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★ **NEW INFORMATION** since last filming

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Cautions and warnings

WARNING

- A/C system is filled with R12 refrigerant gas which is under pressure.
- always be careful that refrigerant does not come in contact with your skin
- always wear eye protection when working around the system
- if liquid refrigerant has come in contact with your skin or eyes:
 - do not rub skin or eyes
 - immediately flush with cool water
 - rush to a doctor or hospital
 - do not attempt to treat yourself
- keep refrigerant containers stored below 50°C (122°F) and never drop from high places
- keep refrigerant away from open flames because poisonous gas will be produced if it burns
- electric welding near refrigerant hoses causes refrigerant to decompose from ultraviolet light. Discharge system before electric welding, see A/C refrigerant system discharging procedure
- do not steam clean condensers or evaporators. Use only cold water or compressed air
- automotive refrigerant containing CFC's is hazardous to the earth's atmosphere. To protect our environment, use an Underwriter's Laboratory (UL) approved refrigerant recovery/recycling unit such as **Kent-Moore ACR³**, or equivalent, whenever discharging an A/C system

CAUTION

Refrigerant system has no sight glass. System must not be topped up.

If low refrigerant charge is suspected, system must be completely discharged, evacuated and recharged with 1050 g + 20 g (37.0 oz + 0.7 oz) of R12 refrigerant.

Refrigerant system components, repairing/replacing

WARNING

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- discharge refrigerant system, see A/C refrigerant system discharging procedure
- remove defective component

Note

Replacement A/C compressors, evaporators and condensers are filled with R12 refrigerant during manufacture. If no gas escapes when these parts are first opened, the component is possibly defective.

- add refrigerant oil to new component

Add the following amount of refrigerant oil when replacing these components:

evaporator	20cc (1.0 oz)
condenser	10cc (0.5 oz)
refrigerant line	10cc (0.5 oz)
refrigerant hose	10cc (0.5 oz)

- replace A/C restrictor
- evacuate and recharge A/C refrigerant system

Use A/C refrigerant oil that meets the specifications of the following oils:

Shell	Clavus G100
Sunoil	Suniso 5 GS
Texaco (DEA)	Triton WF 100
Idemitsu	Nippondenso Oil 6 G
Fuchs	Reniso Kes 100

Replacement A/C compressors supplied by the Parts Department are filled with 80cc (2.70 oz.) of A/C refrigerant oil.

Refrigerant system, discharging

Note

Follow safety precautions on page 87.2 when discharging or charging A/C refrigerant system.

WARNING

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WARNING

The A/C system should be serviced only by trained personnel familiar with:

- equipment use
- related safety procedures
- regulations governing the discharging/handling/disposal of automotive refrigerants.

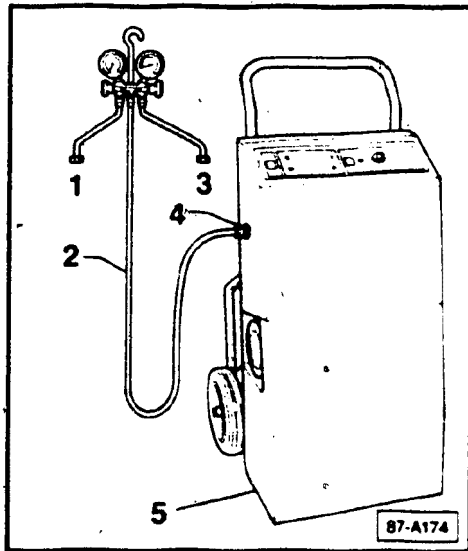
WARNING

Always wear safety goggles when charging or discharging system. Be sure work area is well ventilated.

Avoid inhaling fumes when using flame type leak detector. Refrigerant-12 becomes poisonous gas after coming into contact with open flame.

CAUTION

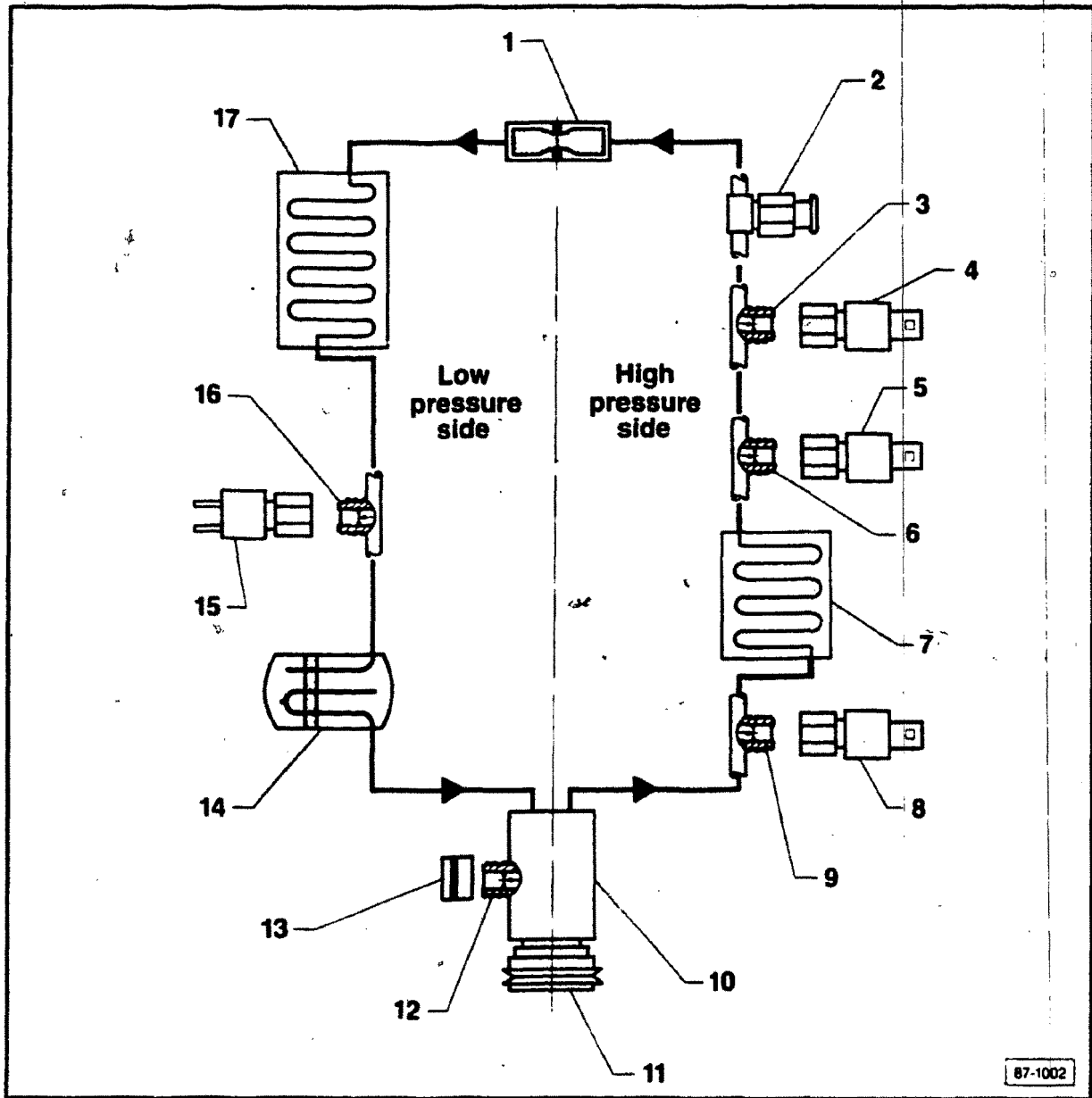
Always follow manufacturer's instructions when using a refrigerant recovery/recycling unit.



- close both valves on A/C manifold gauge set
- connect manifold gauge low pressure hose 1 to A/C low pressure service valve on vehicle
- remove A/C Refrigerant High Pressure Switch (identified by red housing) and connect hose 3 from high pressure gauge to high pressure service valve
- connect manifold gauge hose 2 to inlet connection 4 on refrigerant recovery/recycling unit 5
- following refrigerant recovery/recycling unit manufacturer's instructions, discharge A/C system into refrigerant recovery/recycling unit
- close manifold gauge valves when refrigerant is fully discharged

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BLANK



1 — Restrictor

- removing: Fig. 4
- O-ring: 9.3 mm inside diameter
1.8 mm thickness

2 — Safety valve

- O-ring: 9.3 mm inside diameter
1.8 mm thickness
- torque: 10.0 Nm (7.5 ft lb)

3 — High pressure valve

4 — A/C refrigerant high pressure switch

- housing color: yellow or green
- operating pressures:
closes: 13.1-17.5 bar (189.9-253.7 psi)
opens: 10.6-15.0 bar (153.7-217.5 psi)
- O-ring: 9.3 mm inside diameter
1.8 mm thickness
- torque: 10.0 Nm (7.5 ft lb)

87-1002

5 — A/C high pressure cut-out switch
(5-cylinder motor)

- red housing
- opens: 28.2 bar-31.0 bar
(408.9 psi-449.5 psi)
- closes: 10.3 bar-17.3 bar
(149.3 psi-253.7 psi)
- O-ring: 9.3 mm inside diameter
1.8 mm thickness
- torque: 10 Nm (7.5 ft lb)

6 — High pressure service valve
(5-cylinder motor)

- for A/C refrigerant high pressure switch
- for charging and discharging A/C refrigerant system

7 — Condenser

- O-ring: inlet: 14.0 mm inside diameter
1.8 mm thickness
- O-ring: outlet: 7.5 mm inside diameter
1.8 mm thickness
- torque on inlet: 26.5 Nm (19.5 ft lb)
- torque on outlet: 16.5 Nm (12.0 ft lb)

Note

When removing condensers on vehicles with 5-cylinder motors, first unbolt A/C refrigerant line from evaporator to condenser.

8 — A/C high pressure cut-out switch
(4-cylinder motor)

9 — High pressure service valve
(4-cylinder motor)

- for A/C refrigerant high pressure switch
- for charging and discharging A/C system

10 — A/C compressor

- O-ring seal on low pressure connection:
17.2 mm inside diameter
1.8 mm thickness
- O-ring seal on high pressure connection:
14.0 mm inside diameter
1.8 mm thickness
- torque on low pressure connection
42 Nm (31.0 lb ft)
- torque on high pressure connection
26.5 Nm (19.5 lb ft)

11 — A/C compressor clutch

12 — Low pressure service valve
for charging and discharging A/C refrigerant system

13 — Cap

14 — Accumulator

- O-ring: inlet: 17.2 mm inside diameter
1.8 mm thickness
outlet: 17.2 mm inside diameter
1.8 mm thickness
- torque: inlet: 42.0 Nm (31.8 ft lb)
outlet: 42.0 Nm (31.8 ft lb)

15 — A/C refrigerant low pressure switch

- operating pressures:
opens: 1.45-1.6 bar
(21.0 psi-23.2 psi)
closes: 2.9-3.2 bar
(42.0 psi-46.4 psi)
- O-ring: 9.3 mm inside diameter
1.8 mm thickness
- torque: 5.5 Nm (4.0 ft lb)

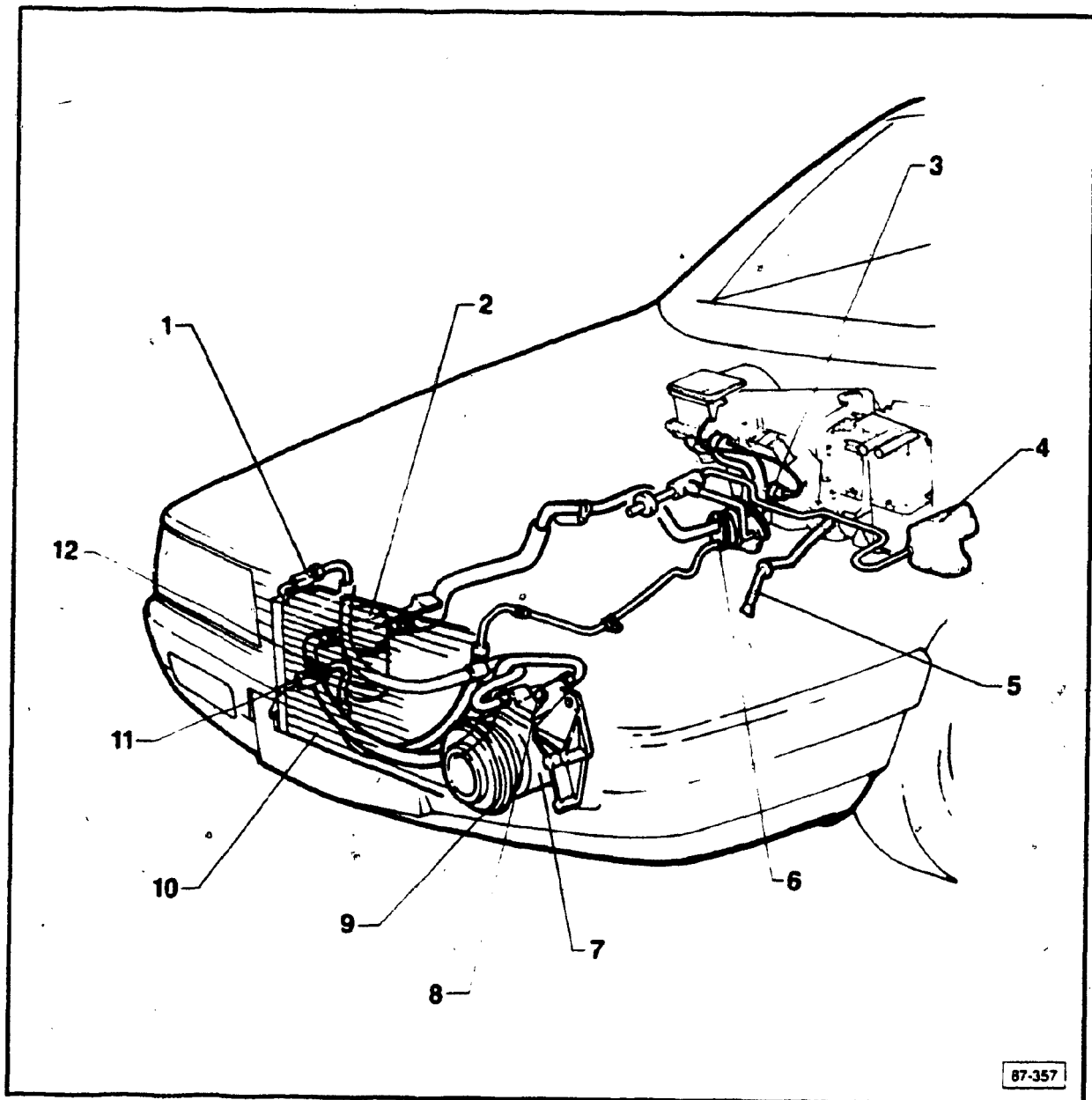
16 — Low pressure valve

17 — Evaporator

- refrigerant lines removing/installing, Fig. 3
- O-ring: inlet: 10.8 mm inside diameter
1.8 mm thickness
outlet: 17.2 mm inside diameter
1.8 mm thickness
- torque: 16-Nm (11.8 ft lb)

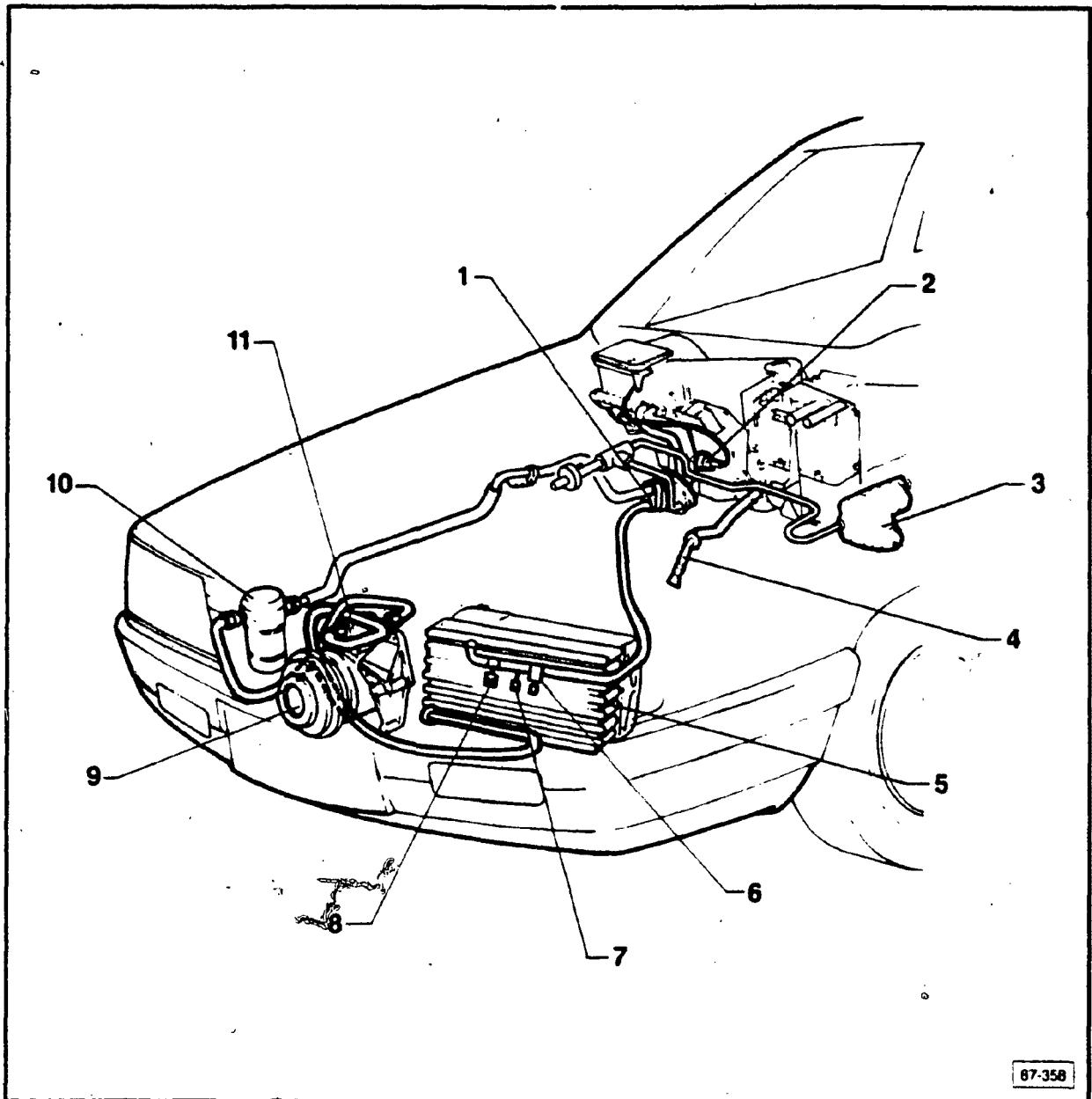
WARNING

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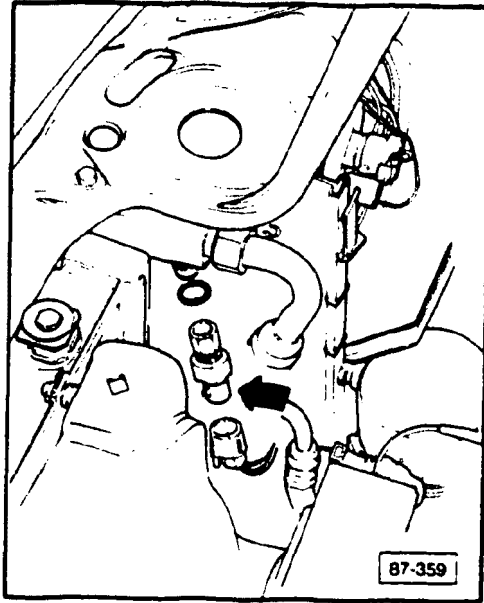
- 1 — A/C high pressure cut-out switch
removing-installing. Fig 1
- 2 — Accumulator
- 3 — A/C refrigerant low pressure switch
removing installing. Fig 5
- 4 — Vacuum reservoir
vacuum system layout. see Index
vacuum system. checking. see Index
- 5 — Water drain hose
checking. Fig 6
removing installing. see Index
- 6 — Restrictor
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- 7 — A/C compressor
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- 8 — Low pressure service valve
- 9 — A/C compressor clutch
repairing. see Index
- 10 — Condenser
- 11 — A/C refrigerant high pressure switch
removing installing. Fig 3
- 12 — A/C refrigerant safety switch
see Fig. 15



87-358

- | | |
|--|--|
| <p>1 — Restrictor
Fig. 13</p> <p>2 — A/C refrigerant low pressure switch
removing/installing, Fig. 5</p> <p>3 — Vacuum reservoir
vacuum hose layout, see Index
vacuum system checking, see Index</p> <p>4 — Water drain hose
removing/installing, Fig. 7</p> <p>5 — Condenser</p> <p>6 — A/C refrigerant safety switch</p> | <p>7 — A/C refrigerant high pressure switch
removing/installing, Fig. 4</p> <p>8 — A/C high pressure cut-out switch
removing/installing, Fig. 2</p> <p>9 — A/C compressor and clutch
V-belt tension, Fig. 9
removing/installing, see Index
repairing, see Index</p> <p>10 — Accumulator</p> <p>11 — Low pressure service valve</p> |
|--|--|



► Fig. 1 A/C high pressure cut-out switch (4-cylinder engine)

Switch is identified by red housing (arrow).

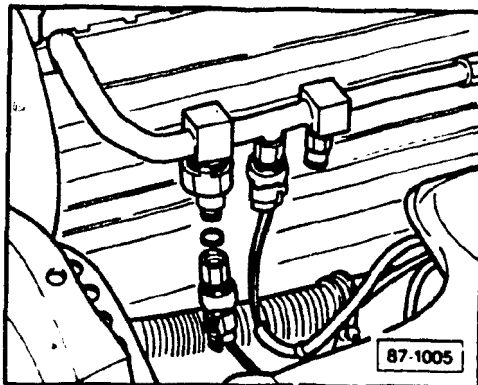
Switches A/C compressor clutch OFF when refrigerant pressure goes too high.

Note

This switch can be removed without discharging the A/C refrigerant system.

Tightening torque:

- 10 N·m (7.5 ft lb)



► Fig. 2 A/C high pressure cut-out switch (5-cylinder engine)

Switch is identified by red housing.

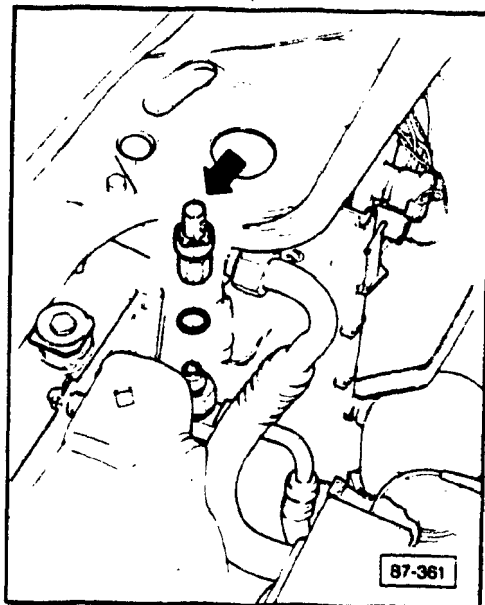
Switches A/C compressor clutch OFF when refrigerant pressure goes too high.

Note

This switch can be removed without discharging the A/C refrigerant system.

Tightening torque:

- 10 Nm (7.5 ft lb)



► Fig. 3 A/C refrigerant high pressure switch (4-cylinder engine)

Switch has yellow housing or green housing with welded connections (arrow).

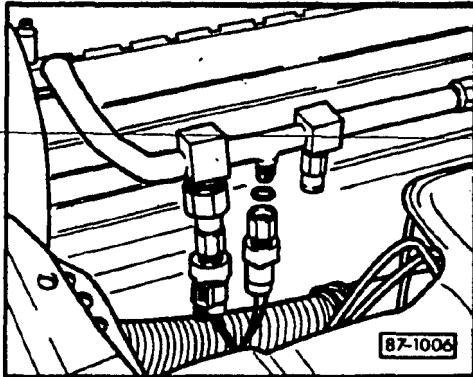
Switches radiator cooling fan to 2nd stage when refrigerant pressure reaches specified level.

Note

This switch can be removed without discharging the A/C refrigerant system.

Tightening torque:

- 10 Nm (7.5 ft lb)



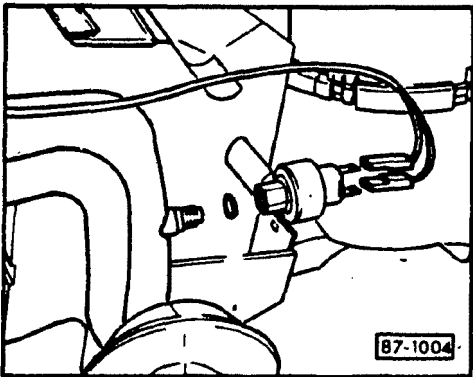
► **Fig. 4 A/C refrigerant high pressure switch (5-cylinder engine)**

Switch has yellow housing or green housing with welded connections.

Switches radiator cooling fan to 2nd stage when refrigerant pressure reaches specified level.

Note

This switch can be removed without discharging the A/C refrigerant system.



► **Fig. 5 A/C refrigerant low pressure switch**

Switch controls evaporator temperature by cycling A/C compressor clutch **ON** and **OFF**.

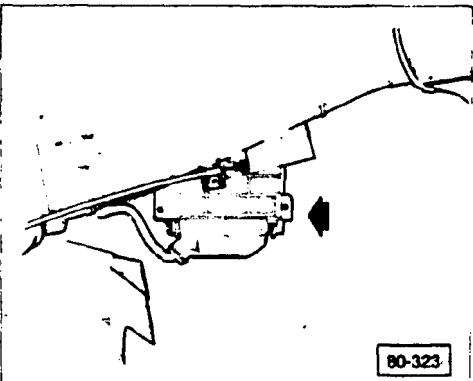
Switch also turns A/C compressor clutch **OFF** when refrigerant pressure is too low.

Installation location

On passenger side of vehicle between evaporator housing and firewall.

Note

This switch can be removed without discharging the A/C refrigerant system.

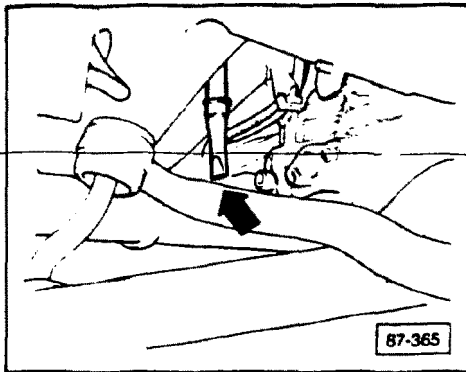


Removing

- remove close-out panel under glove compartment
- remove fuel injection control unit (arrow)
- remove A/C refrigerant low pressure switch

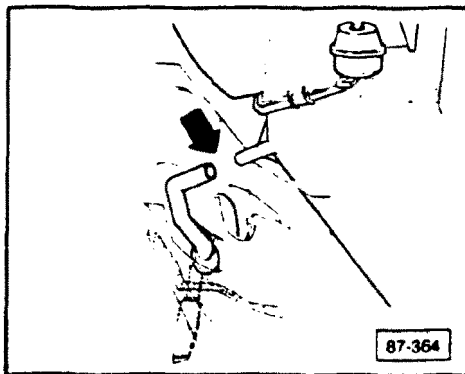
CAUTION

Wear protective glasses and gloves when removing the A/C refrigerant low pressure switch.



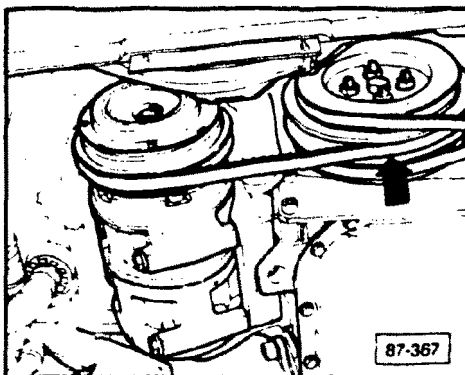
► Fig. 6 Water drain valve

Located in right hand side of engine compartment next to transmission housing (arrow).



► Fig. 7 Water drain valve, installing

- lubricate hose connection lightly with Vaseline
- push water drain hose on connection to stop (arrow)



► Fig. 8 A/C compressor V-belt (4-cylinder engine)

V-belt is properly tensioned when it can be pushed in approximately 5mm (5/16 in.) at center.

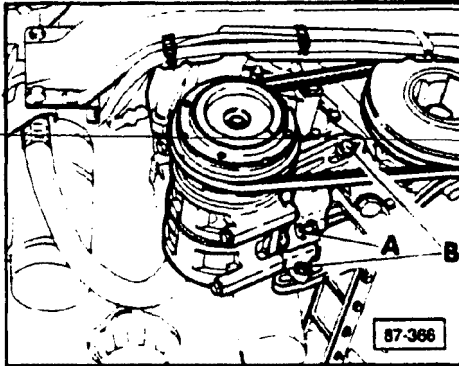
The V-belt tension is adjusted by adding or subtracting shims between the crankshaft pulley halves (arrow).

Store unused shims on front half of crankshaft pulley between pulley and tightening bolts.

Note

When adjusting V-belt, tighten crankshaft pulley bolts alternately while turning crankshaft.

Tightening torque: 22 Nm (16.2 ft lb)



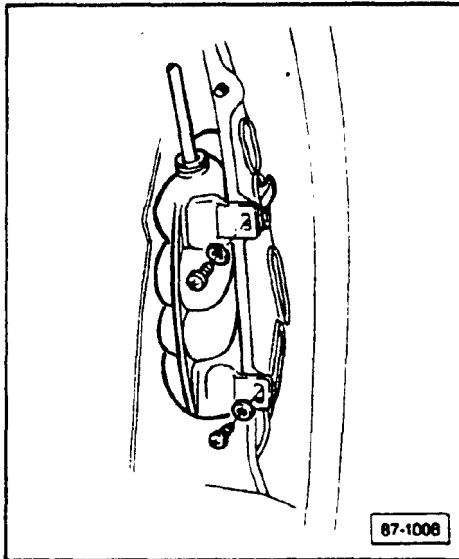
► **Fig. 9 A/C compressor V-belt (5-cylinder engine)**

V-belt is properly tensioned when it can be pushed in approximately 5mm (5/16 in.) at center.

- loosen bolts **B**
- tension belt by turning bolt **A**
- tighten bolts **B**
 - 22 Nm (16.2 ft lb)
- back bolt **A** out until there is at least a 5mm gap between engine block and bolt
- lock adjusting bolt **A** in place with nut

CAUTION

Bolt **A** is used for adjustment only. Do not leave this bolt tensioned against the engine block.



► **Fig. 10 Vacuum reservoir**

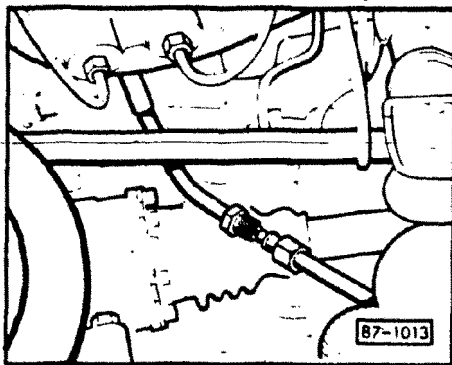
The vacuum reservoir is located in the rear of the left front wheelhouse behind the wheelhousing liner.

Vacuum system, checking

- remove left front wheelhousing liner
- remove vacuum hose from vacuum reservoir
- connect vacuum pump to vacuum hose
- apply 300mbar (8.8 Hg) vacuum to system
 - reading should not drop more than 10% in two minutes

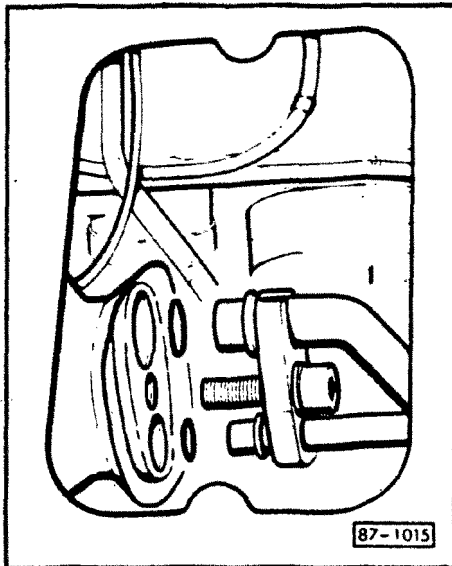
If system will not maintain vacuum.

- check vacuum hoses and components for leaks
- repair as necessary



► **Fig. 11 Connection in refrigerant high pressure line (5-cylinder engine only)**

- remove this connection before removing condenser in vehicles with 5-cylinder engines
- torque: 16.5 Nm (12.1 ft lb)

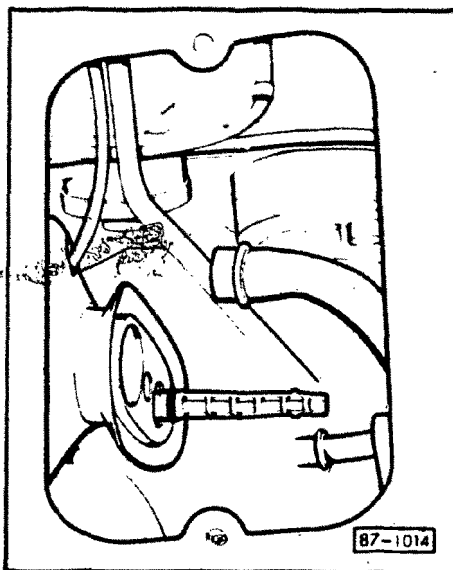


► **Fig. 12 A/C refrigerant line connection to evaporator**

Note

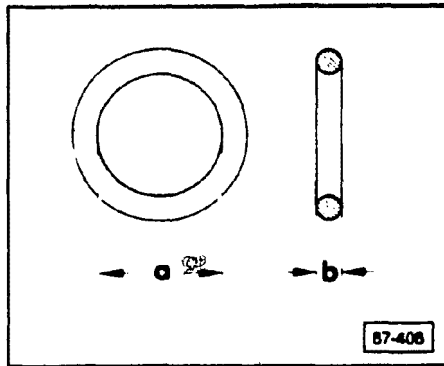
Be sure there is no tension on refrigerant lines before tightening.

- torque: 16.0 Nm (12.1 ft lb)



► **Fig. 13 Restrictor, removing/installing**

- remove refrigerant lines from evaporator
- pull restrictor from evaporator with needle nose pliers
- install restrictor with new O-ring
- install refrigerant lines
- 16.0 Nm (12.1 ft lb)



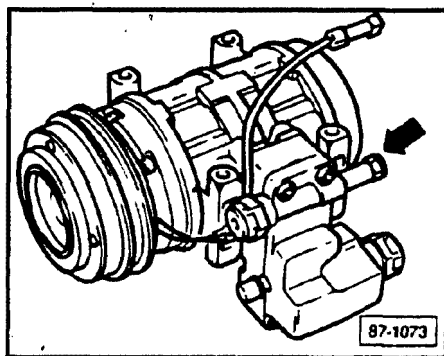
► Fig. 14 O-ring gaskets

Note

Do not re-use O-ring gaskets.

Lubricate O-ring seals with A/C refrigerant oil before installing.

O-ring Specifications	a (mm)	b (mm)
<ul style="list-style-type: none"> ● Compressor (low pressure side) ● Evaporator outlet ● Accumulator 	17.2	1.8
<ul style="list-style-type: none"> ● Compressor (high pressure side) ● Condenser inlet 	14.0	1.8
<ul style="list-style-type: none"> ● Evaporator inlet 	10.8	1.8
<ul style="list-style-type: none"> ● Refrigerant high pressure switch ● Refrigerant low pressure switch ● Safety switch 	9.3	1.8
<ul style="list-style-type: none"> ● Condenser outlet ● Connection in high pressure refrigerant line (5-cylinder only) 	7.5	1.8
<ul style="list-style-type: none"> ● Restrictor 	7.5	1.5



► Fig. 15 A/C compressor with high pressure relief valve

Since November 1987, A/C compressors with a high pressure relief valve are being installed on Audi 80/90 vehicles with 4 cylinder motors.

With the installation of these compressors, the high pressure relief valve on the condenser has been eliminated.

CAUTION

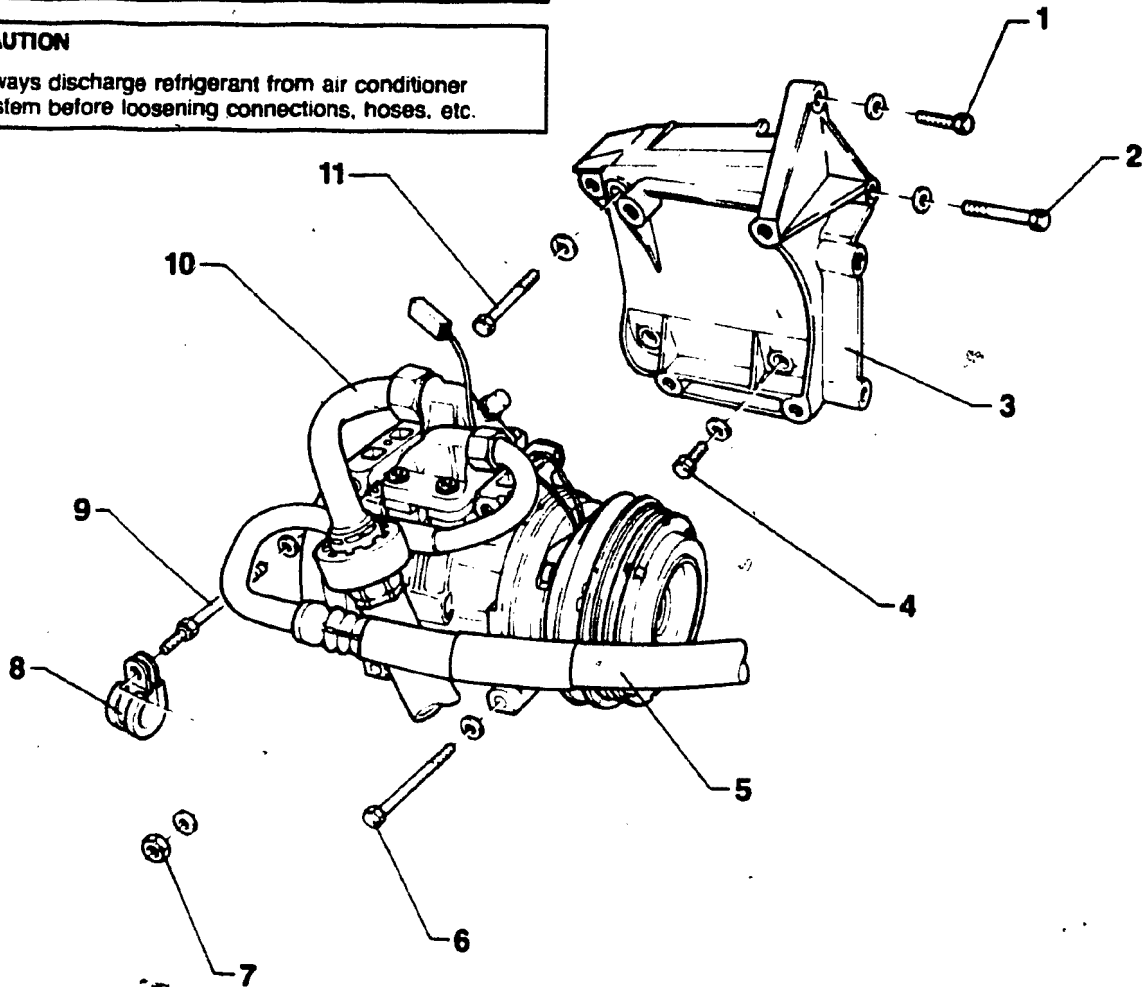
If an A/C compressor or condenser is replaced during repairs, check that at least one pressure relief valve remains in the refrigerant system.

WARNING

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CAUTION

Always discharge refrigerant from air conditioner system before loosening connections, hoses, etc.



87-1011

1 — 32 Nm (23.6 ft lb)

2 — 32 Nm (23.6 ft lb)

3 — A/C compressor bracket

4 — 32 Nm (23.6 ft lb)

5 — A/C refrigerant high pressure hose

6 — 32 Nm (23.6 ft lb)

7 — 32 Nm (23.6 ft lb)

8 — Clamp

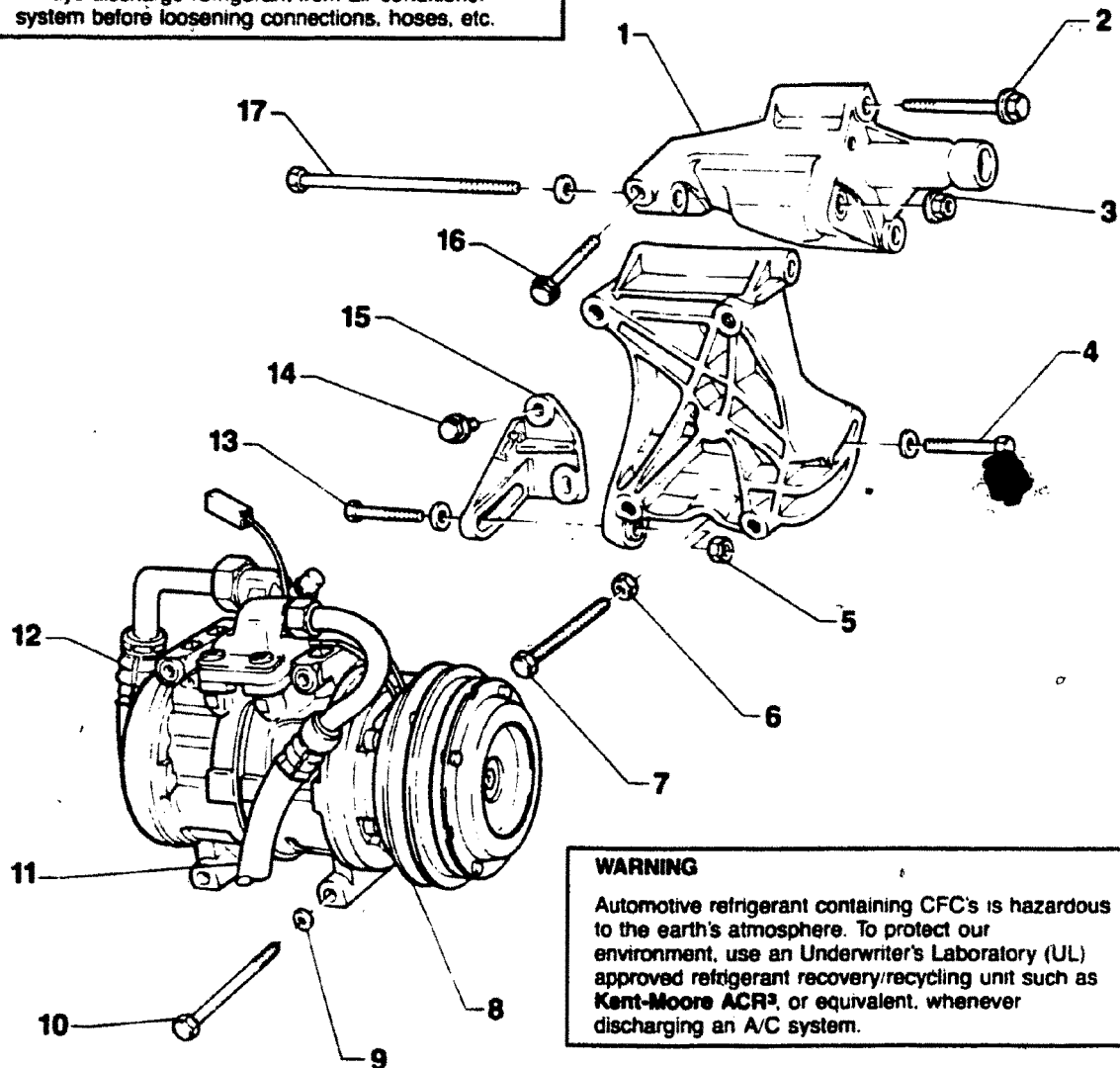
9 — 32 Nm (23.6 ft lb)

10 — A/C refrigerant low pressure hose

11 — 32 Nm (23.6 ft lb)

CAUTION

Always discharge refrigerant from air conditioner system before loosening connections, hoses, etc.

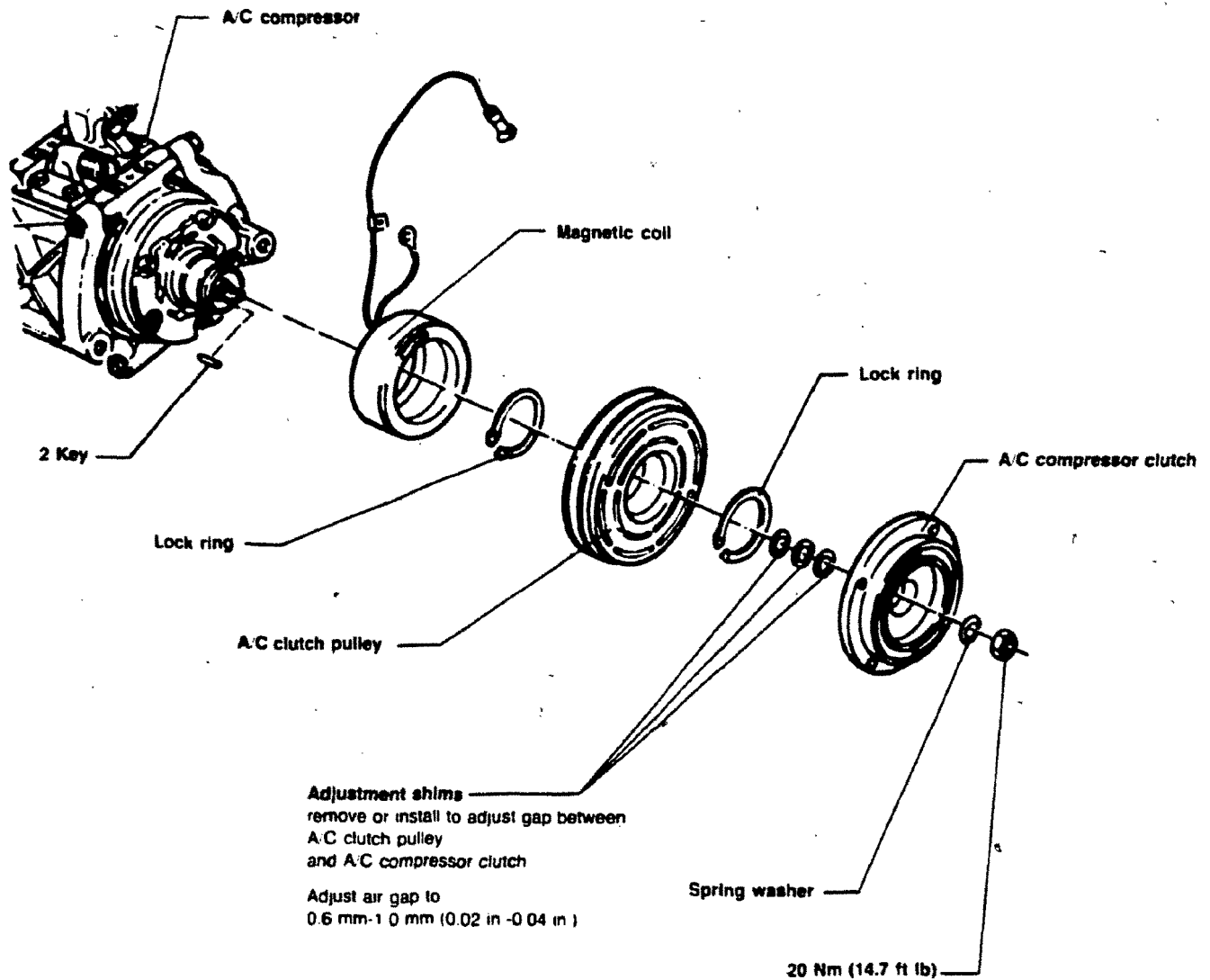


WARNING

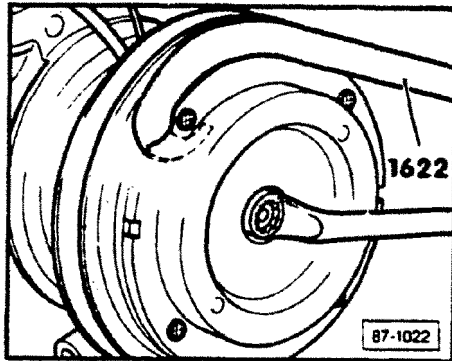
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87-1010

- | | | |
|--|---|---|
| 1 — Bracket | 7 — Bolt
for adjusting belt tension | 15 — Angle bracket |
| 2 — Bolt/washer assembly
45 Nm (33.1 ft lb) | 8 — A/C compressor and clutch | 16 — Bolt/washer assembly
22 Nm (16.2 ft lb) |
| 3 — Self locking nut
45 Nm (33.1 ft lb)
always replace | 9 — Washer | 17 — Bolt |
| 4 — 22 Nm (16.2 ft lb) | 10 — 22 Nm (16.2 ft lb) | |
| 5 — Self locking nut
22 Nm (16.2 ft lb)
always replace | 11 — A/C refrigerant high pressure hose | |
| 6 — Nut | 12 — A/C refrigerant low pressure hose | |
| | 13 — Bolt | |
| | 14 — Bolt/washer assembly | |

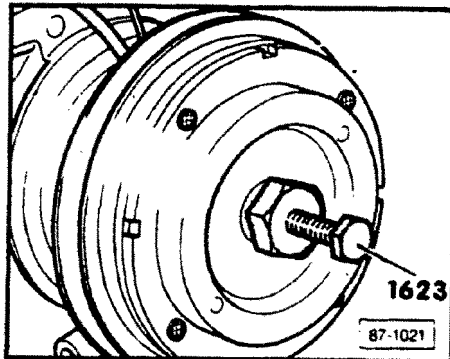


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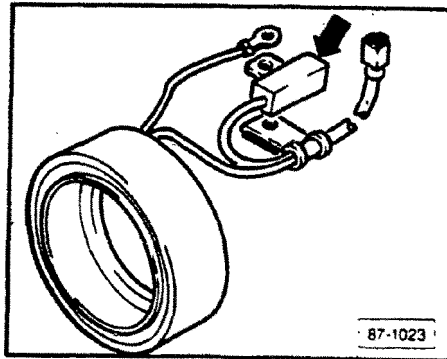


A/C compressor clutch, removing/ installing

- hold A/C compressor clutch with tool and loosen and remove nut
 - 20 Nm (14.7 ft lb)



- remove A/C compressor clutch

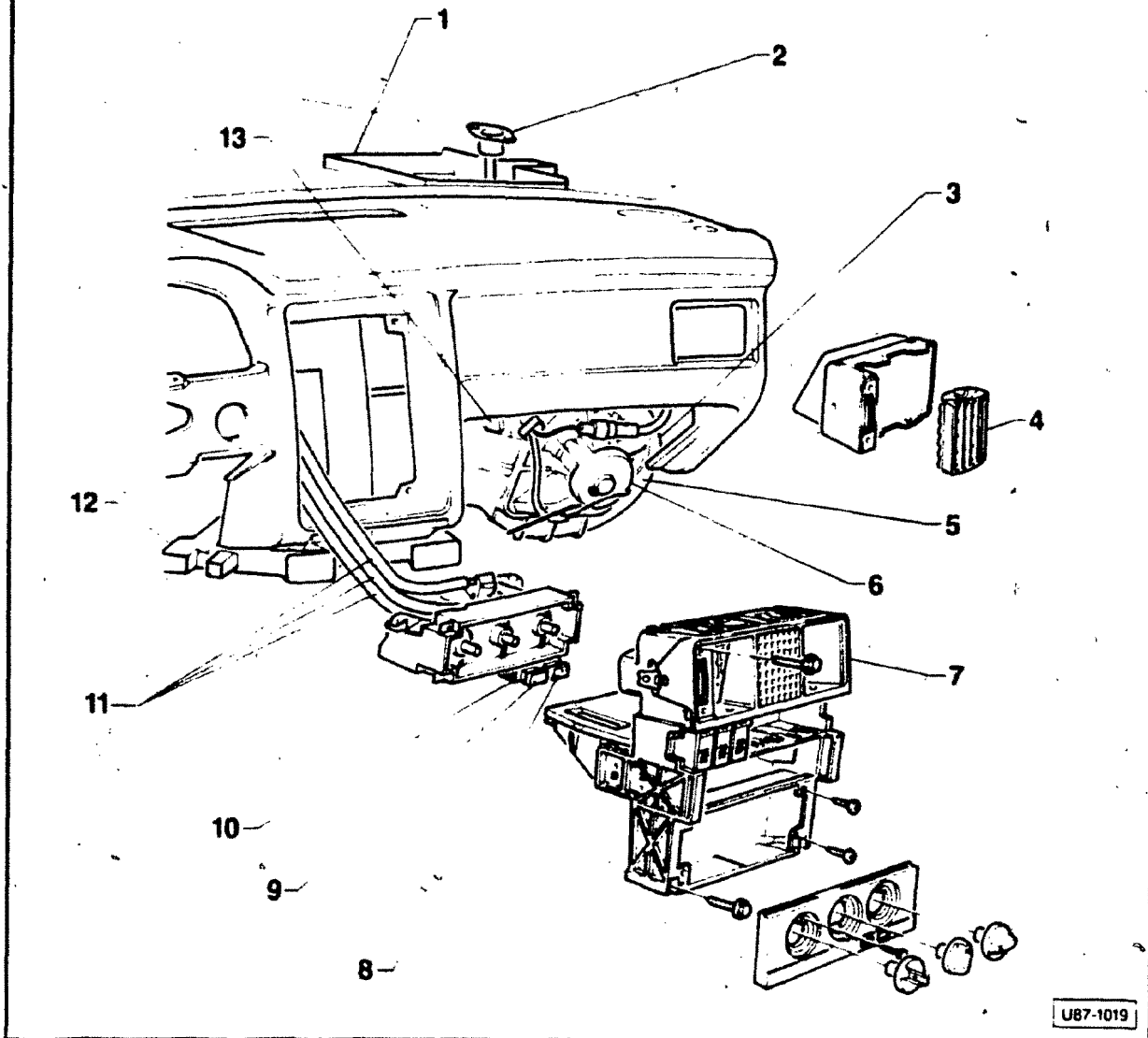


CAUTION

Only install magnetic coil with protective diode (arrow).

Note

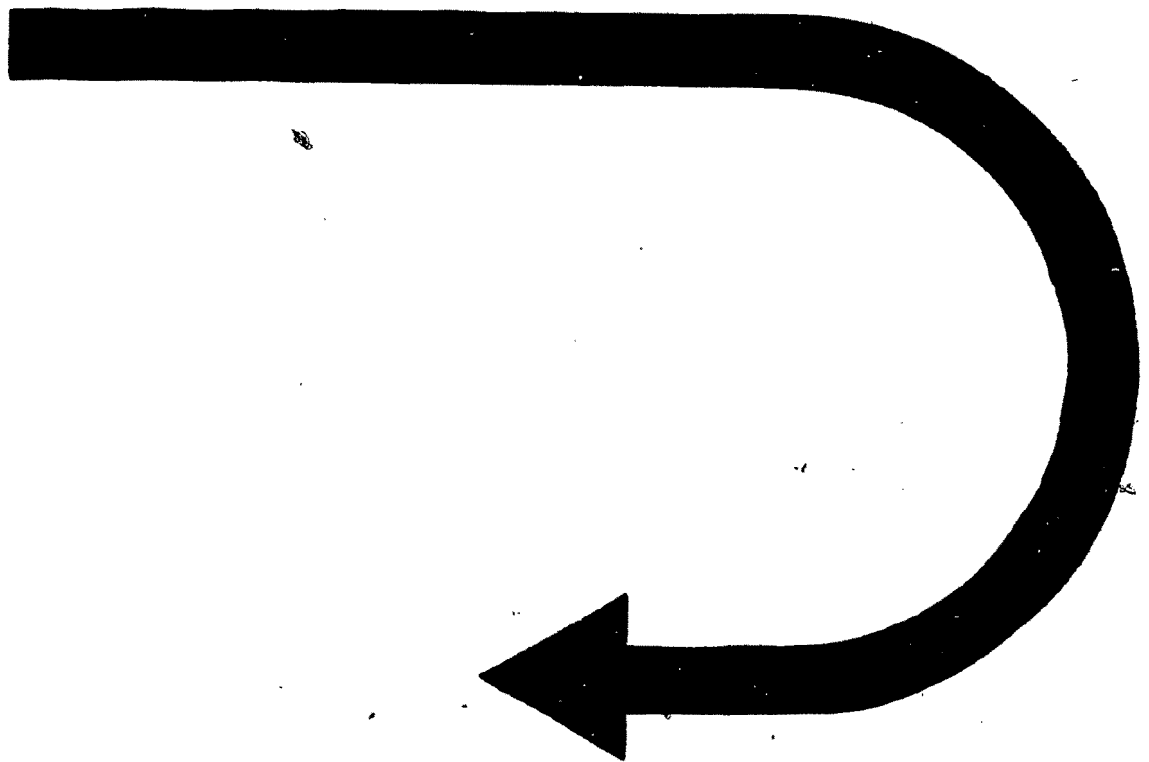
Repairs can be made to these components without discharging the A/C refrigerant system.

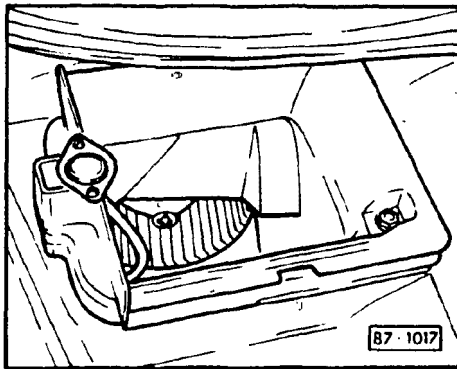


- | | |
|---|---|
| <p>1 — Fresh air/recirculation door
checking, Fig. 1</p> <p>2 — Outside temperature sensor
removing/installing, Fig. 2</p> <p>3 — Vacuum servo
● for fresh air/recirculation door
● checking, Fig. 5
● vacuum system layout, see Index
● checking, see Index</p> <p>4 — Instrument panel air vent
removing/installing, Fig. 4</p> <p>5 — Two way valve
for fresh air/recirculation door</p> | <p>6 — Fresh air blower
● removing/installing, Fig. 6
● checking, Fig. 8</p> <p>7 — Center vent/control panel
removing/installing, Fig. 4</p> <p>8 — Fresh air/recirculation door switch</p> <p>9 — A/C switch</p> <p>10 — A/C control head</p> |
|---|---|

- 11 — **Bowden cable**
 - connections at A/C control head,
Fig. 9-10
 - connections at flap doors,
Fig. 11-12
- 12 — **Footwell air outlets**
removing/installing,
Fig. 13
- 13 — **Fresh air blower series resistance**
removing/installing, Fig. 3

CONTINUED IN THE
BEGINNING OF NEXT ROW





► Fig. 1 Fresh air/recirculation door, checking

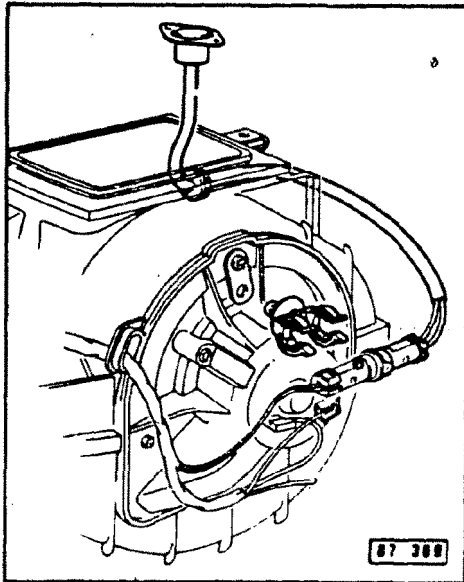
- remove air plenum cover on right side
- start engine and run at idle
- push A/C switch button
- push recirculation button
 - warning light lights
 - fresh air/recirculation door closes

If warning light does not light and fresh air/recirculation door does not close,

- check voltage supply for two way valve per wiring diagram
- repair as necessary
- check vacuum system
- repair as necessary

Note

If the vacuum system fails, the fresh air/recirculation door will open and all air will be drawn into the vehicle from the outside.



► **Fig. 2 Outside temperature sensor, removing/checking**

Sensor switches A/C compressor clutch **OFF** when temperature drops below specified temperature.

Sensor switches clutch **OFF**: -1°C (30°F)

Allows clutch to be switched **ON**: $+7^{\circ}\text{C}$ (45°F)

Removing

- remove air plenum cover
- remove glove compartment
- disconnect wires to temperature sensor

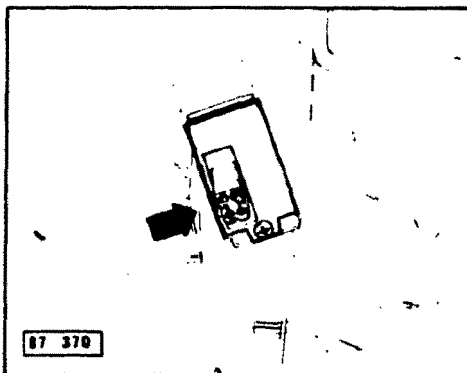
- remove sensor and pull wiring and grommet out through fresh air blower intake

Checking

- disconnect wires to sensor
- connect **VW 1119** and set to ohm scale

- place thermometer near outside temperature sensor
- spray cold water on sensor and thermometer

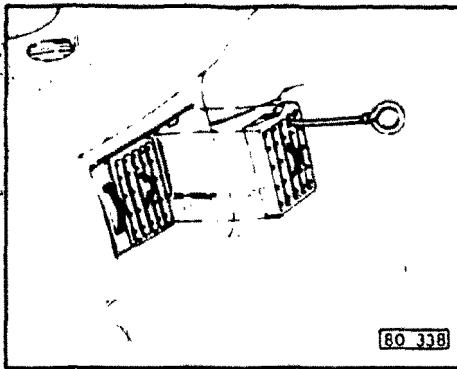
- measure temperature and check **VW 1119** to see when switch opens and closes



► **Fig. 3 Fresh air blower series resistance**

Removing/Installing

- remove glove compartment
- remove series resistance (arrow)



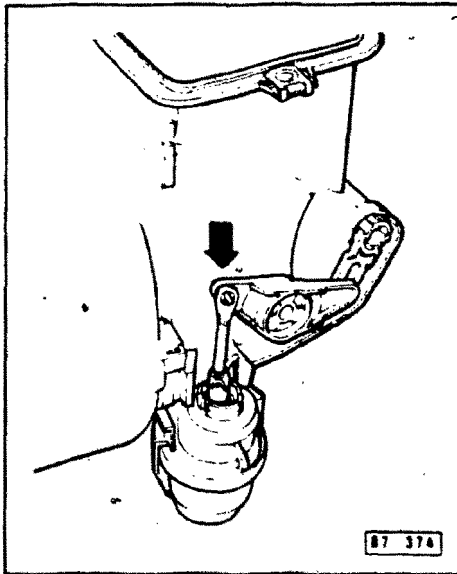
► Fig. 4 Instrument panel air outlet, removing/installing

Removing

- remove air direction vanes with self-made hook
- remove air outlet

Installing

- install air outlet
 - air outlet must snap in
- install air direction vanes with larger tab on top



► Fig. 5 Vacuum servo (for fresh air/recirculation door)

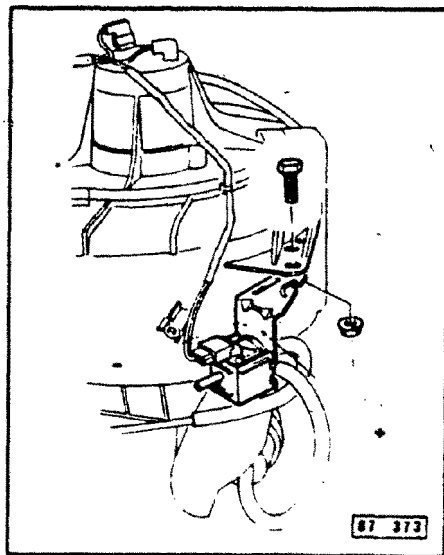
Vacuum servo is located on passenger side of vehicle on right side of heater housing.

Checking

- remove cover under glove compartment
- connect vacuum pump to vacuum servo
- apply vacuum to vacuum servo
 - fresh air recirculation door must close

Note

Vacuum servo can only be replaced when the heater box is removed.



► Fig. 6 Two way valve (for fresh air/recirculation door), removing

Valve allows vacuum to be applied to vacuum servo for fresh air/recirculation door.

Located on passenger side of vehicle on right side of heater housing.

Removing

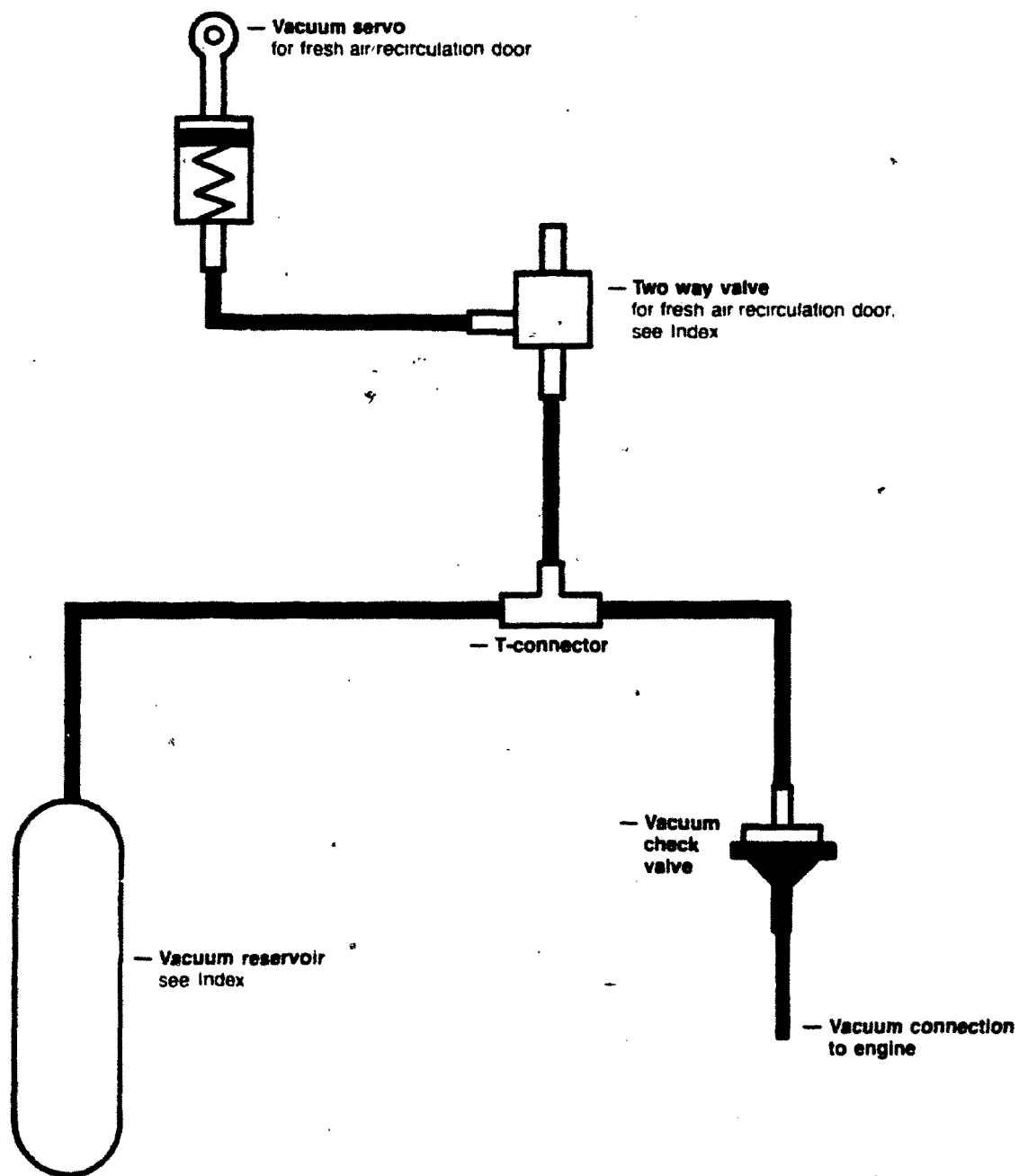
- remove cover under glove compartment
- start engine and run at idle
- push A/C switch button
- push recirculation button
 - warning light lights
 - fresh air/recirculation door closes

If warning light lights and fresh air/recirculation door does not close.

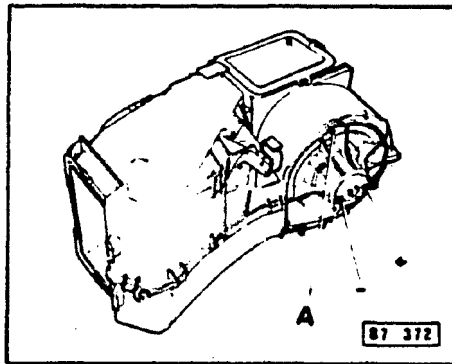
- check voltage supply for two way valve per wiring diagram
- repair as necessary
- check vacuum system, see index
- repair as necessary

Note

If the vacuum system fails, the fresh air/recirculation door will open and all air will be drawn into the vehicle from the outside.



87-1003

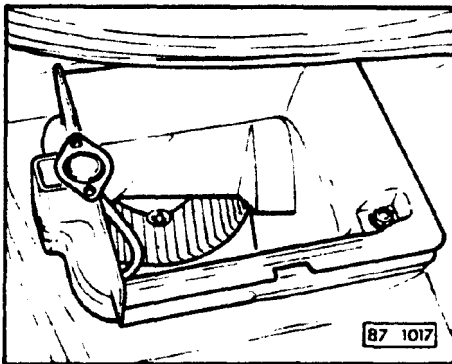


► Fig. 7 Fresh air blower, removing/installing

- remove cover under glove compartment
- remove glove compartment
- remove 6 bolts (A)
- remove fresh air blower with anchor plate from heater housing
- separate fresh air fan and anchor plate
- remove motor

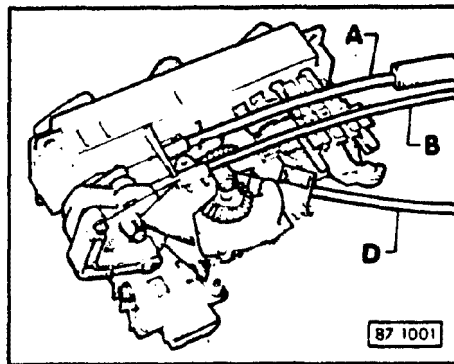
Note

Coat fitting surfaces of fresh air motor and anchor plate with silicone gasket sealer before assembling.



► Fig. 8 Fresh air blower impeller, checking

- remove cover over air plenum on right side of vehicle
- check that impeller moves easily
- check for objects in wheel



► Fig. 9 Bowden cable identification on A/C control head

A = from air distribution control to flap door for floor defrost outlet

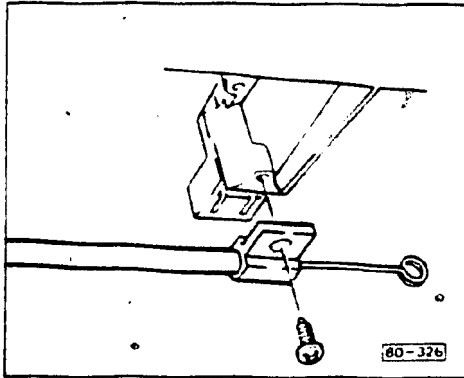
color: white

B = from air distribution control to main air distribution flap

color: black

D = from temperature control lever to temperature regulation flap

color: red



► **Fig. 10 Bowden cable connections on A/C control head**

Bowden cables are not adjustable.

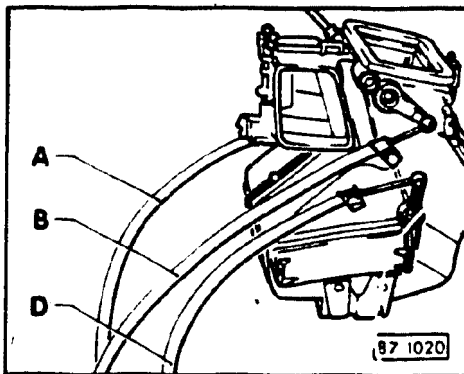
Note

If cable retainer (A) breaks,

- turn cable 90° and attach with screw (arrow).

Note

Always replace bent or binding cables.



► **Fig. 11 Bowden cable connections on heater/evaporator box**

A = from footwell defrost flap door to air distribution control

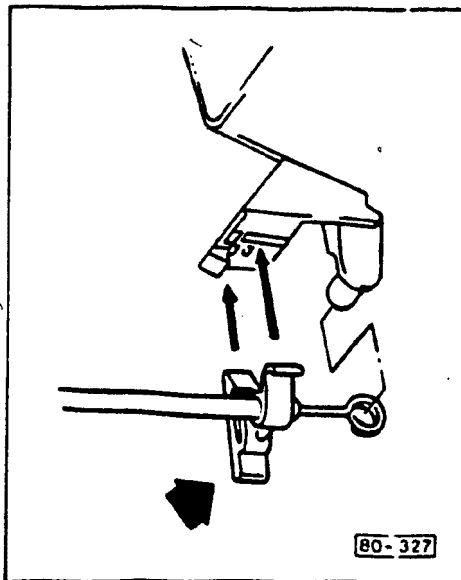
color: white

B = from central air distribution flap door to air distribution control

color: black

D = from temperature regulation flap to temperature regulation control

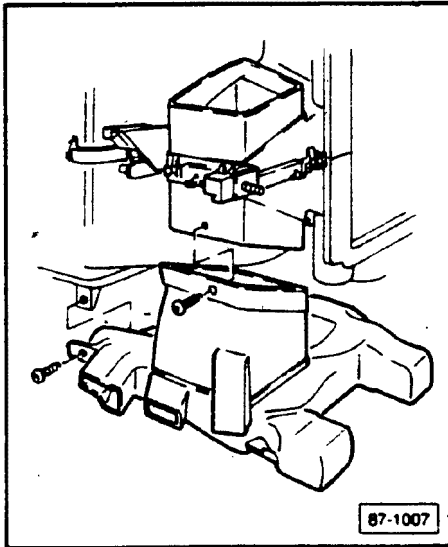
color: red



► **Fig. 12 Bowden cable connections on heater evaporator box**

Note

Always replace bent or binding cables.



► **Fig. 13 Footwell air outlet, removing/installing**

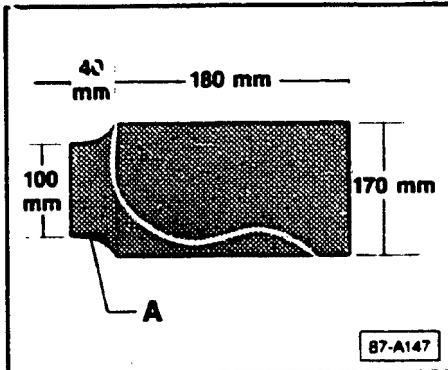
- remove storage shelf on driver's side
- remove cover under glove compartment
- remove center vent/control panel
- remove ashtray
- remove instrument panel support at center tunnel
- loosen mounting bolts
- remove heater floor outlets channels, rear
- remove footwell air outlet

Fresh air intake duct mesh, installing

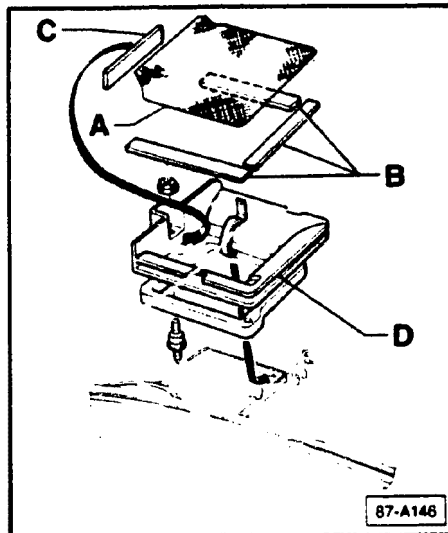
Debris can enter the passenger compartment through the fresh air intake duct if the intake duct mesh is missing.

Note

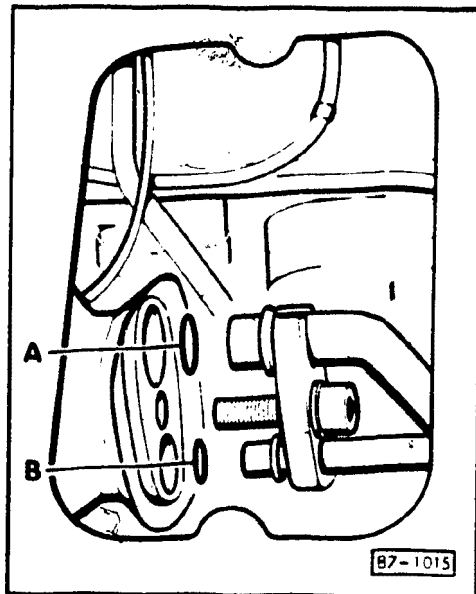
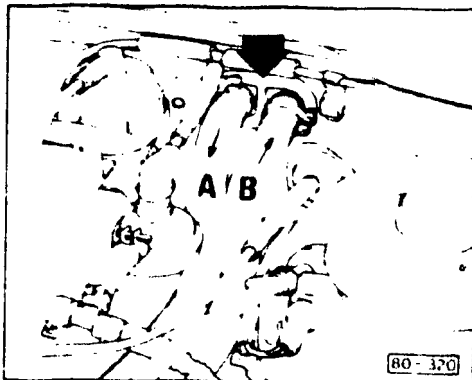
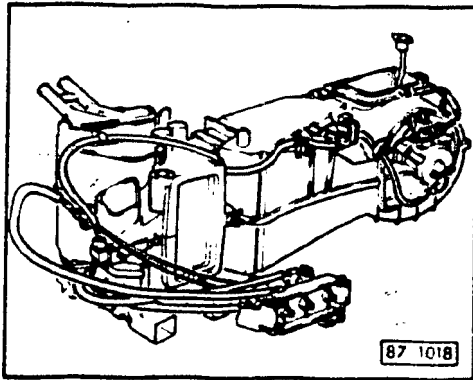
Clean debris from air intake before installing intake duct mesh.



- cut intake duct mesh, P/N: 893 819 408 according to illustration
- bend section A up 90°



- cut sealing cord P/N: AKD 497 010 04 R10 to fit bottom of mesh (B and C)
- apply sealing cord to intake housing (D)
- press edge A of intake mesh onto sealing cord first
- press intake mesh onto remaining sealing cord



Heater/evaporator housing, removing/installing

WARNING

Automotive refrigerant containing CFC's is hazardous to the earth's atmosphere. To protect our environment, use an Underwriter's Laboratory (UL) approved refrigerant recovery/recycling unit such as **Kent-Moore ACR³**, or equivalent, whenever discharging an A/C system.

- disconnect battery cables and remove battery
- discharge refrigerant system, see A/C refrigerant system discharge procedure
- remove center vent/control panel
- remove instrument panel (see Group 70)

- clamp heater hoses **A** and **B** to prevent excess engine coolant loss.

A = return to water pump

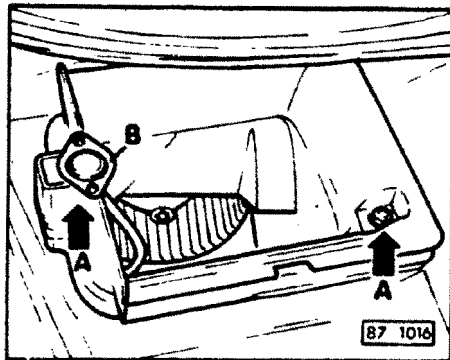
B = feed to cylinder head

- loosen clamps and remove hoses
- cap hoses

- remove A/C refrigerant lines from evaporator
 - 16 Nm (11.8 ft lb)

Note

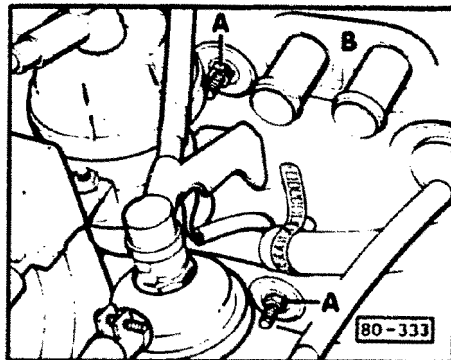
Be sure there is no tension on refrigerant lines during installation.



- remove right side air plenum cover
- remove outside temperature sensor B
- remove mounting bolts A
- remove air intake

Note

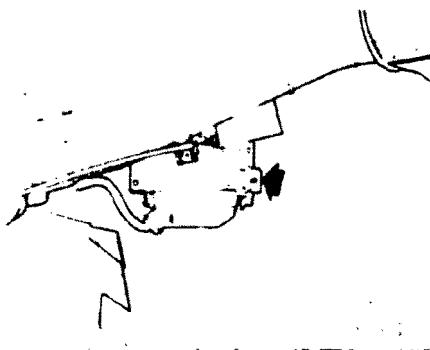
Be sure gasket around air intake seals correctly during installation.



- remove nuts A on fire wall

Note

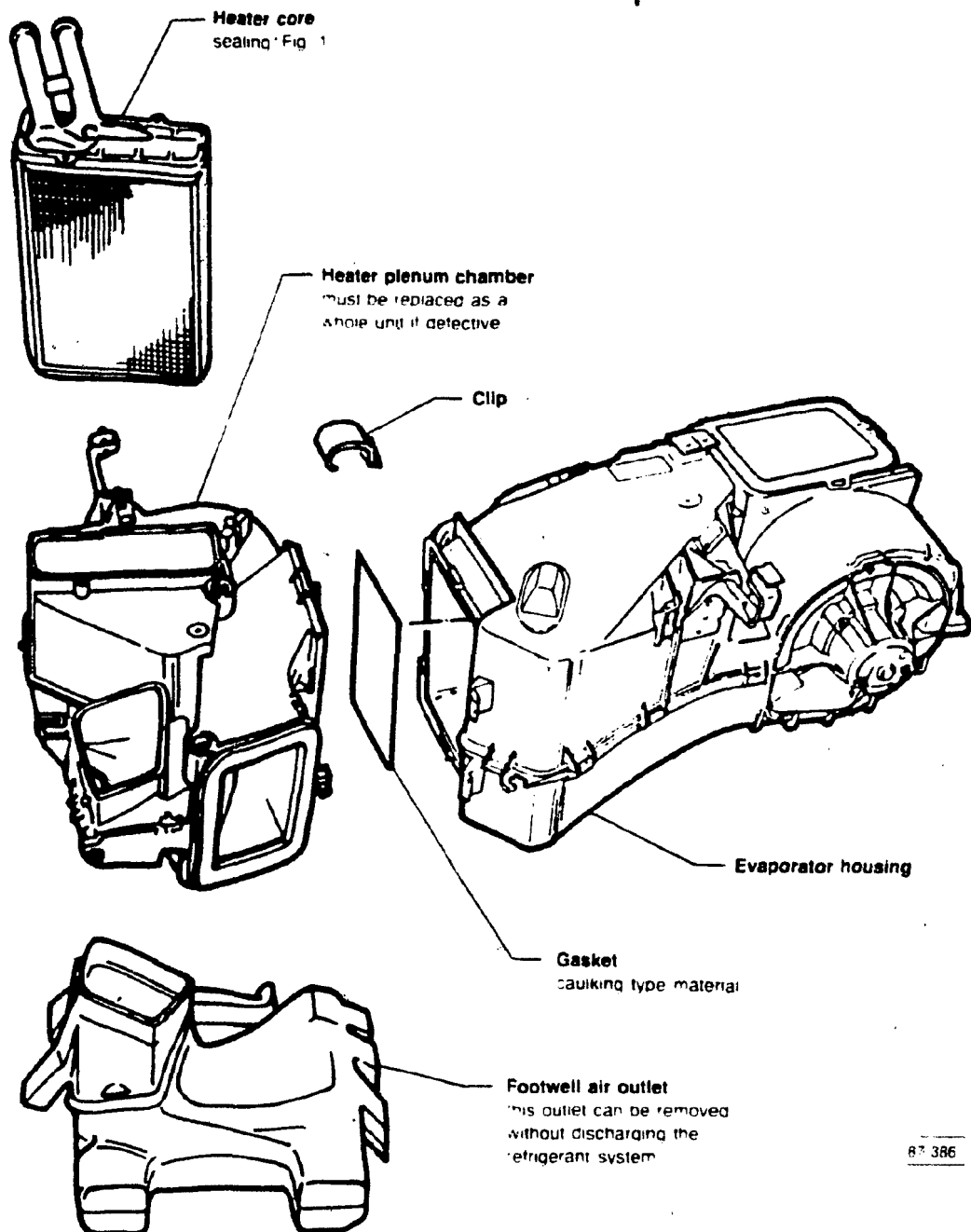
Be sure rubber grommet B seals properly during installation.

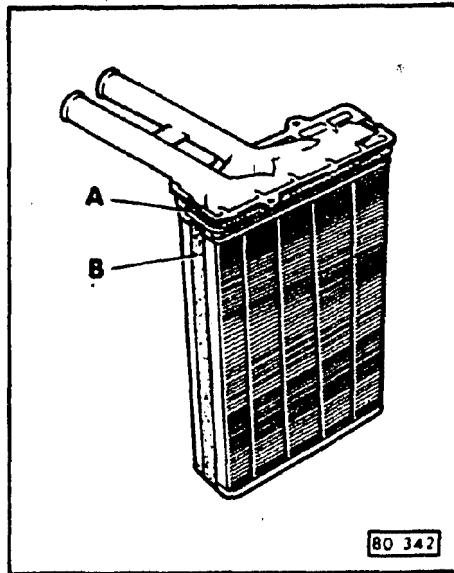


- remove vacuum hose from two way valve
- remove water drain hose from heater/evaporator housing
- remove fuel injection control unit (arrow)
- remove heater/evaporator housing

Note

Check Bowden cables for kinks and ease of movement before reinstalling heater/evaporator housing. Replace cables if necessary.





► Fig. 1 Heater core

Sealing

Gaskets **A** and **B** must seal heater core completely without gaps.

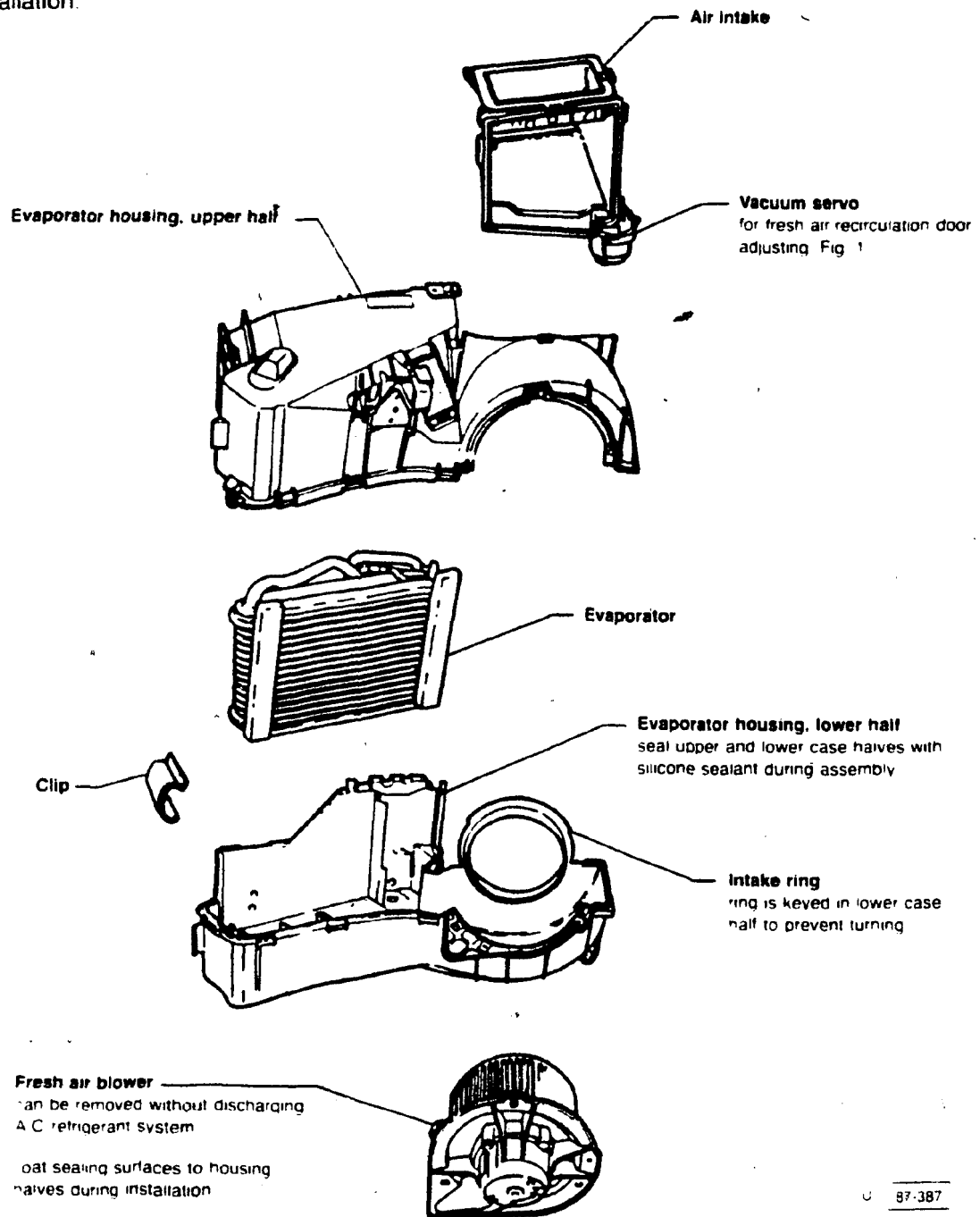
Note

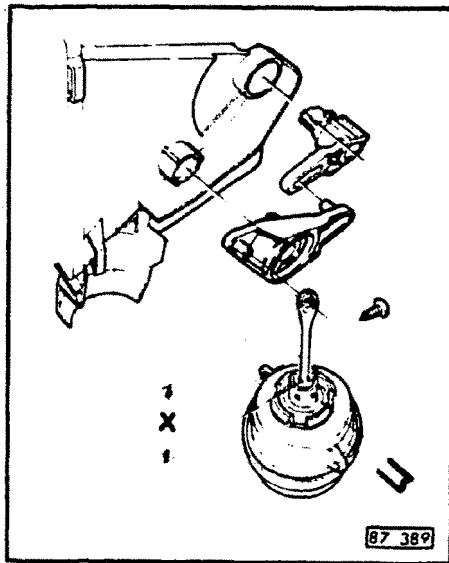
If the heater core does not lock firmly in place during installation,

- secure with self-tapping screws

Note

Be sure evaporator case halves seal properly during installation.





► Fig. 1 Vacuum servo, removing/installing

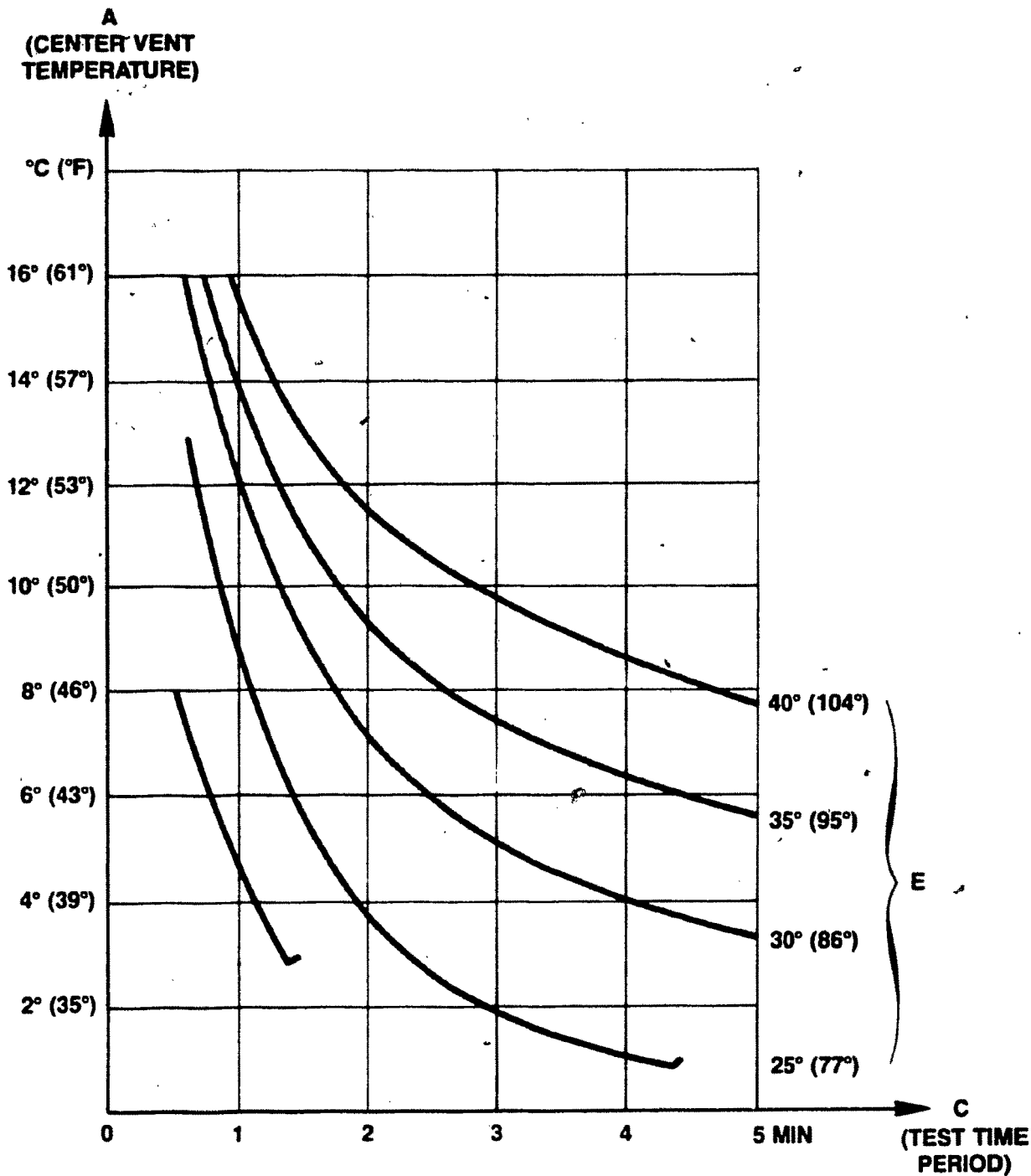
- remove screw
- remove vacuum servo

Note

Length of vacuum servo arm A is adjustable.

Adjusting

- remove clip B
- adjust arm height
 - X = 50mm (approximately 2 in.)
- install clip



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A/C system, checking

Troubleshooting preparations

Observe the following:

- do not park car in sunlight
- V-belt properly adjusted
- condenser and radiator free of obstructions
- air ducts for condenser and radiator properly installed

- close valves on pressure test gauges
- remove A/C refrigeration high pressure switch
- connect line from high pressure test gauge to valve

- connect line from low pressure test gauge to low pressure service valve on A C compressor

- run engine until warm
- push A/C switch button and fresh air recirculation door button
 - fresh air/recirculation door light lights
 - A/C compressor runs
 - radiator cooling fan runs in stage one
 - fresh air/recirculation door is closed

- switch ignition **OFF**

Test preparation

- switch ignition **ON**
- open doors
- run fresh air blower for approximately 5 minutes on speed 4 to stabilize evaporator temperature

- close sunroof, doors and windows

- switch A/C switch **ON**
- push fresh air/recirculation button
 - fresh air/recirculation door closes
 - indicator light **ON**
- set temperature to full cold position
- set fresh air blower speed to 4
- open all instrument panel vents

- adjust air distribution so all air comes only from instrument panel vents

- place thermometer at air intake for heater evaporator housing (under glove compartment)

- measure temperature and match to closest temperature curve at **E** on graph

This is your base measurement ...

Test

- insert thermometer in center vent
- start engine

After approximately 30 seconds,

- raise idle speed to 2000 RPM

THIS STARTS THE TEST TIME PERIOD

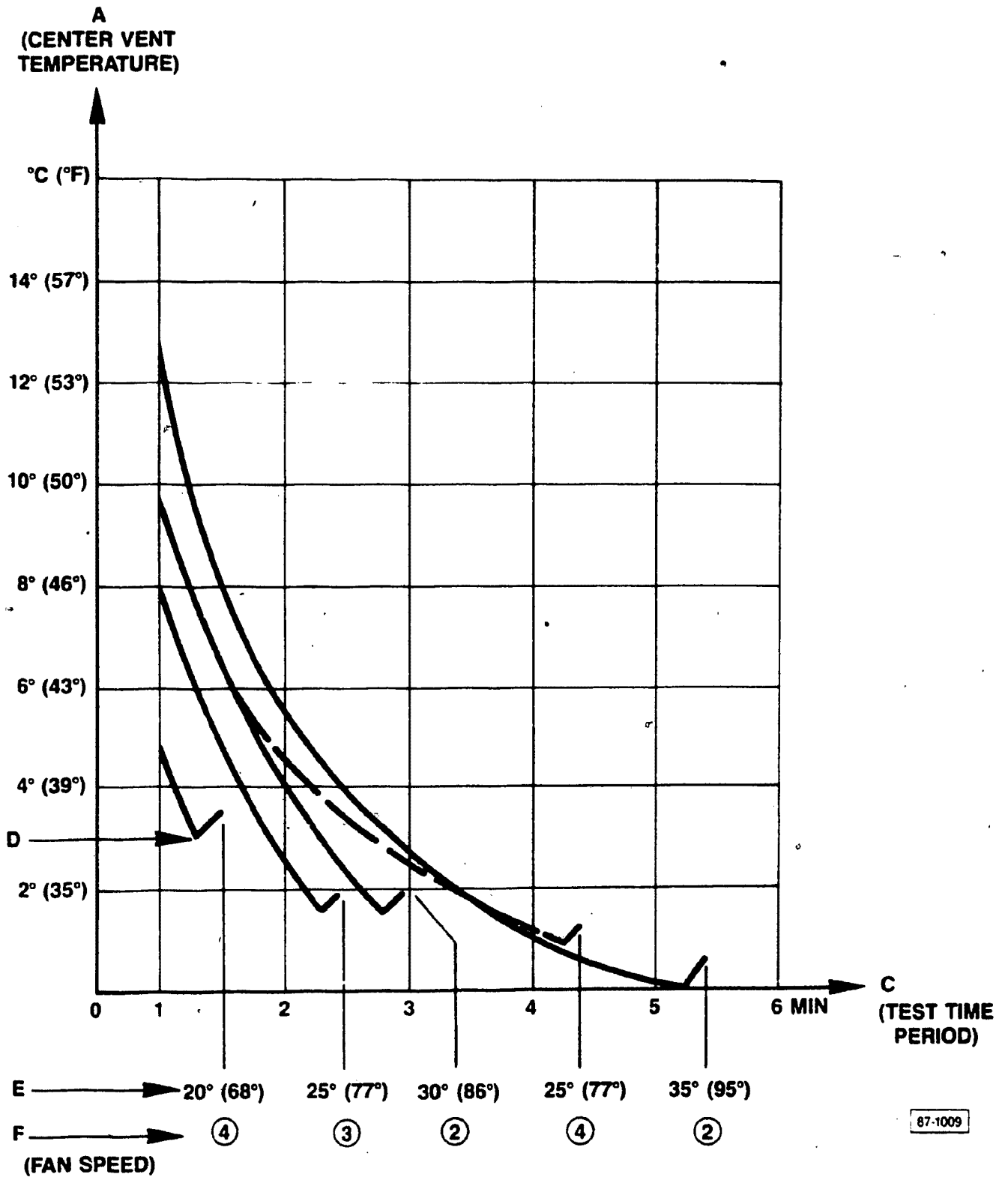
- measure temperature at center vent
- compare temperature at center vent with temperature from selected curve at **E** (your base measurement) in relation to time period **C**

Note

Temperature must not vary from graph by more than $+5^{\circ}\text{C}$ (9°F).

If specified values are not obtained,

- check that radiator cooling fan is operating on 2nd stage (high speed)
- check position of temperature flap arm on evaporator/heater housing



A/C refrigerant low pressure switch, checking

Note

This switch will cycle the A/C compressor **ON** and **OFF** depending on the pressure in the refrigerant system.

A/C refrigerant low pressure switch is used to regulate interior temperature and prevent evaporator icing.

Test preparation

- switch ignition **ON**
- open doors
- run fresh air blower for approximately 5 minutes on speed 4 to stabilize evaporator temperature
- close sunroof, doors and windows
- switch A/C switch **ON**
- push fresh air/recirculation button
 - fresh air/recirculation door closes
 - indicator light lights
- set temperature to full cold position
- set fresh air blower speed to 4
- open all instrument panel vents
- adjust air distribution so all air comes only from instrument panel vents
- place thermometer at air intake for heater/evaporator housing (under glove compartment)
- measure temperature and match to closest temperature curve at **E** on graph

This is your base measurement

- adjust fresh air blower speed (**F** on graph) according to selected temperature curve at **E**

Test

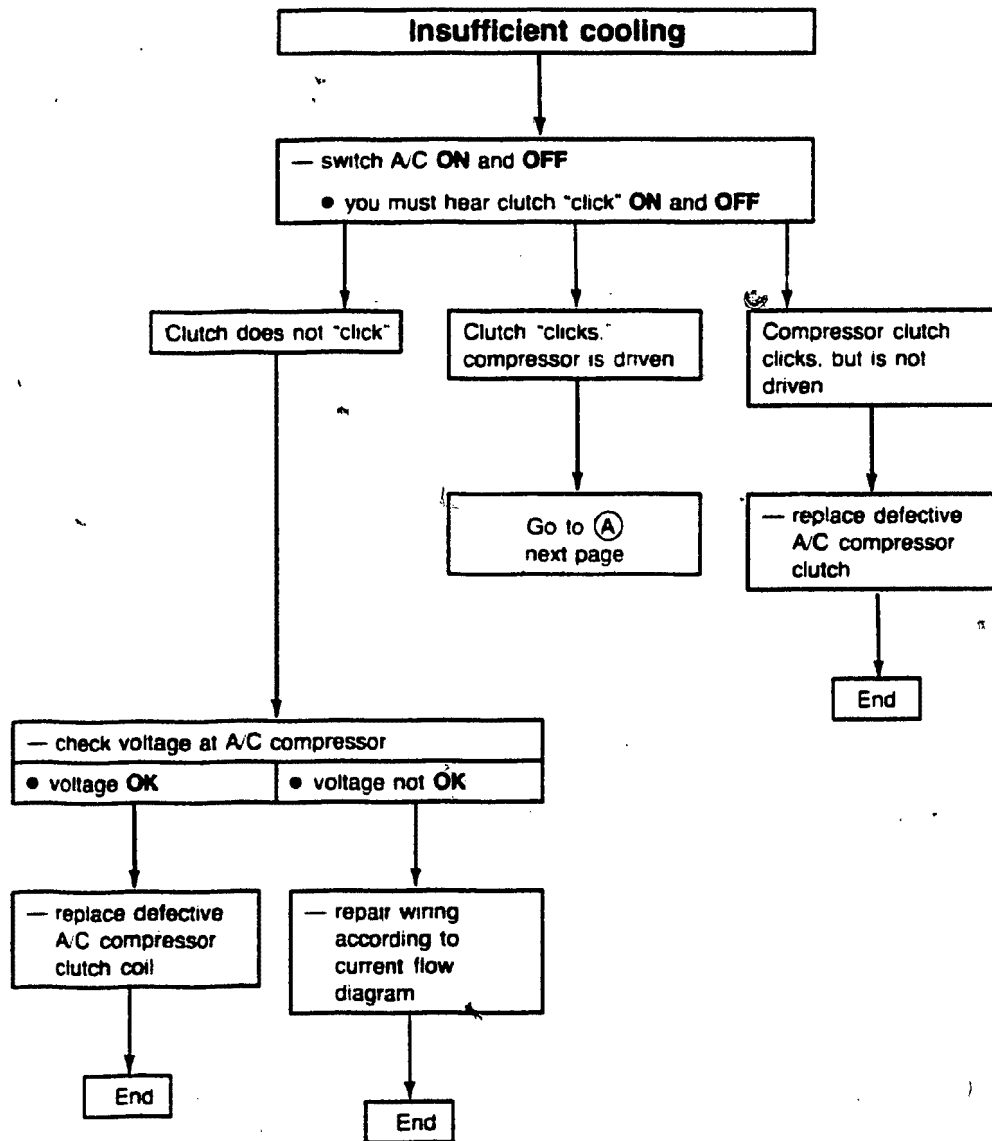
- insert thermometer in center vent
- start engine

After approximately 30 seconds,

- raise idle speed to 2000 RPM

THIS STARTS THE TEST TIME PERIOD

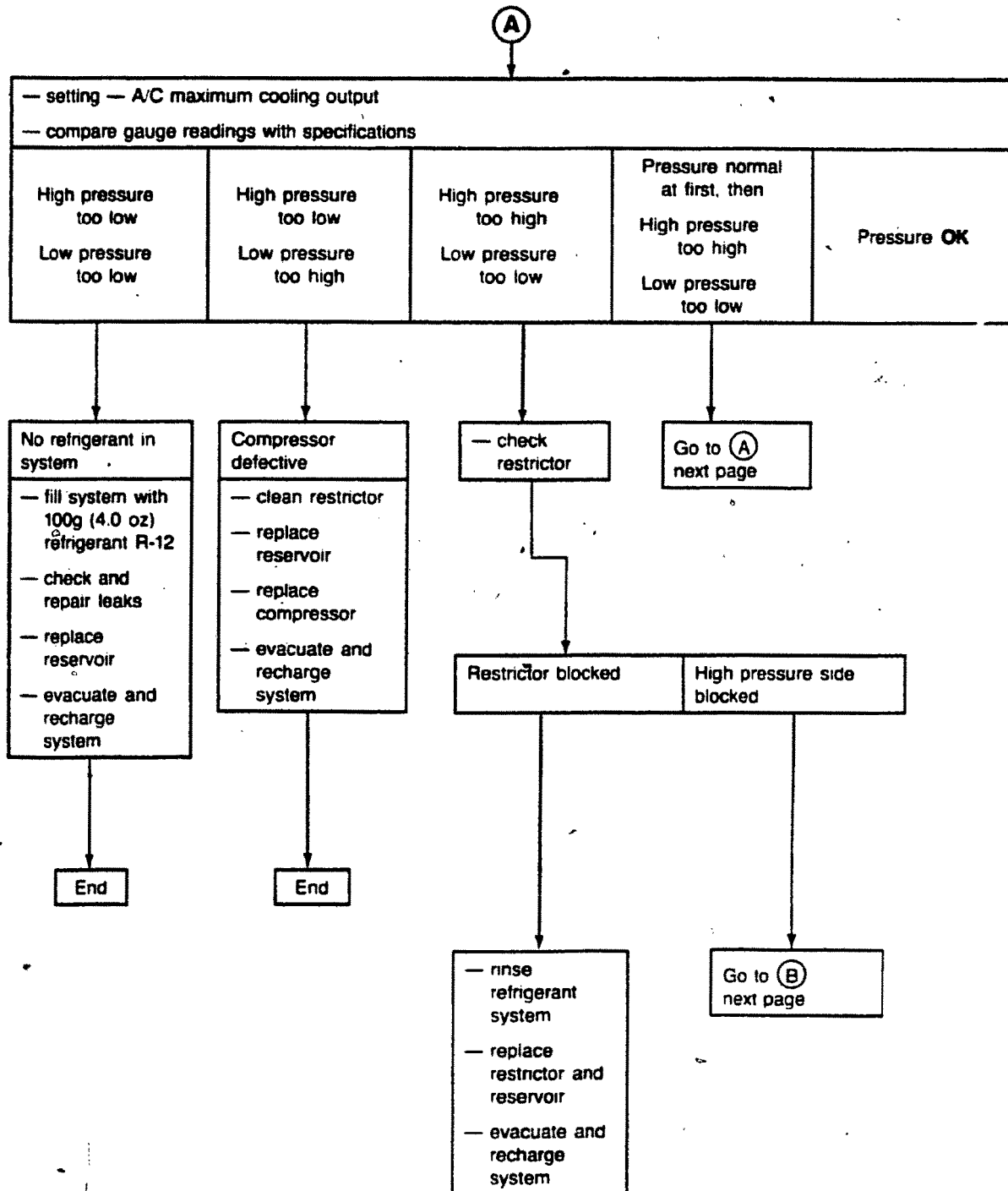
- measure temperature at center vent
- compare temperature at center vent with temperature from selected curve **B** (your base measurement) in relation to time period **C**
- read temperature from center when A/C compressor clutch disengages (**D** on graph)
- compare temperature with temperature curve you have chosen on graph
 - A/C compressor clutch must disengage at point indicated on graph for the temperature curve you have selected (your base measurement) + 5°C (9°F) tolerance

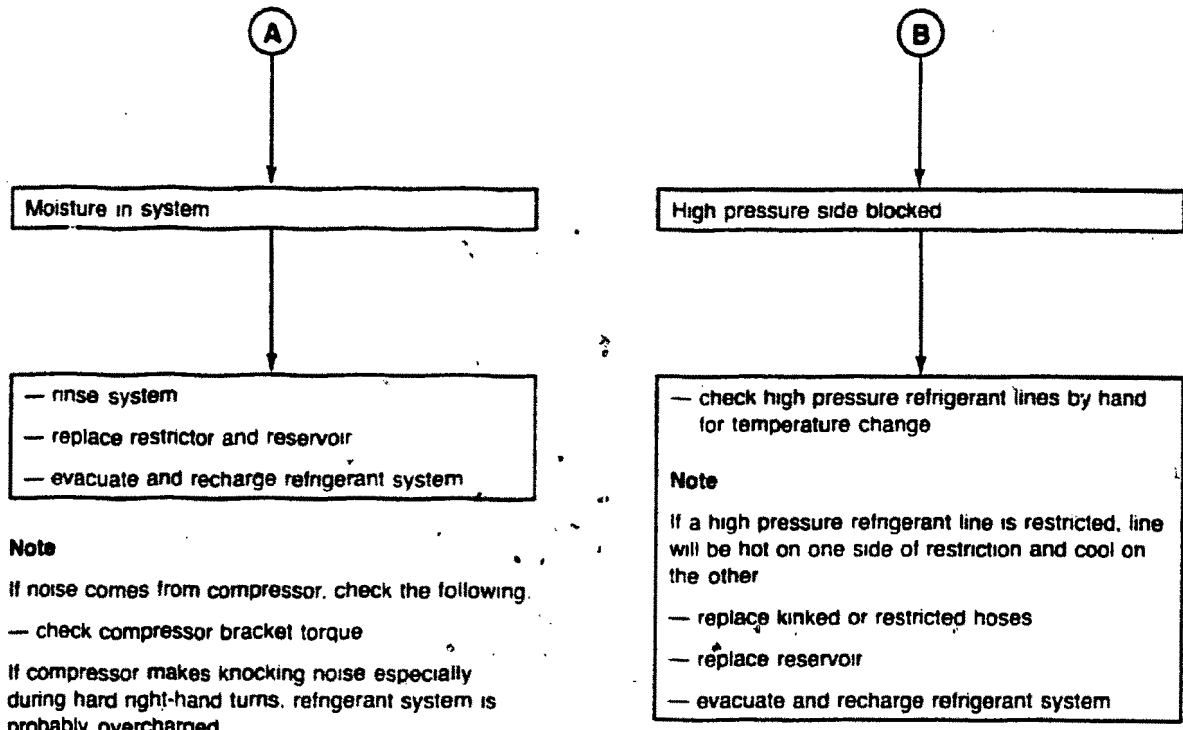


Pressure specifications

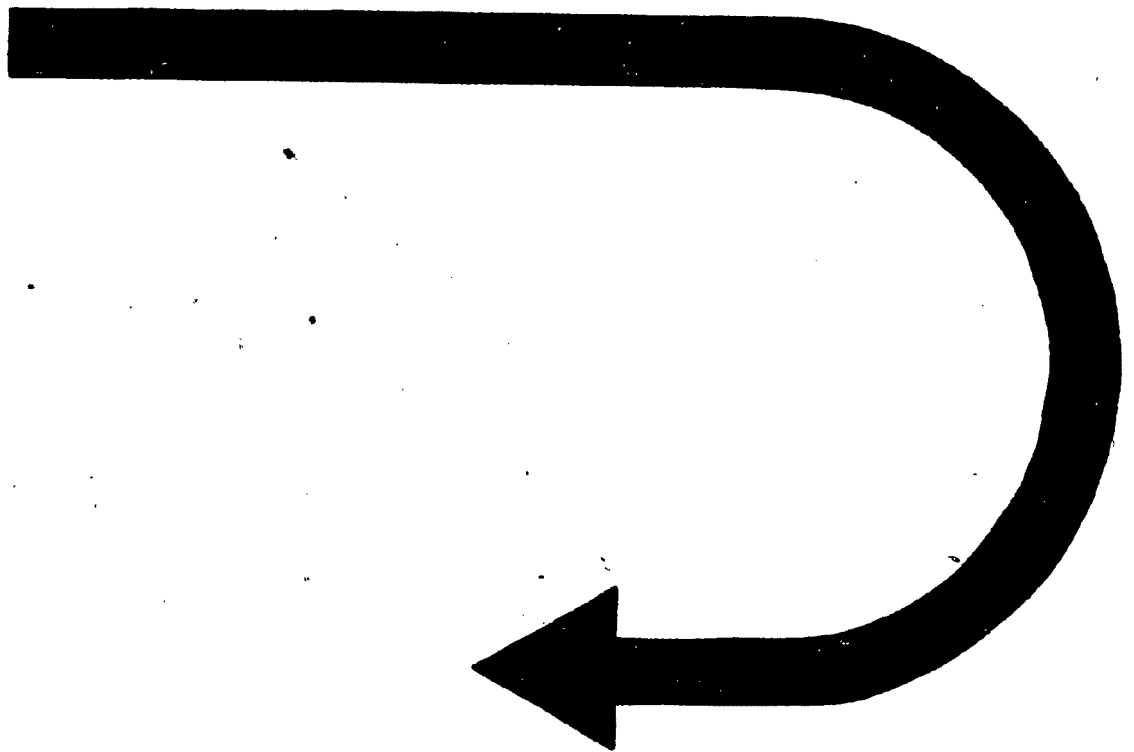
— test with gauge

- low pressure = 1.3 bar-3.2 bar (19 - 46 psi)
at idle
- high pressure = 10.6 bar-17.6 bar
(154 - 255 psi) at idle



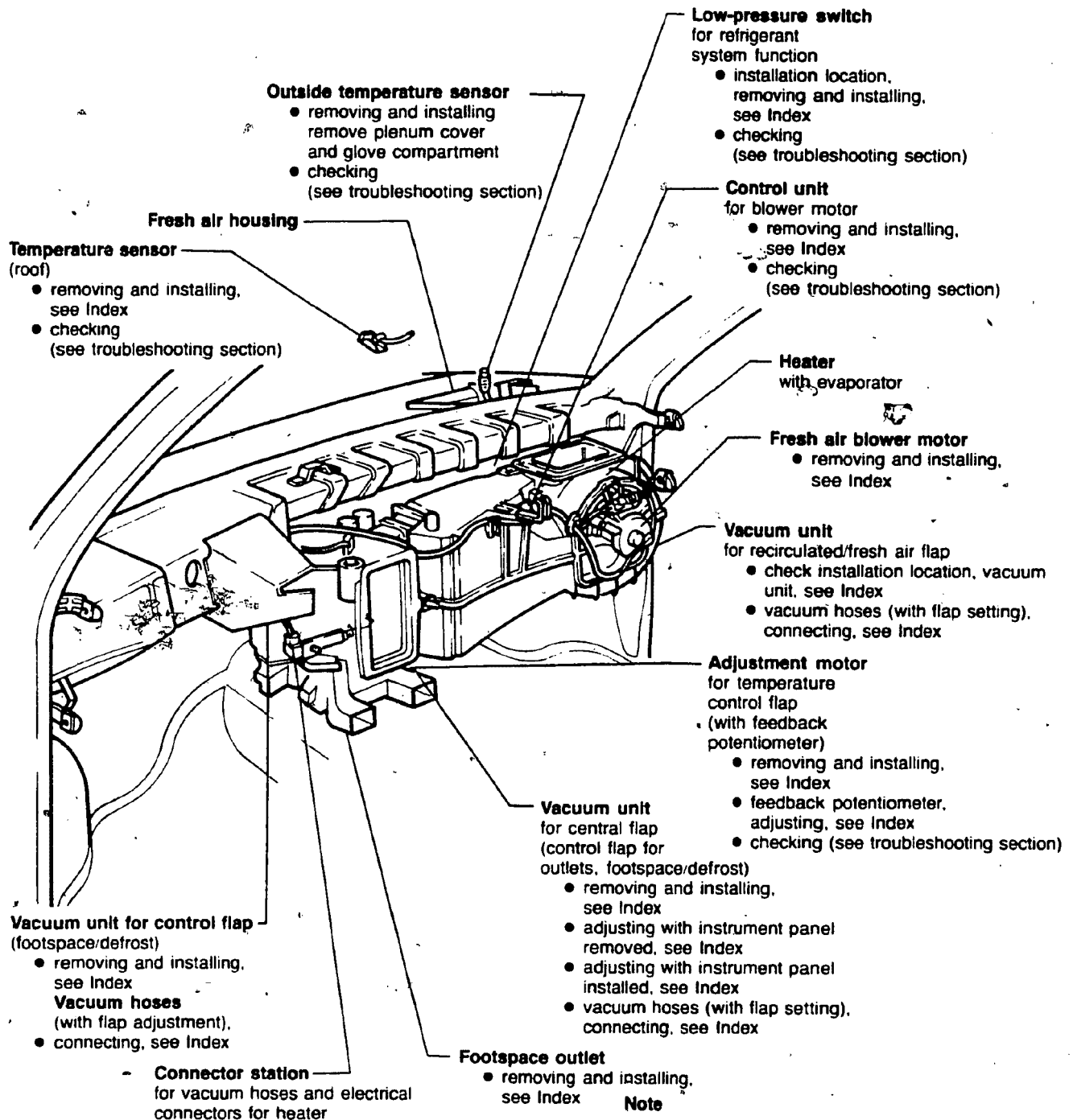


**CONTINUED IN THE
BEGINNING OF NEXT ROW**



Note

The components listed on this page are in the engine compartment in addition to the components shown on page 87.8 (4-cylinder engine) and page 87.9 (5-cylinder engine).



Note

A defective vacuum unit can only be replaced if the heater is removed.

CAUTION

Heater cannot be removed until refrigerant system is discharged.

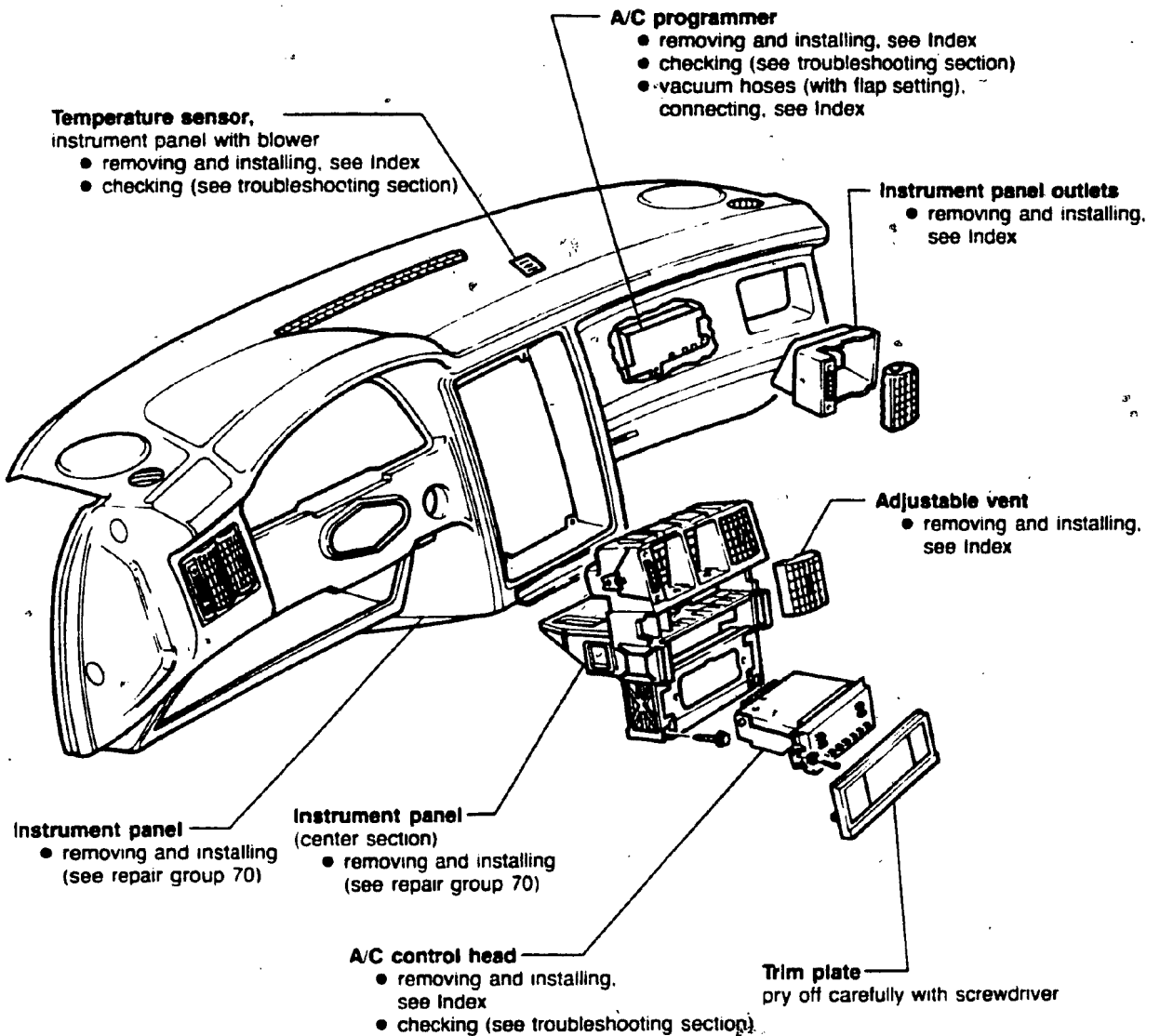
- remove and install evaporator housing with heater as a complete unit

Note

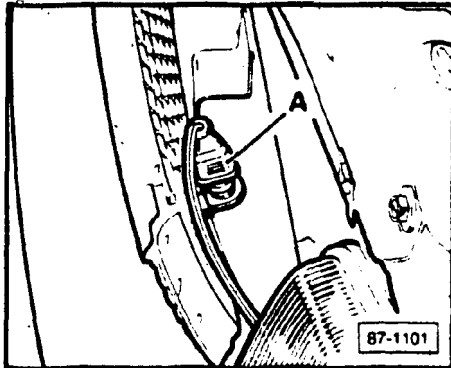
When installing fresh air housing, make sure it seats properly on plenum gasket.

WARNING

Automotive refrigerant containing CFC's is hazardous to the earth's atmosphere. To protect our environment, use an Underwriter's Laboratory (UL) approved refrigerant recovery/recycling unit such as Kent-Moore ACR³, or equivalent, whenever discharging an A/C system.



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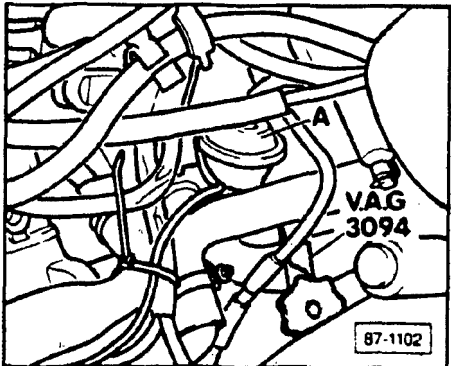
Climate control (with fault memory), repairing

Note

The following repair information describes procedures that do **NOT** affect the refrigerant system.

Outside temperature sensor

Checking (see troubleshooting section)



Vacuum unit and coolant check valve (for heater with coolant temperature sensor), removing and installing

- open cap on overflow reservoir
- disconnect coolant hoses
- after installing, ventilate coolant circuit according to directions (see repair group 19)
 - vacuum hoses (with flap adjustment), connecting, see Index

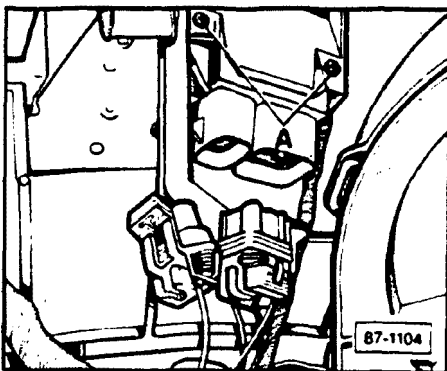
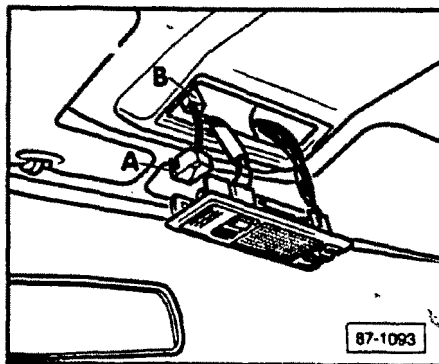


Fig. 1 Blower motor control unit, removing and installing

- remove glove compartment (see repair group 70)
- remove screws A (2)

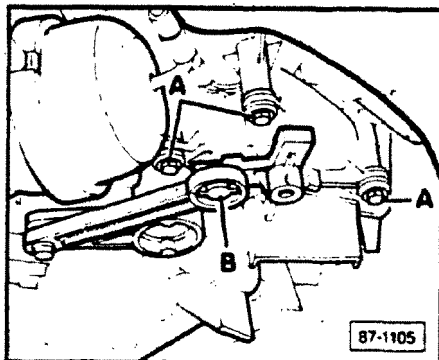
Note

Clean old heat-conducting paste off of heat sink and control unit each time unit is removed, then apply new paste to contact surfaces.



► **Fig. 2 Temperature sensor (roof), removing and installing**

- remove interior light
- remove connector B
- press back clip A

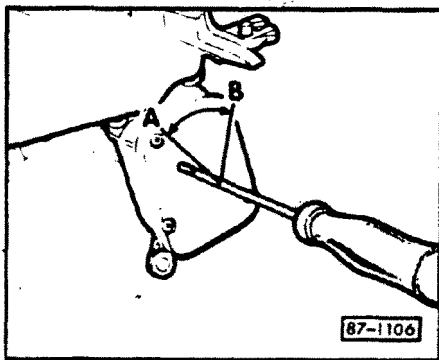


► **Fig. 3 Adjustment motor for temperature control flap (with feedback potentiometer), removing and installing**

- remove center section of instrument panel (see repair group 70)
- remove footspace outlets, see Index
- remove screws A (3)
- disconnect linkage B
- disconnect adjustment motor harness connector at the 5-pin connector (left, on the heater)
- pull out wiring (over the heater)

When installing:

Route wiring (5-pin connector) for the new adjustment motor using the harness clip in front of the heater, making sure there is sufficient clearance for the heater lever.



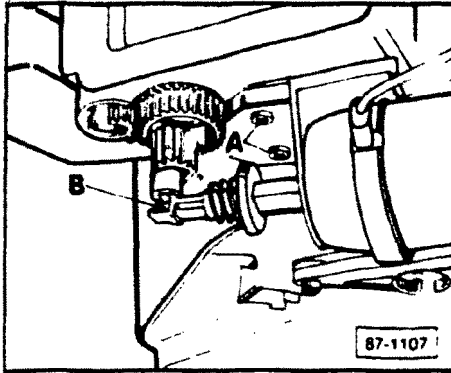
► **Fig. 4 Feedback potentiometer, adjusting**

- remove temperature control flap adjustment motor but do not separate harness connectors
- set control head temperature to "High"
- start diagnosis on channel 8 (see troubleshooting)
 - checking: 9-14
 - adjusting: 12

Turning in direction:

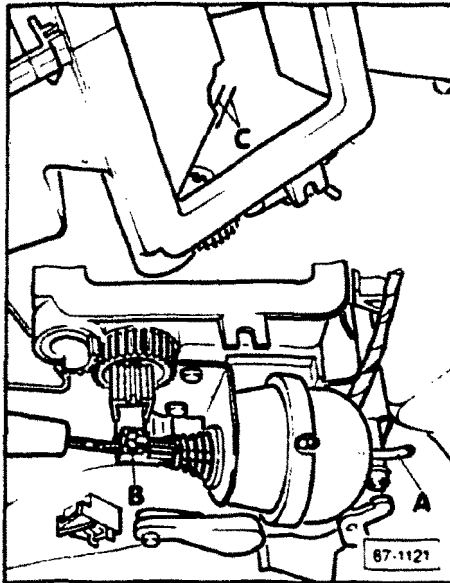
A — feedback value increases

B — feedback value decreases



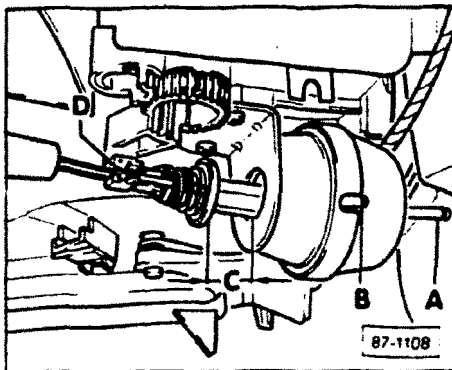
► **Fig. 5 Vacuum unit for central flap (control flap for footspace and defrost outlets), removing and installing**

- remove footspace outlet, see Index
- remove screws A (2)
- remove screw B



► **Fig. 6 Vacuum unit for central flap, adjusting (Instrument panel removed)**

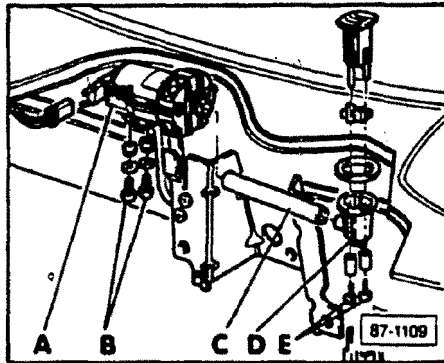
- apply vacuum at connection A
- adjust central flap setting by turning screw B until it is between marking C of the heater/fresh air housing



► **Fig. 7 Vacuum unit for central flap, adjusting (Instrument panel installed)**

- remove footspace outlet, see Index
- remove vacuum hoses from connectors A and B
- adjust by turning screw D
 - adjustment dimension C = 19 mm (0.75 in.)

Vacuum hoses (with flap adjustment), connecting, see Index



► **Fig. 8 Instrument panel temperature sensor (with blower), blower (A) removing and installing**

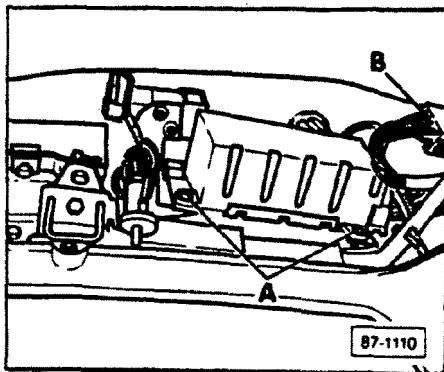
- remove glove compartment (see repair group 70)
- remove screws B (2)
- remove hose C

Temperature sensor (D) instrument panel, removing and installing

- remove glove compartment
- remove A/C programmer (see Fig. 9)
- remove screws E (2)
- remove hose C

CAUTION.

Hose C **MUST** fit properly.

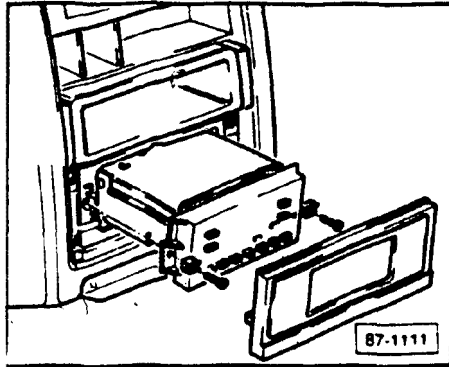


► **Fig. 9 A/C programmer, removing and installing**

- remove glove compartment (see repair group 70)
- remove center section of instrument panel
- remove driver's side storage compartment
- remove screws A (2)
- separate connector B
- separate connector for vacuum hoses (on heater, left)

Note

Visually inspect the connectors before making connections.

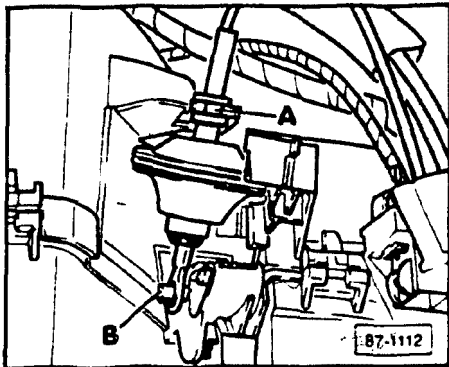


► Fig. 10 A/C control head, removing and installing

- carefully pry off trim plate with a screwdriver
- remove 2 screws

Note

Visually inspect the terminals before inserting the connector.



► Fig. 11 Vacuum unit for control flap (foot space/defrost), removing and installing

- remove driver's side storage compartment
- remove vacuum unit A
- disconnect vacuum unit at lever B

THIS FRAME INTENTIONALLY LEFT

BLANK

Vacuum hoses (with flap adjustment), connecting

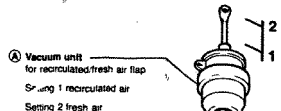
Note

The temperature control flap adjustment motor and the vacuum unit settings are program dependent.

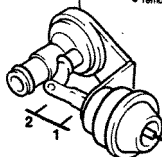
Air leakage is permissible for all flap settings.

Checking — see troubleshooting section

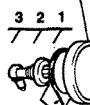
- Ⓐ Vacuum unit with coolant check valve for heater
 - Setting 1 check valve closed
 - Setting 2 check valve open
 - removing and installing, see index



- Ⓐ Vacuum unit for recirculated/fresh air flap
 - Setting 1 recirculated air
 - Setting 2 fresh air



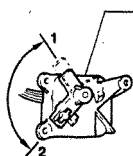
- Ⓑ Vacuum unit for central flap (control flap for footspace/deftrost outlets)
 - Setting 1 air from instrument panel outlets
 - Setting 2 air from instrument panel outlets and to control flap for footspace/deftrost
 - Setting 3 air to control flap for footspace/deftrost
 - removing and installing, see index



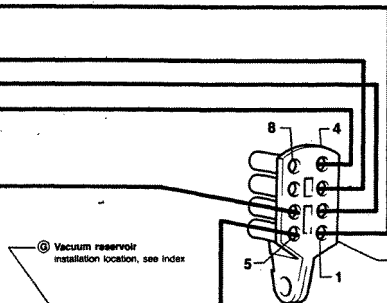
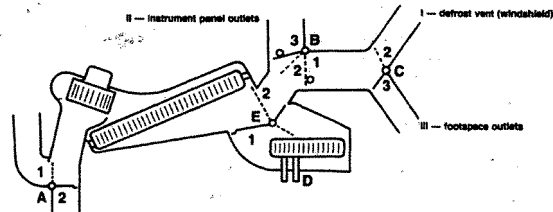
- Ⓒ Vacuum unit for control flap (footspace/deftrost)
 - Setting 2 air to the footspace outlets
 - Setting 3 air to the deftrost vent (windshield)
 - removing and installing, see index

Note

A defective vacuum unit ~~can~~ be replaced with the heater removed. Take vehicles to an Audi service shop that specializes in air conditioning repairs.



- Ⓓ Adjustment motor for temperature control flap (with feedback potentiometer)
 - Setting 1 air stream NOT passing through heat exchanger (cooling)
 - Setting 2 air stream passing through heat exchanger (heating)
 - removing and installing, see index
 - feedback potentiometer, setting, see index
 - checking (see troubleshooting section)



- Ⓔ Vacuum reservoir installation location, see index

- Ⓕ Coupling for vacuum hoses to A-C programmer
 - Colors of vacuum hoses:
 - Connector 1 — white
 - Connector 2 — yellow
 - Connector 3 — green
 - Connector 4 — blue
 - Connector 5 — black
 - Connector 6 — red
 - Connector 7 — not assigned
 - Connector 8 — not assigned

