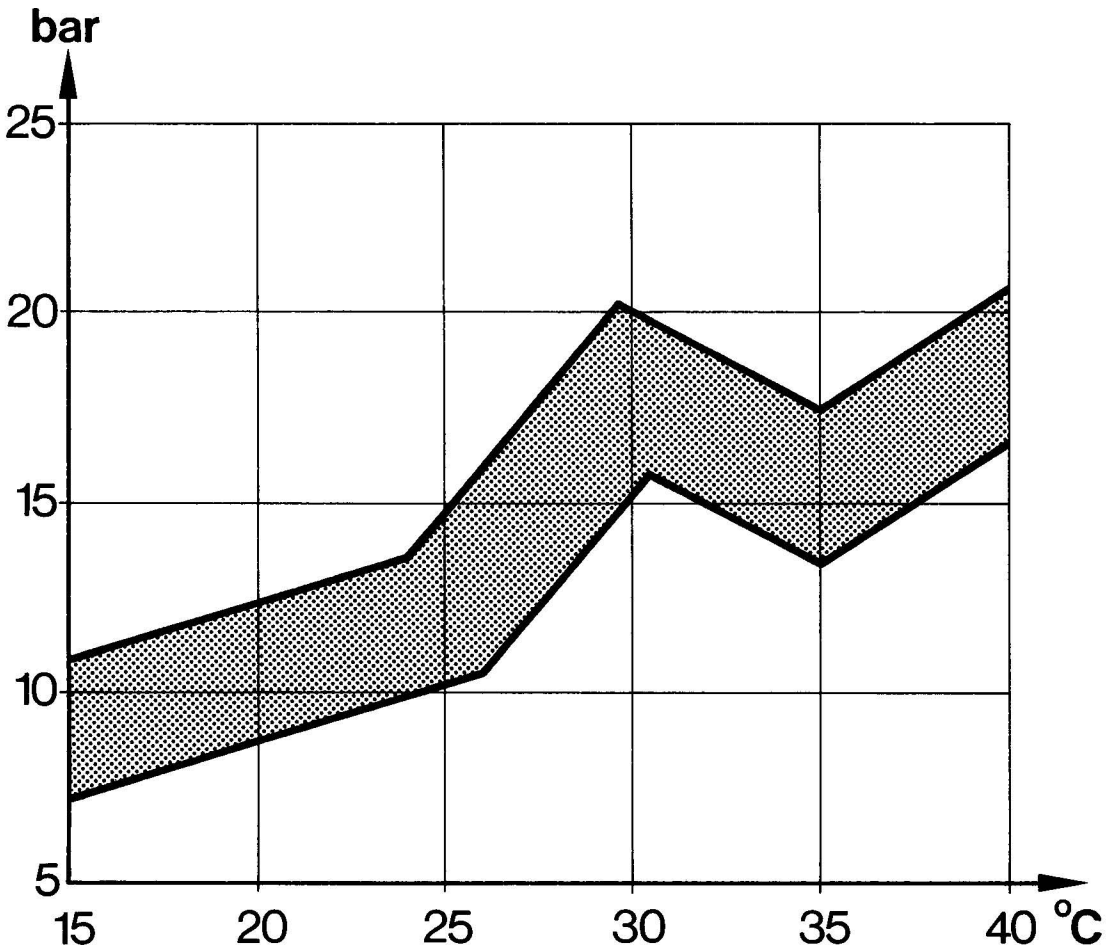
Refrigerant R 134 a

General testing requirements:

- V-belt tensioned correctly.
- Magnetic coupling energized.
- Condenser clean.
- Sunroof, doors and windows closed.

1. Switch on A/C system.
2. Set temperature selector to max. cooling.
3. Set fresh-air blower to stage 4.

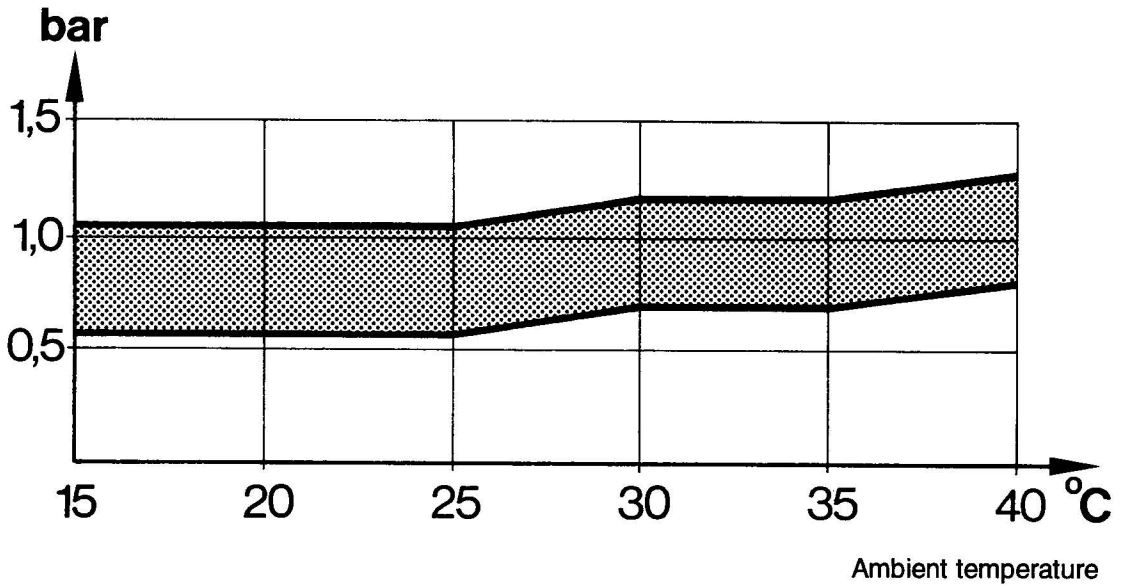
The pressures and temperatures indicated in the below diagrams must be reached after a running time of approx. 10 mins. at a speed of 2,000 rpm with the compressor switched on.



Ambient temperature

1355 - 87

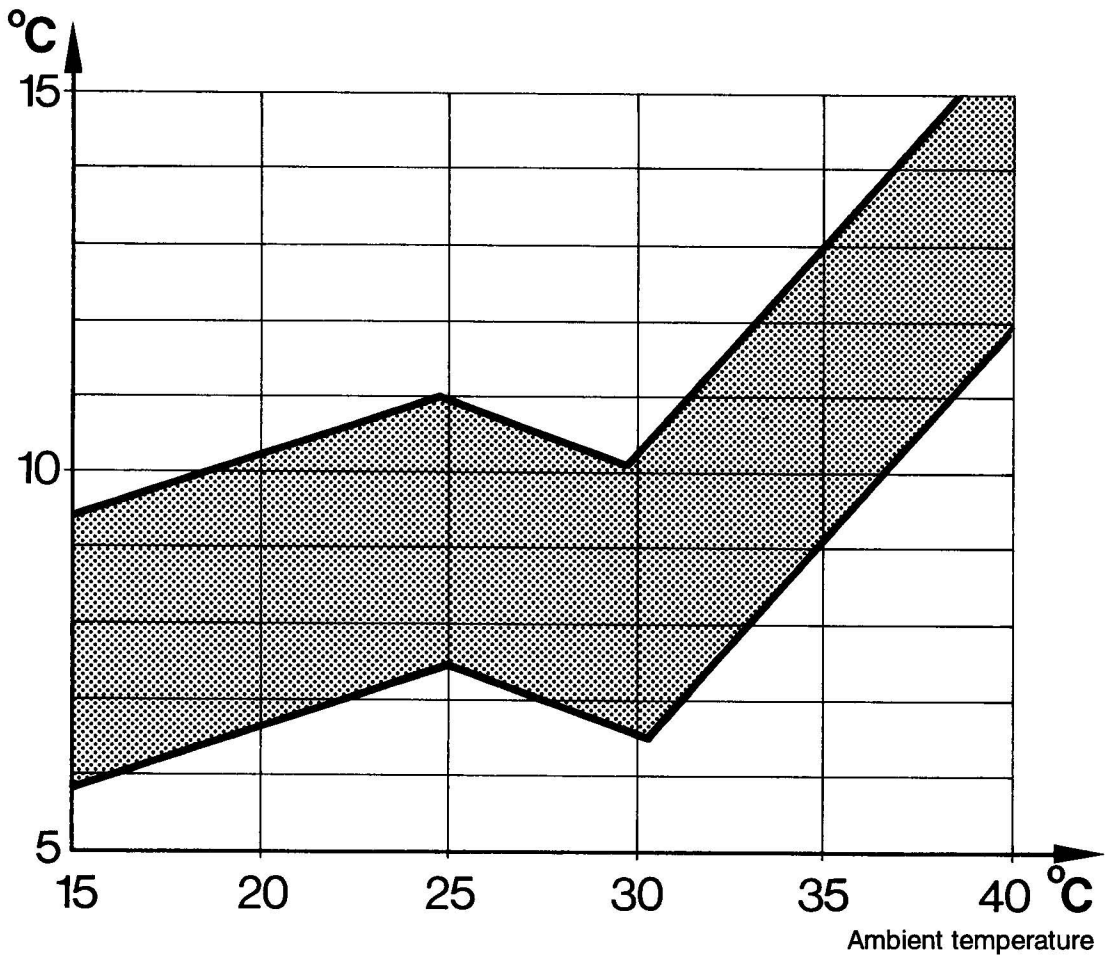
High pressure in refrigerant circuit vs. ambient temperature



1356 - 87

Low pressure in refrigerant circuit vs. ambient temperature

Temperature at center nozzle



1357 - 87

Air temperature at center nozzle vs. ambient temperature

Diagnosis / Troubleshooting

The heater and/or air conditioner can be checked with a 9288 System Tester or 9268 Tester. The 9268 tester is connected in the 19-pin diagnosing socket with help of adapter leads 9268/2 and 9288/1.

Reading Fault Memory

9288 System Tester: see Repair Group 03, Self-diagnosis.

9268 Tester: see information brochure on diagnosing DME, LH-EZK.

Information for 9268 Tester:

The fault memory of the DME control unit must be read first. The fault memory of the heater and/or air conditioner can be read only after 1500 (no faults stored) or 1000 (end of output) is displayed.

If the control lamp for the airbag system indicates a fault, flashing code diagnosis with the 9268 Tester will not be possible. Diagnosing is only possible with a 9288 System Tester.

Explanation of Four Digit Fault Codes:

1st digit: 8 = Heater and/or air conditioner

2nd digit: 1 = Fault existing at moment

2 = Fault not existing at moment

3rd digit }
4th digit } = Fault code

This diagnosing/troubleshooting plan is based on the contents of the fault memory.

Paths not covered by self-diagnosis can be diagnosed with conventional means (Test Point 1 in following Fault List).

Troubleshooting requires that the person testing

- knows the location of components, function and interrelation of the systems being tested (model information),
- is capable of reading and evaluating Porsche wiring diagrams,
- knows the function of circuits and relays, and
- knows how to operate and read testers such as oscilloscope, voltmeter, ohmmeter and ammeter.

Important:

If a faulty component appears in the display of a tester or in the Fault List, the fault does not have to be in the displayed component, but instead could also be in the concerned control unit or connecting leads (paths) between the component and control unit. No troubleshooting may be carried out in the form of disconnecting plugs and so on before reading the fault memory, since this could be stored as a fault in the fault memory.

Note

Displayed

Fault does not exist, this could mean:

- Fault does not exist at time of testing (loose contact)

Remedy: Path checked by visual inspection

- Conditions, with which the fault had occurred, are not given (e.g. ignition not turned on, AC button not pressed)

Remedy: Compliance with the conditions displayed in the tester

Signal unplausible:

- The control unit cannot recognize whether there is a short, break or seizure of an electric motor.

Temperature Sensor Values

Left and Right Mixing Chambers

Evaporator

at: 0°C (32° F)	30.6 - 34.7 kΩ
25°C (77° F)	9.5 - 10.5 kΩ
50°C (122° F)	3.4 - 3.8 kΩ

at: 0° (32° F)	8.8 - 9.2 kΩ
25°C (77° F)	2.6 - 2.9 kΩ

Rear Fan

Oil Cooler

at 0°C (32°F)	28.8 - 36.4 kΩ
25°C (77°F)	9.0 - 11.0 kΩ
50°C (122° F)	3.1 - 4.0 kΩ

at 60°C (140° F)	3.6 - 4.0 kΩ
85°C (185° F)	1.4 - 1.6 kΩ
100°C (212° F)	0.9 - 1.0 kΩ

Criteria for canceling the diagnostic operation

1. Vehicle speed > 0 mph
2. RH mixing chamber temperature > 80°C
3. LH mixing chamber temperature > 80° C
4. Rear fan temperature > 95° C
5. Oil temperature > 105° C

Criteria for starting the diagnostic operation

1. Vehicle speed = 0 mph
2. RH mixing chamber temperature < 80°C
3. LH mixing chamber temperature < 80°C
4. Rear fan temperature < 95° C
5. Oil temperature < 105°C

Fault, Fault Code	Possible Causes, Elimination, Remarks
Test Point 1 Power supply	to heater/air conditioner regulator K1 - term. 31 K2 - term. 30 G29 - term. X G35 - term. 15 G17 - term. 58 b (light) check
Test Point 2 Inside temperature sensor Fault Code 8 _ 11	Replace heater/air conditioner regulator.
Test Point 3 Left mixing chamber temperature sensor Fault Code 8 _ 12	Measure resistance between G 18 and G 23. Check both electric leads against ground.
Test Point 4 Right mixing chamber temperature sensor Fault Code 8 _ 13	Measure resistance between G 18 and G 24. Check both electric leads against ground.
Test Point 5 Evaporator temperature sensor Fault Code 8 _ 14	Measure resistance between G 18 and G 22. Check both electric leads against ground.
Test Point 6 Rear fan temperature sensor Fault Code 8 _ 15	Measure resistance between G 10 and G 18. Check both electric leads against ground. Note that the electric leads run via two plugs (T 5 and T 30).

Fault, Fault Code	Possible Causes, Elimination, Remarks
Test Point 7 Oil cooler temp. sensor Fault Code 8 _ 21	Measure resistance between G 12 and G 18. Check both electric leads against ground. Note that the electric leads run via plug T 34.
Test Point 8 Defrost flap motor Fault Code 8 _ 22	<ol style="list-style-type: none">1. Check voltage between G 18 (negative) and G 26 (positive). Display: 0.2 - 5 volts depending on position of motor.2. Check voltage between G 13 (positive) and G 18 (negative). Display: approx. 5 volts. Replace heater/air conditioner regulator if there is no voltage.3. Pull off plug on drive motor.4. Check pin 4 and pin 5 electric leads for breaks, short against ground and against battery voltage.
Test Point 9 Footwell flap motor Fault Code 8 _ 23	<ol style="list-style-type: none">1. Check voltage between G 18 (negative) and G 27 (positive). Display: 0.2 - 5 volts. Points 2 through 4 – see Test Point 8.
Test Point 10 Fresh air flap motor Fault Code 8 _ 24	<ol style="list-style-type: none">1. Check voltage between G 18 (negative) and G 20 (positive). Display: 0.2 - 5 volts. Points 2 through 4 – see Test Point 8.
Test Point 11 Left mixing flap motor Fault Code 8 _ 31	<ol style="list-style-type: none">1. Check voltage between G 18 (negative) and G 25 (positive). Display: 0.2 - 5 volts. Points 2 through 4 – see Test Point 8.

Fault, Fault Code	Possible Causes, Elimination, Remarks
Test Point 12	
Right mixing flap motor Fault Code 8 _ 32	<ol style="list-style-type: none"> 1. Check voltage between G 18 (negative) and G 8 (positive). Display: 0.2 to 5 volts. Points 2 through 4 – see Test Point 8.
Test Point 13	
Left heater blower motor Fault Code 8 _ 33	<ol style="list-style-type: none"> 1. Check whether final stage is screwed tight on the aluminum cooling panel. 2. Check whether motor is seized mechanically.
Test Point 14	
Right heater blower motor Fault Code 8 _ 34	See Test Point 13.
Test Point 15	
Condenser blower motor Fault Code 8 _ 41	<ol style="list-style-type: none"> 1. Check voltage on terminals 30 and 30 C. 2. Check whether motor is seized mechanically; e.g. bridge terminals 30 and 87. 3. Check leads from relay to motor for breaks and ground shorts. 4. Check leads from motor to heater/air conditioner regulator G 7 for breaks.
Test Point 16	
Oil cooler blower motor Fault Code 8 _ 42	<p>Points 1 through 3 – see Test Point 15.</p> <ol style="list-style-type: none"> 4. Check leads from motor to heater/air conditioner regulator G 9 for breaks.

Fault, Fault Code	Possible Causes, Elimination, Remarks
Test Point 17 Rear blower motor speed 1 Fault Code 8 _ 43/46	Points 1 through 3 – See Test Point 15. 4. Check electric leads from motor to heater/air conditioner regulator G 19 for breaks. 5. Check electric leads from motor to relay term. 87 or to ballast resistor for short against battery voltage.
Test Point 18 Rear blower motor speed 2 Fault Code 8 _ 44/47	1. Check voltage on terminals 30 and 30 C. 2. Check whether motor is seized mechanically, e.g. bridge terminals 30 and 87. 3. Check electric leads from relay term. 87 to motor for breaks and ground short. 4. Check electric leads from motor to heater/air conditioner regulator G 19 for breaks.
Test Point 19 Inside sensor blower motor Fault Code 8 _ 45	1. Check voltage on plug receptacle. Display: approx. 12 volts. 2. Check whether motor is seized mechanically.

Note on Test Item 17/18

The turbo is fitted with 2 rear blowers. Fault Codes 43 and 44 refer to the right-hand blower, 46 and 47 refer to the left-hand blower.

Since both the 911 Carrera 2/4 and the 911 turbo are fitted with the same heating/airconditioning blower, a separate jumper is fitted to the 911 Carrera 2/4 (also refer to page 87-27). For this reason, both fault codes, i.e. 43 and 46 or 44 and 47, respectively, are displayed at the same time whenever a fault in the rear blower is detected on the 911 Carrera 2/4.

Heating/air conditioning blower with index 01

Software No.: H 03, H 04

H 03 - Heating regulator

H 04 - Heating and air conditioning regulator

Diagnosis was extended by additional features:

- Drive link activation
- Input signals
- Actual values

The following drive links can now be activated:

- Left mixing flap
- Right mixing flap
- Defroster flap
- Footwell flaps
- Fresh air flaps
- Rear blower
- Left heater blower
- Right heater blower
- Oil cooler blower
- Condenser blower (only H 04)
- Air-conditioning test (only H 04)

Operation of the drive motors for the flaps and the blower motor, respectively, is displayed via a bar graph (except for the heater blowers: in this case, operation is indicated by the operating noise). In case of the drive motors, it is important for the bar graph display to change, i.e. the flaps must be operated from the open to closed and from the hot to cold positions, respectively, and vice versa.

In case of the air conditioning test, the evaporator temperature must drop below 5°C. If testing is not possible, check operation of the left and right mixing flaps and of the condenser blower.

The following input signals may be checked:

- Footwell flap
- Defroster flap
- Blower potentiometer
- Temperature potentiometer
- Air circulation switch
- Defroster switch
- AC switch (only H0 4)

Operation of the potentiometers is displayed via a bar graph.

Modify position of potentiometers: the bar graph must increase or decrease, respectively.

Operation of the switches is indicated by the opened or closed position;

Switch not actuated: open

Switch actuated: closed

The following actual values may be displayed:

- Voltage Term. X
- Inside temperature
- Rear temperature
- Mixing chamber temperature, left
- Mixing chamber temperature, right
- Oil temperature
- Evaporator temperature (only H 04)