

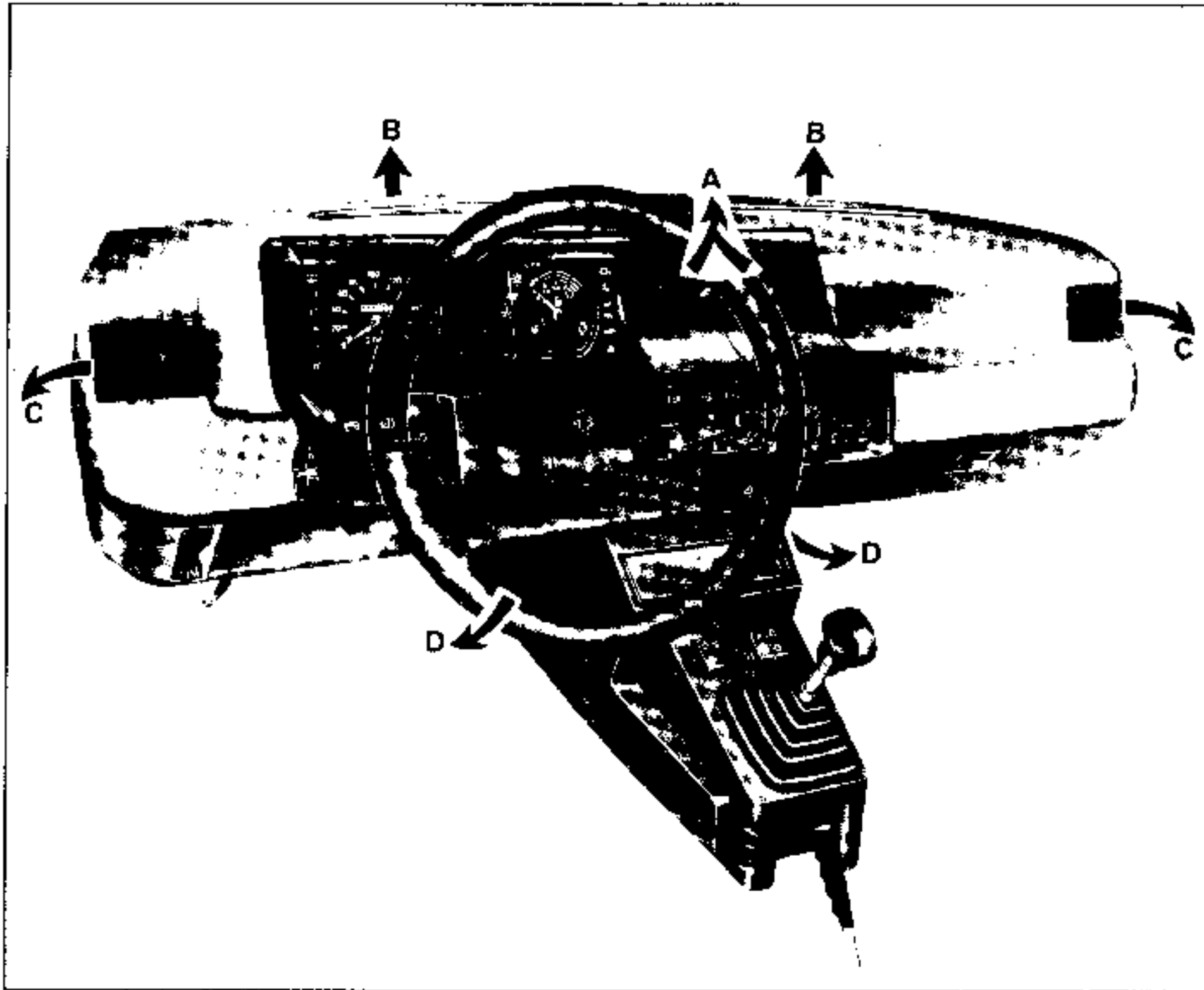
- A** Passenger compartment
- B** Engine compartment
- C** External air
- D** To air mixing chamber
- E** Scuttle panel
- F** External or recycled air

CONSUMABLES

Compressor oil :
ELF RIMA 100 : 135 cm³ ± 15 for SD 709

Coolant fluid :
FREON R12 → 825 g ± 25 g

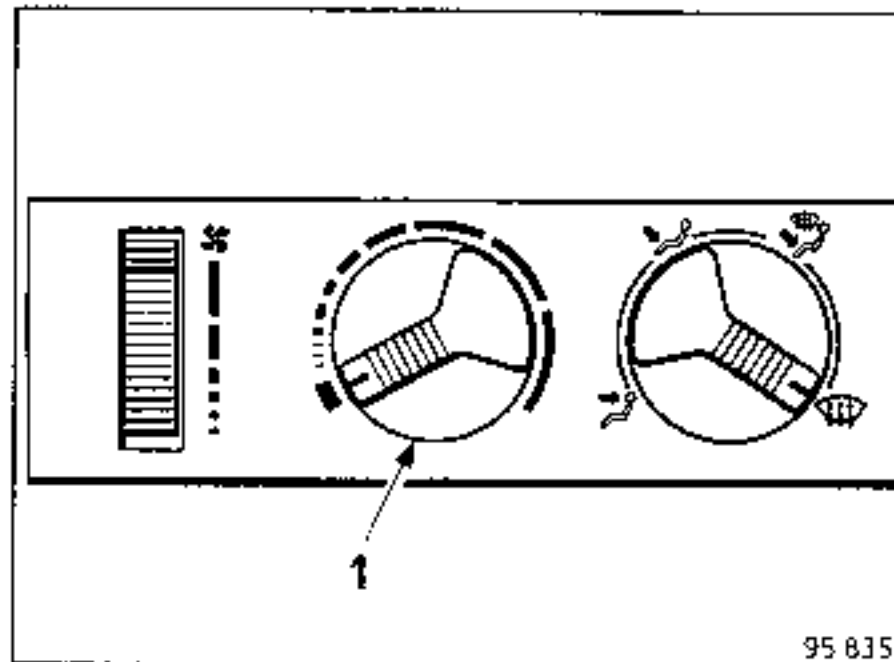
- 1** SANDEN compressor : SD 709
- 2** Condensor
- 3** Freon reservoir
- 4** Trifunction pressostat
- 5** High pressure bleed
- 6** Pressure relief valve
- 7** Pressure relief valve thermostatic control
- 8** Evaporator
- 9** Low pressure bleed
- 10** Heating and ventilation fan
- 11** Air conditioning fan
- 12** Engine radiator
- 13** High pressure fluid
- 14** Low pressure vapour
- 15** High pressure vapour



- A Central ventilator outlets
- B Windscreen demister outlet
- C Dashboard ventilator outlets
- D Lower ventilation outlet.

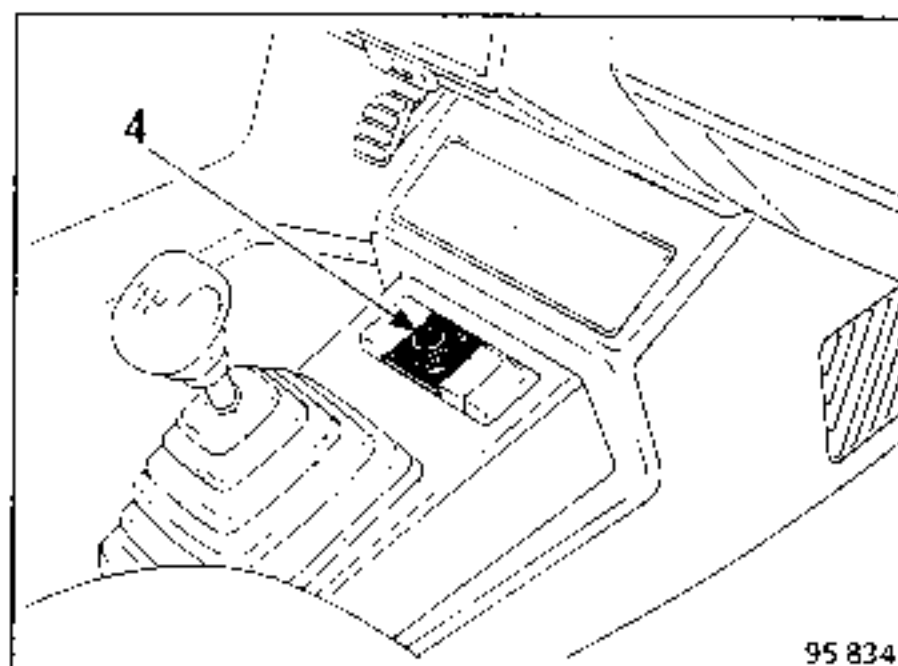
TEMPERATURE ROTATING CONTROL SWITCH (1)

Turn the rotating switch (1) to obtain the required temperature.

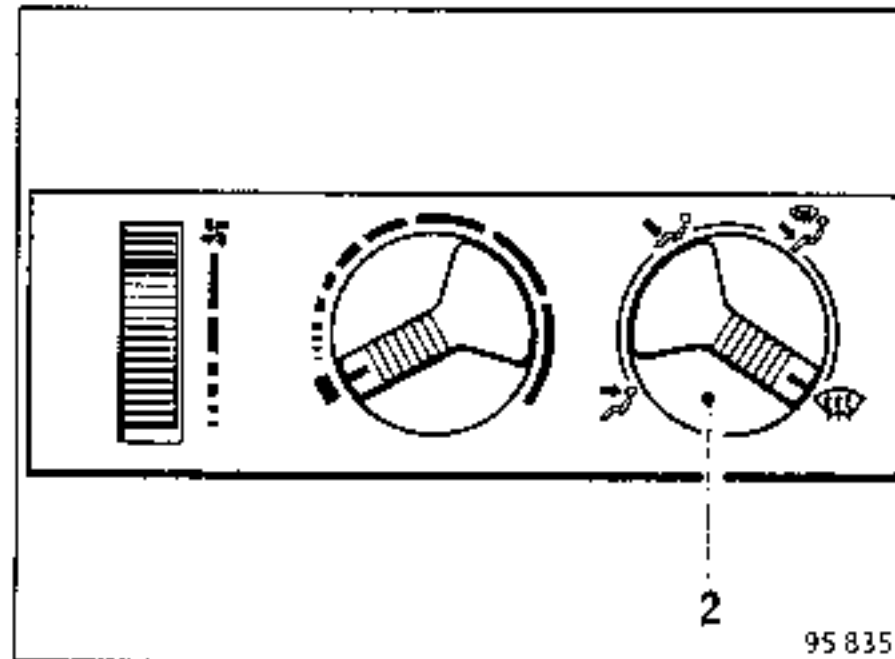


When the rotating switch is in the extreme left position, the air is not heated, and is therefore at the minimum possible temperature.

When the air conditioning control (4) is on a position other than - O -, the air is first cooled and dried as it passes through the evaporator, then a certain amount is reheated by passing across the radiator.



AIR DISTRIBUTION SWITCH (2)



POSITION

The air flow is directed to the dashboard ventilators (A) and (C) only.

Each ventilator has three settings:

- open or closed,
- directed up or down,
- directed left or right.

POSITION

The air flow is directed to all ventilators (A), (B), (C), (D).

POSITION

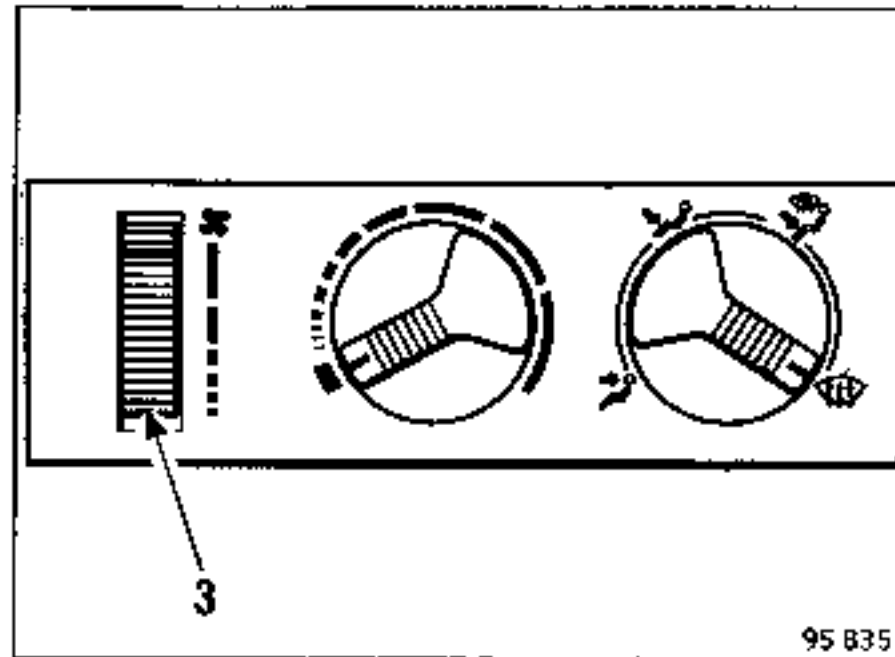
The air flow is directed to the lower ventilators (D) and the dashboard ventilators (A) and (C).

POSITION

The air flow is directed to the windscreen ventilators (B) and the dashboard ventilators (A) and (C).

To improve windscreen demisting and de-icing efficiency, ventilators (A) and (C) may be closed.

FAN CONTROL WHEEL (3)



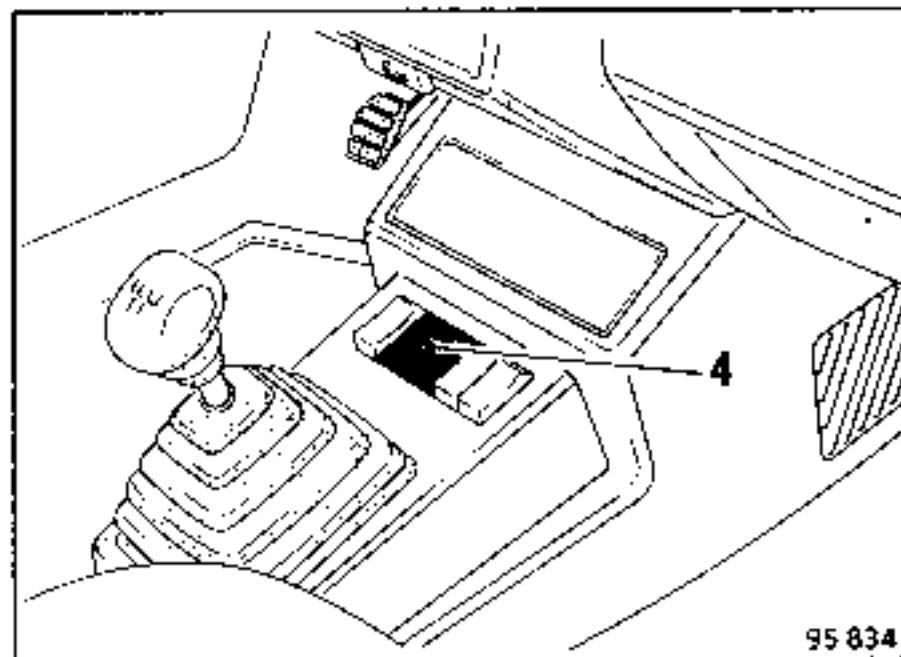
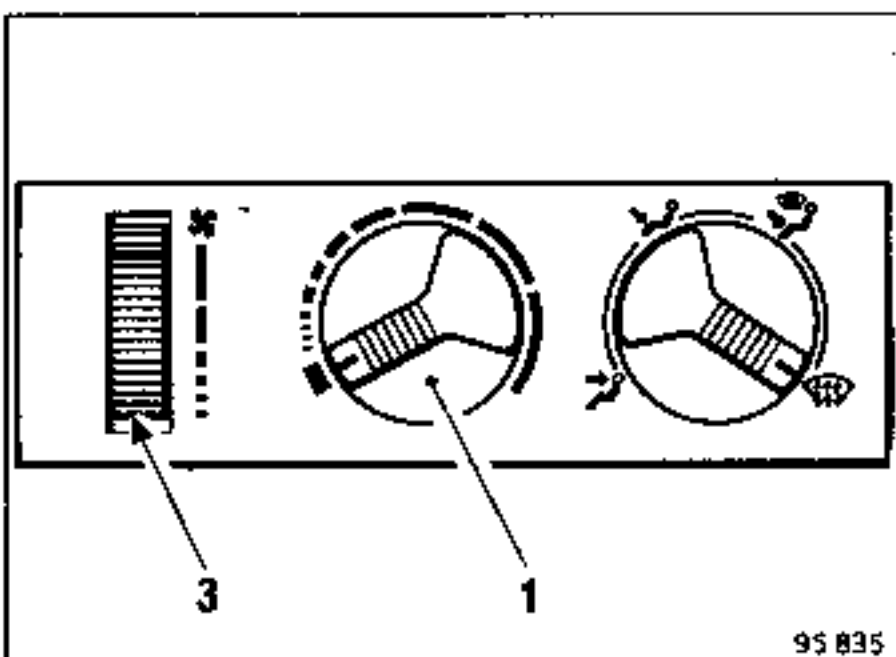
Ventilation is said to be by using blown air
The air flow circulating in the passenger compartment is controlled by the positions on the control wheel (3)

AIR CONDITIONING CONTROL KEY (4).

This control switch stops or starts air conditioning

Its use allows:



- the temperature of the air inside the passenger compartment to be lowered,
- the amount of humidity in the air blown into the passenger compartment to be reduced (improves demisting).



– **POSITION 0** : Air conditioning is not operational, the heating and ventilation system has the same functions as a vehicle not fitted with air conditioning.

- **POSITION "AC"** : – Place the rotating switch (1) on the all cold position (blue spot)
- Place the air flow control wheel (3) on at least the lowest speed.
 - Adjust the temperature using key (4) (Adjustment range between 0 and 15°C).

Air conditioning is operational. This is the normal position of use. Cold air is taken from outside the vehicle and is constantly renewed.

- **AIR RECYCLING POSITION**  : – Place the rotary switch (1) on the all cold position (blue spot)
- Place the air flow control wheel (3) on at least the lowest speed
 - Set key (4) on position .

The air conditioning is operational. Air is taken from the passenger compartment and recycled, without taking air from outside the vehicle

This position allows the air temperature in the passenger compartment to be lowered quickly and the external atmosphere to be isolated (driving in polluted areas)

If this position is used for some time, the air inside the vehicle may become slightly humid. It is therefore preferable to return to the position "AC" as soon as the polluted area is left or the air temperature in the passenger compartment falls to the required level.

LOCATION OF COMPONENTS

- + APC : + after ignition.
- + AVC : + before ignition.

- M10 : Front left hand pillar earth
- M15 : Heating cross member earth
- M16 : Engine case earth

- A : Electronic temperature switch
- B : Air conditioning control
- C : Air conditioning relay
- D : Fan control wheel

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- 103 : Alternator
- 104 : Anti-theft.
- 120 : Injection computer.
- 164 : Cold air blower
- 169 : Air recycling solenoid valve
- 170 : Power assisted steering solenoid valve
- 171 : Compressor clutch
- 187 : Heating fan
- 224 : Power assisted steering pressostat.
- 234 : Cooling fan assembly relay
- 248 : Cooling fan assembly temperature switch
- 260 : Fuse box
- 262 : Cooling fan assembly
- 408 : Evaporator sensor
- 411 : Air conditioning pressostat
- 412 : Accelerated idle solenoid valve
- 474 : Air conditioning compressor control relay

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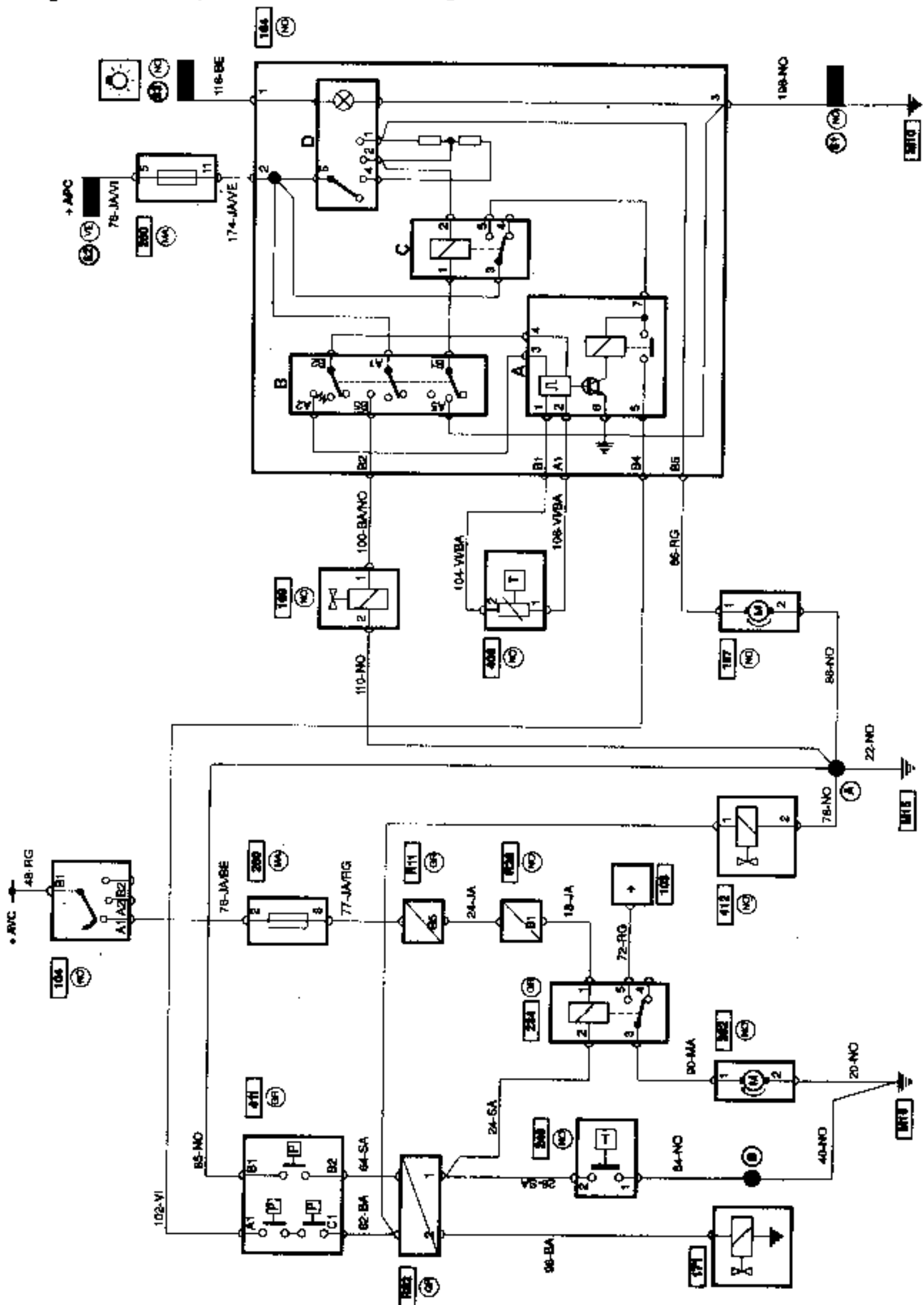
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- R11 : Dashboard / left hand side member connection
- R28 : Engine / left hand side member connection
- R82 : Engine / air conditioning connection
- R90 : Heating cross member / injection connection

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E 6 J engine without power assisted steering

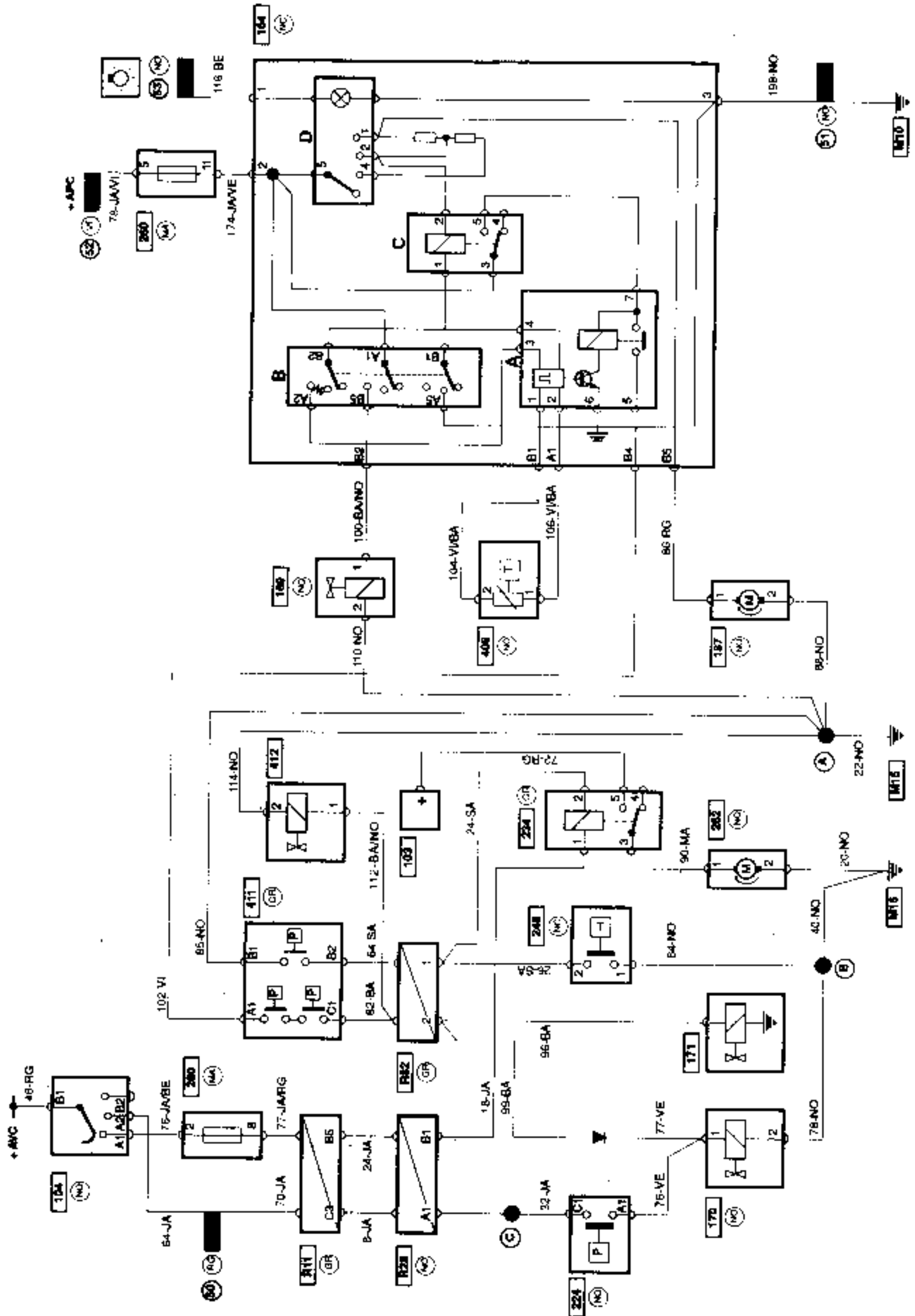


AIR CONDITIONING

Wiring diagram

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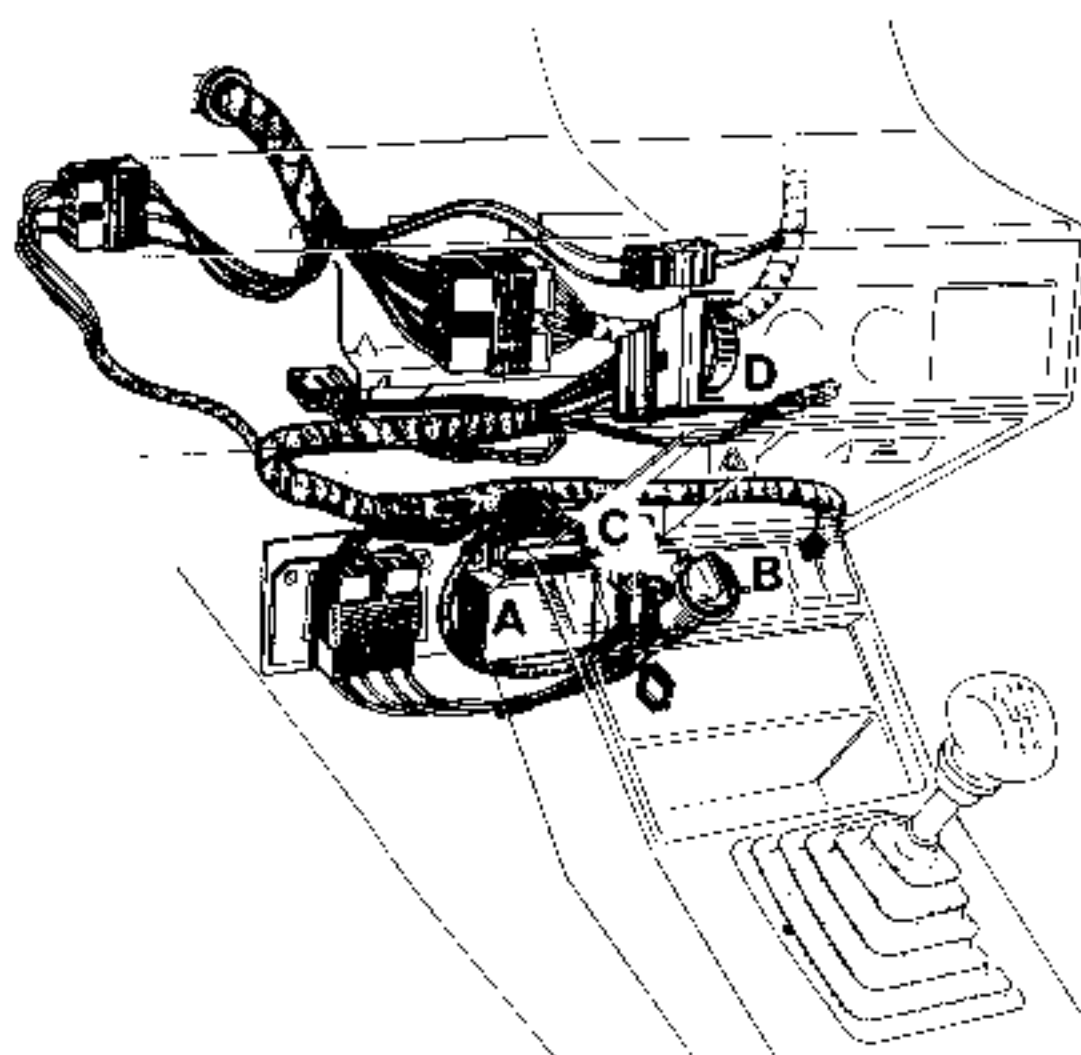
E 6 J engine with power assisted steering



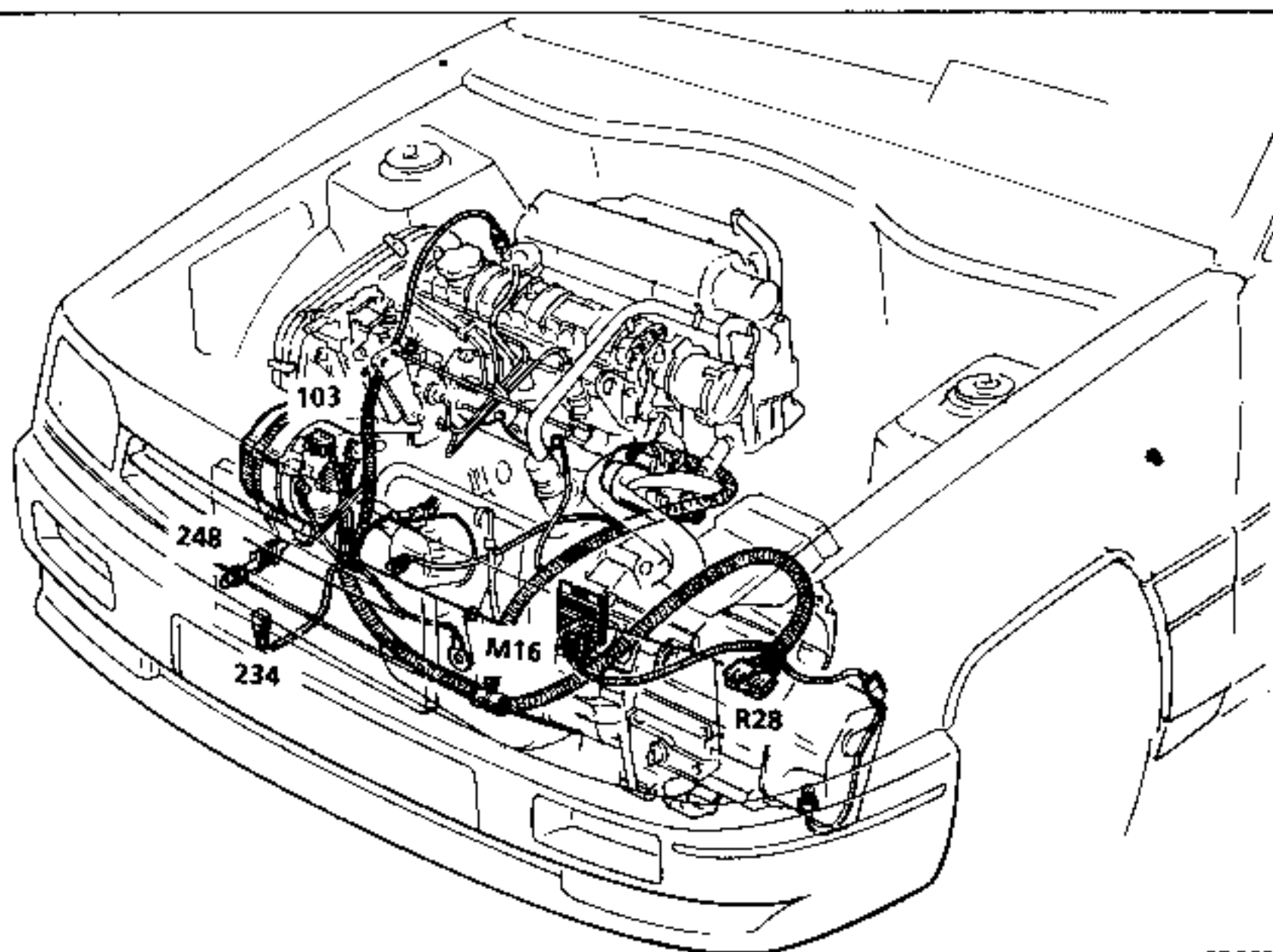
AIR CONDITIONING

Wiring diagram

62



90 644-28



95 066

Fault : Lack of efficiency

- A/C operational and fan on top speed.
- Engine at idle speed.

Is the compressor operating?

no

See page 15

yes

Check the compressor drive belt tension, the clutch air gap and its condition (possible slip). Retighten the belt or replace the compressor clutch.
Does the fault persist?

no

Correct

yes

Check the resistance for the evaporator sensor (*)
Replace the sensor if necessary.
Does the fault persist?

no

Correct

yes

Ensure the recycling flap is in the recycling position when the key is on position
Is this correct?

no

See page 23
" recycling-flap not working "

yes

Check the mixing flap moves across its complete movement path, and readjust the cable if necessary.
Does the fault persist?

no

Correct

yes

Is there an air flow problem?

yes

See page 24
fan problem

no



(*) if the sensor resistance is incorrect:

1) above maximum tolerance level :

The compressor operates too early and is less efficient.

2) below minimum tolerance level :

The compressor operates too soon, the evaporator freezes and reduces its efficiency as well as blown air efficiency.



Connect the pressure gauges (high and low pressure) and check the pressures. With the vehicle stationary, the engine running at idle speed and the A/C on maximum operation level.

If $HP > 25$ bars there is either:

- too much freon in the circuit.
- or the cooling fan is not operating correctly.
- or the engine is overheating
- or the condensor is dirty

In this case the compressor is operated by the HP pressostat.

Is the high pressure reading (HP) < 25 bars?

no

Check the condensor connection is clean.
Clean or replace the condensor.
Does the fault persist?

yes

Check the operation of the cooling fan.
(A/C at maximum operation level).
Cooling fan operates if HP is ≥ 19 bars and stops if HP is ≤ 16 bars
Also operates for engine coolant temperature of $\geq 92^{\circ}\text{C}$.
Is the fan operation normal?

yes

On the HP pressure gauge check the engine cooling fan control pressostat pressure settings.
Pressures $16/19 \text{ bars} \pm 1,5 \text{ bar}$.

Note: If the setting is too high the engine cooling fan operates and switches off too late, reducing A/C efficiency.

Replace the pressostat if necessary.
Does the fault persist?

yes

no

Correct

Humidity in the circuit may form an ice plug in the pressure relief valve or the pressure relief valve may be faulty (lack of gas in the bulb).
Replace the dehydration reservoir and the pressure relief valve and adjust the freon level.

no

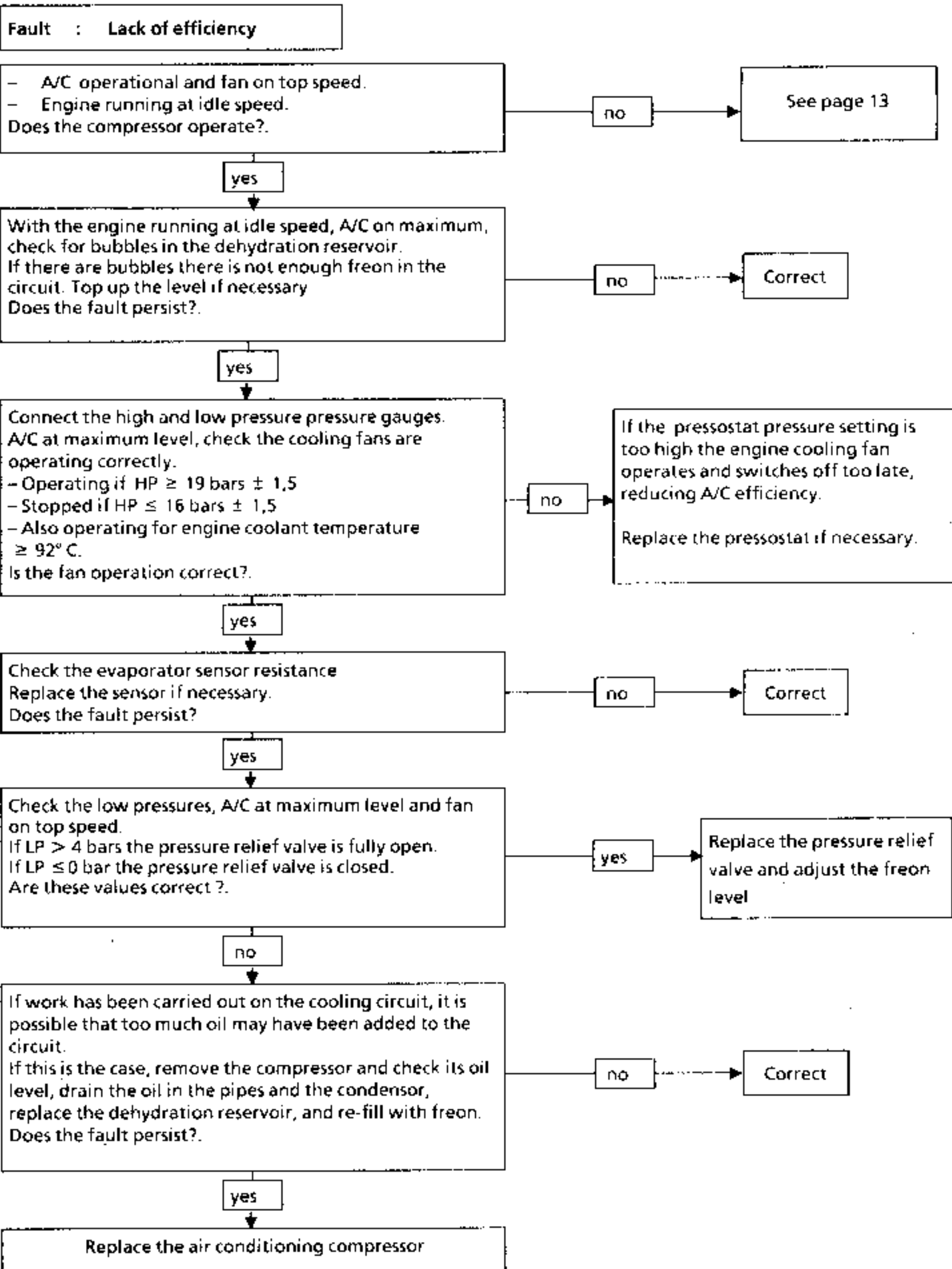
Correct

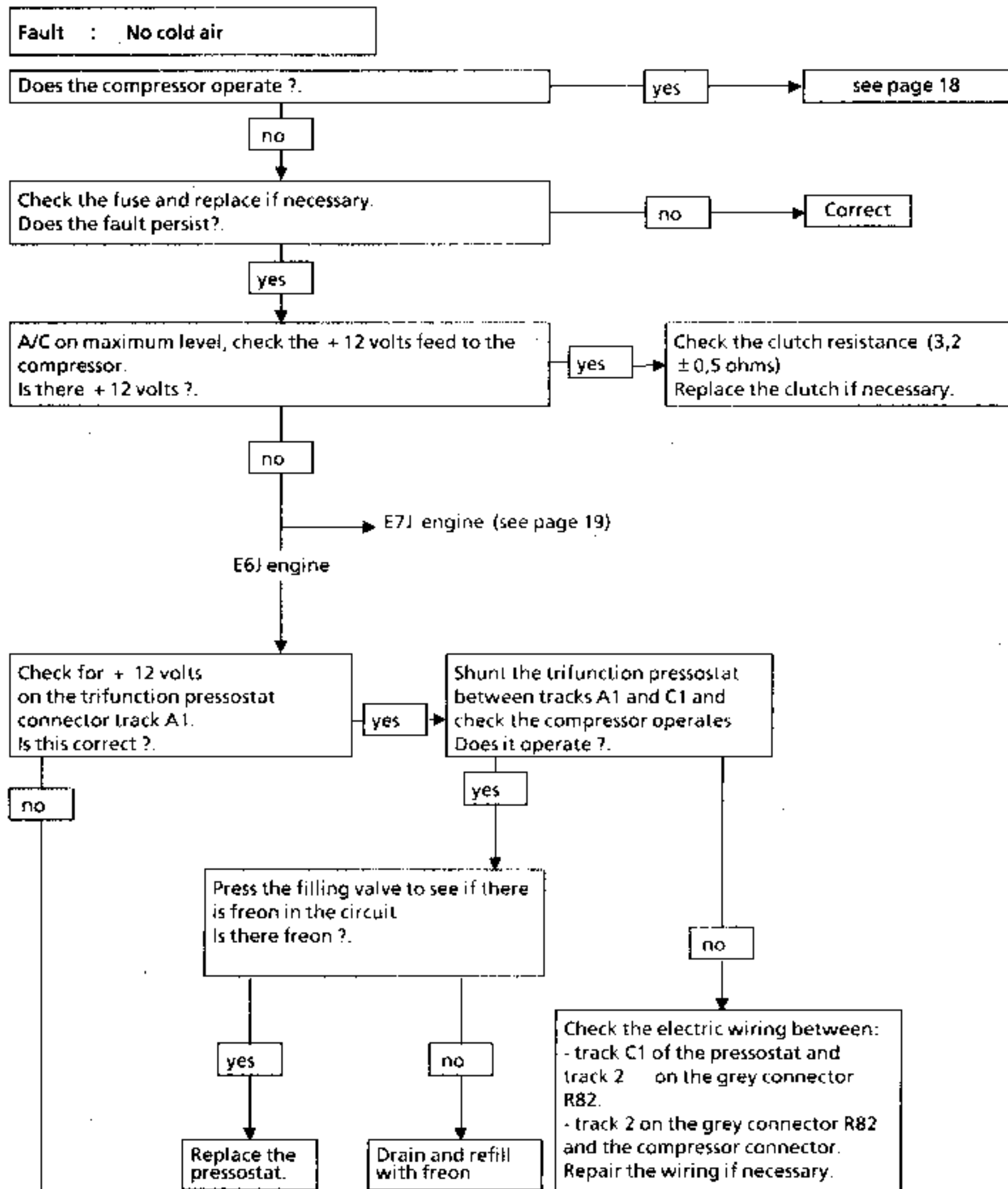
no

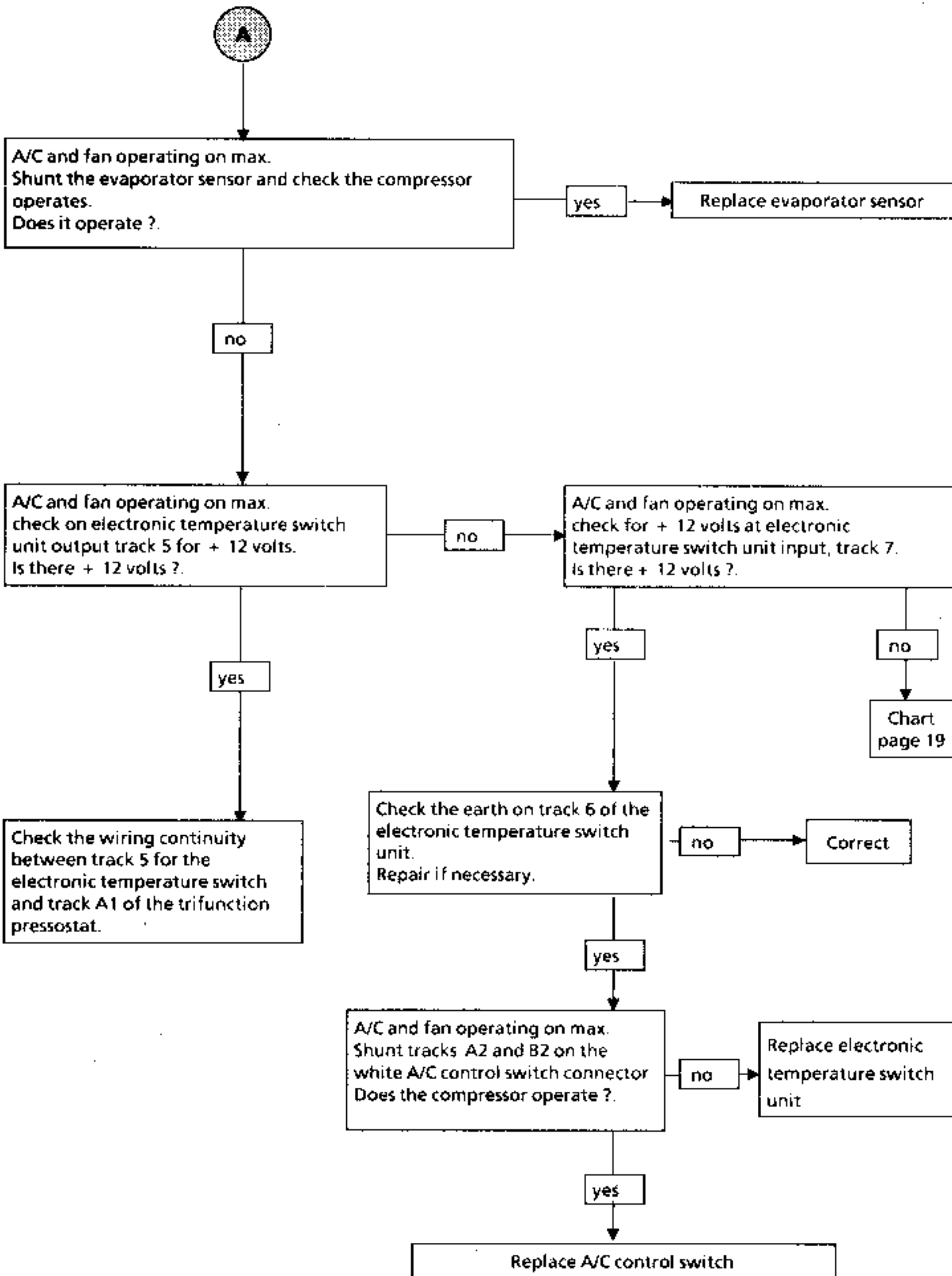
See page 24
fan problem

yes

Drain and refill with freon.
The cause of the problem is excess freon.







Fault : No cold air

Does the compressor operate ?

no

See page 16

yes

Check the dehydration reservoir inspection glass for bubbles with the vehicle at idle speed and A/C on max. Are there bubbles ?

yes

Drain and refill freon

no

Check the mixing flap moves when the heating control is moved. Does the flap move ?

no

yes

Visually check that the flap moves the correct distance. Adjust if necessary. Does the fault persist ?

no

Correct

yes

Connect the HP and LP pressure gauges and check the pressures, engine at idle and A/C on max. If HP = LP the pressure relief valve is fully open or LP \leq 0 the pressure relief valve is closed. If these pressures are read, replace the pressure relief valve and drain and refill the freon. Does the fault persist ?

no

Correct

yes

Replace the compressor

Visually check that the flaps move when the control is moved. Do the flaps move ?

no

yes

Readjust cable

Check the cable connection to the assembly and the control panel. Repair if necessary. Does the fault persist ?

no

Correct

yes

Check the moving parts on the control panel and the assembly (pinions, levers). Is this correct ?

no

Repair if possible or replace assembly.

yes

Remove the assembly and check the air distribution flaps. Replace the assembly is necessary.

See page 16

Connect the XR25 (injection fiche).
Enter code D03 selector on S6.
Operate the A/C and fan (maximum).
Is bar graph 14 L illuminated?

yes

Is bar graph 14 R illuminated?

yes

Check for + 12 volts on track 3 of
relay 474.
Is there + 12 volts?

no

Is there + 12 volts on track 5 of
relay 474?

yes

Check for + 12 volts between
tracks 1 and 2 on relay 474
Is there + 12 volts?

no

Check wiring between:
- track 2 of relay 474 and grey connector R82
on track 2.
- track 2 of black connector R82 and track A1 of
black connector R90.
- track A1 of black connector R90 and track 22
of injection computer.
Repair if necessary.
Does the fault persist?

yes

Injection is preventing A/C operation. Look for a
possible cause or replace the injection computer.

no

Check wiring continuity between:
- track 30 on injection computer and track A2
on black connector R90.
- track A2 on black connector R90 and track B3
on black instrument panel connector.
- track B3 on black instrument panel connector
and track 7 on electronic temperature switch.
Repair if necessary
Does the fault persist?

yes

See page 20

no

Correct

no

Refer to chart on
page 16 from "E6J engine"

yes

Check wiring between tracks 3 on
relay 474 and A/C compressor
Repair

no

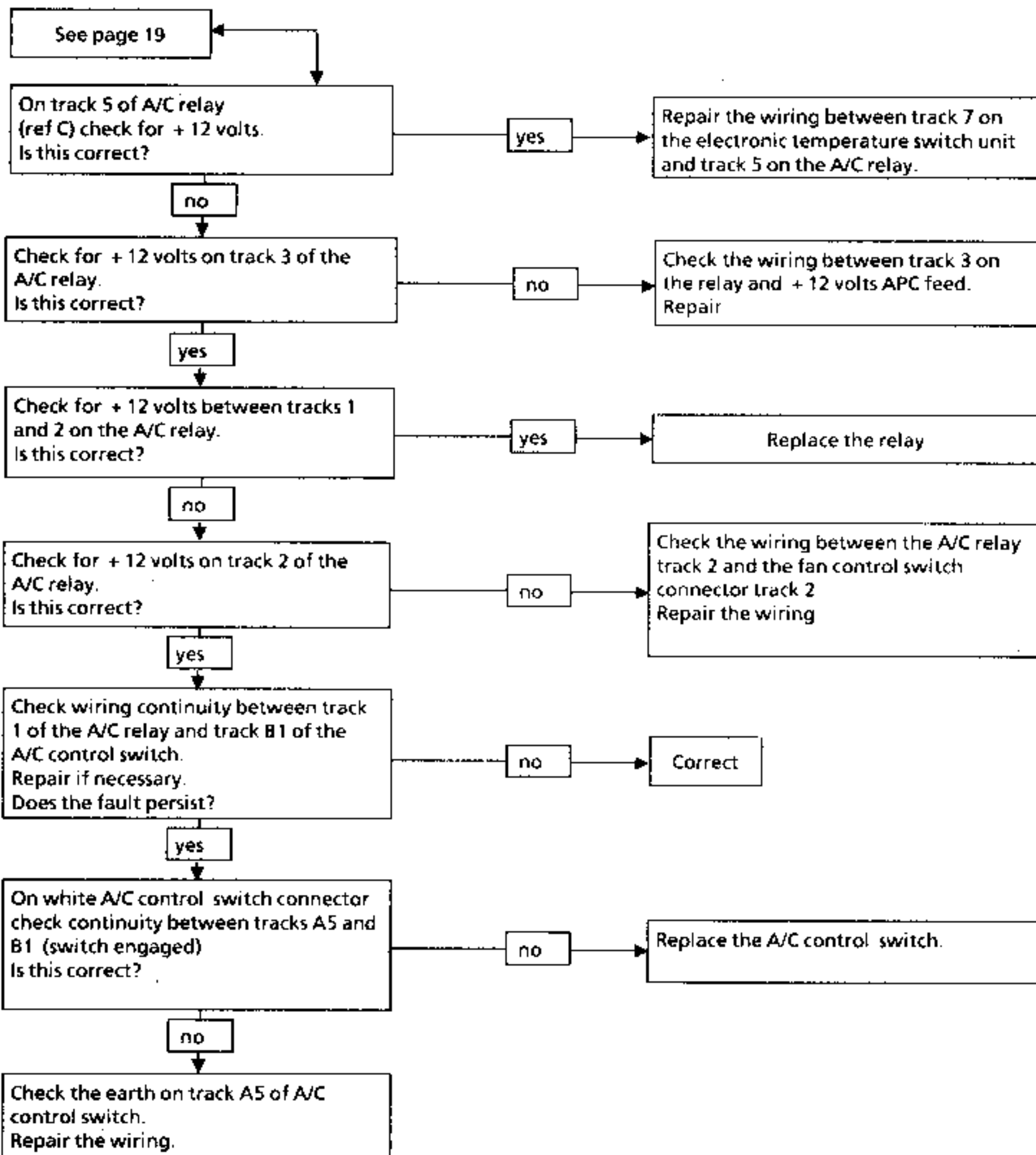
Check shunt between tracks 5 and 1 on relay 474
and wiring between:
- track 1 on relay 474 and track B1 on black
connector R28.
- track B1 on black connector R28 and track B5 on
grey connector R11.
- track B5 on grey connector R11 and fuse holder
unit (track 8).
Repair electrical wiring.

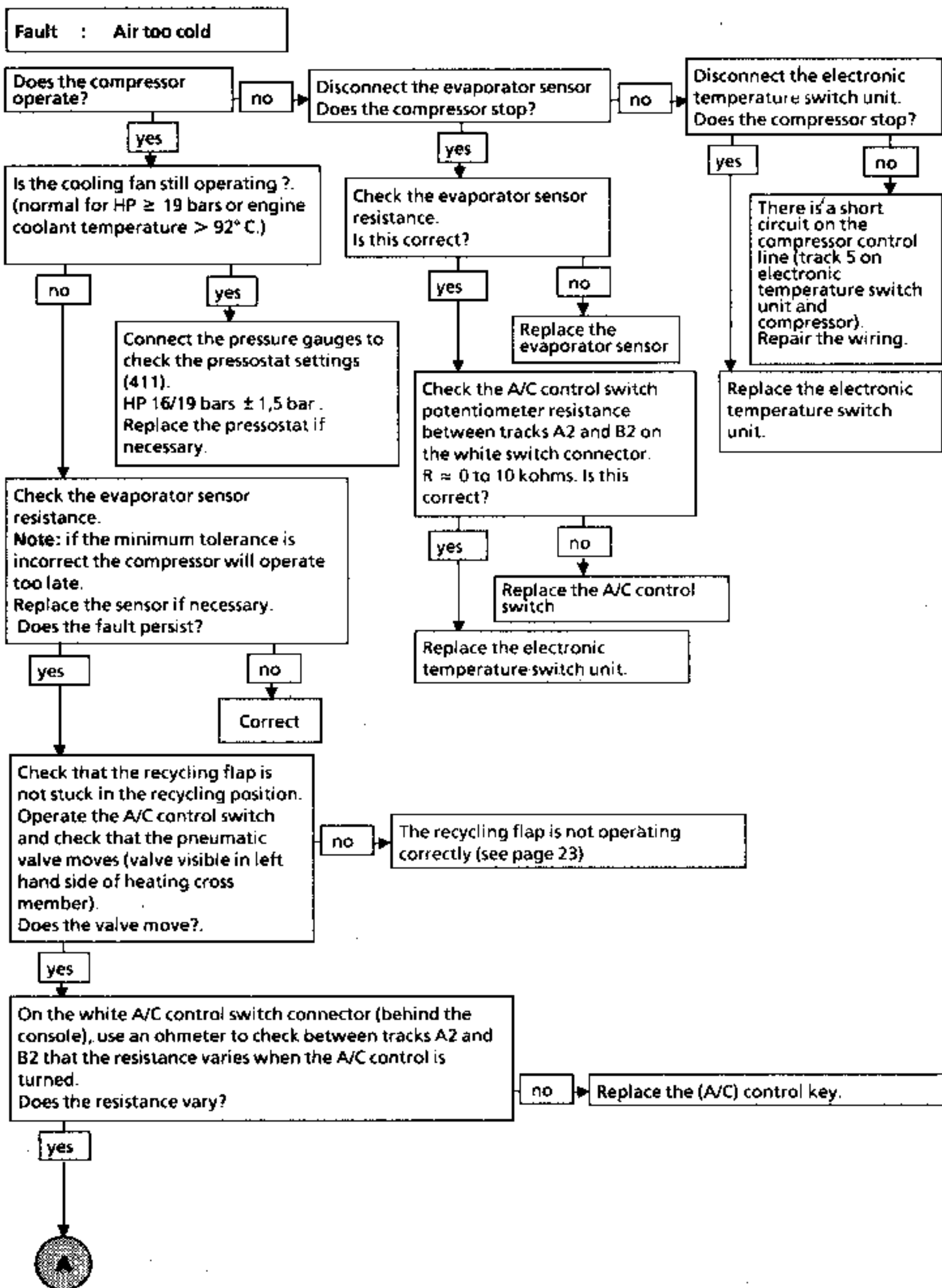
yes

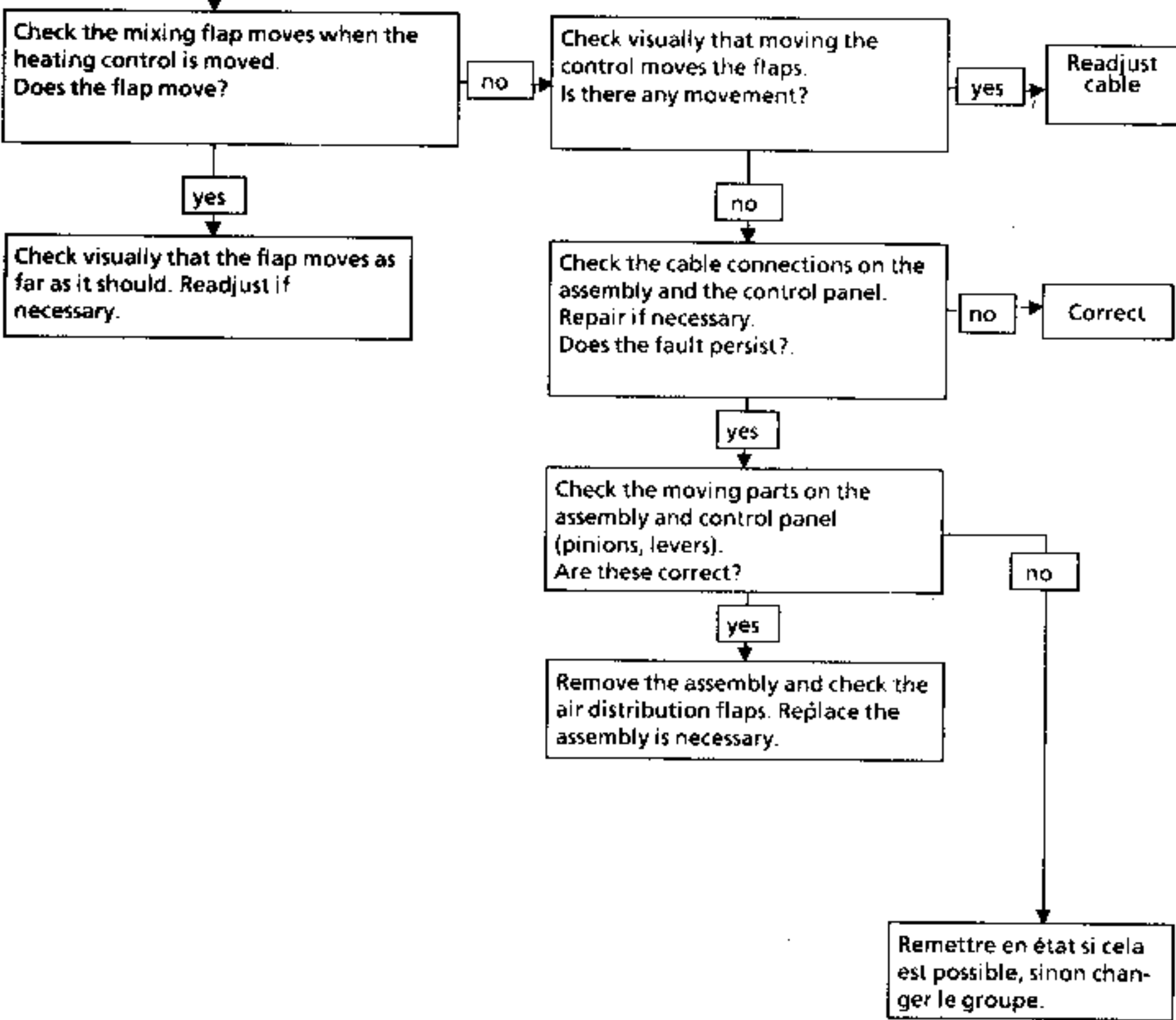
Replace relay 474

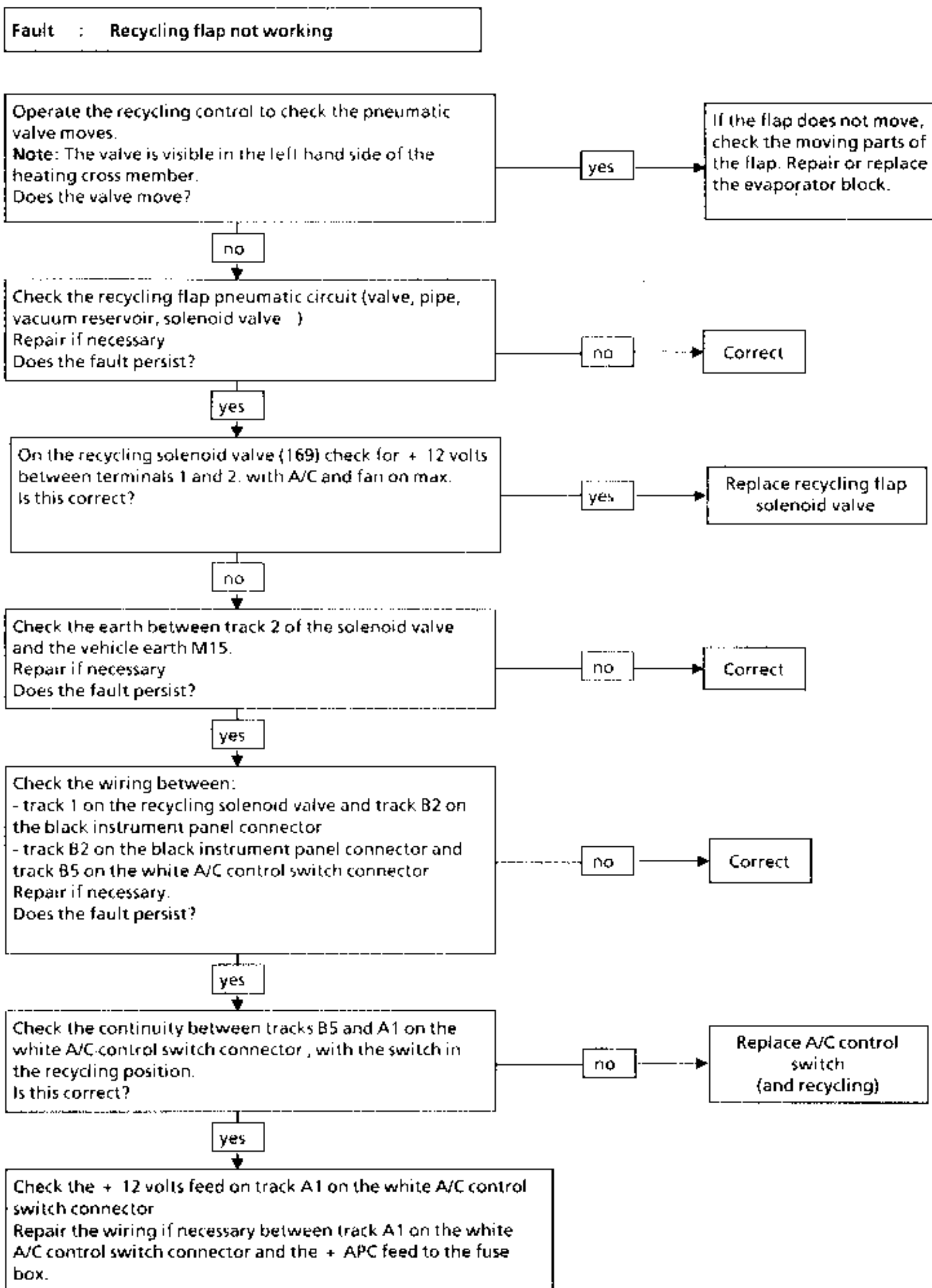
no

Correct









Fault : Engine coolant cooling fan is not working

Check the fuse protecting the fan.
Repair if necessary.
Does the fault persist?

no

Correct

yes

A/C and fan on max., engine at idle speed.
Wait 1 minute for the pressure to rise in the A/C circuit
and check the + 12 volts feed between tracks 1 and 2 of
the cooling fan.
Is there 12 volts ?

yes

Replace the cooling fan

no

Shunt the trifunction pressostat between
tracks B1 and B2.
Does the fan operate?

yes

Connect the HP and LP gauges to the A/C circuit.
A/C and fan on max..
Check the fan pressostat pressure settings.
 $HP \geq 19 \pm 1,5$ bars fan operating.
 $HP \leq 16 \pm 1,5$ bars fan stopped.
Note : fan should also operate for an engine
coolant temperature of $\geq 92^{\circ}C$.
Is the pressure $> 19 \pm 1,5$ bars ?

yes

Replace
the
trifunction
pressostat

no

Shunt the relay between tracks 3 and 5.
Does the fan operate ?

yes

Check for + 12 volts between tracks 1 and
2 of fan relay 234.
Is there 12 volts ?

no

Is there + 12 volts on track 1 of fan relay
234 ?

yes

Check the wiring between:
- track 2 of relay 234 and track 1 of grey
connector R82.
- track 1 of grey connector R82 and track
B2 of pressostat (411).
- track B1 of pressostat (411) and the
vehicle earth (M15).
Repair the electrical wiring

A/C and fan on max., engine at idle speed.
If the HP is low and does not reach the pressostat
set value, check for bubbles in the dehydration
reservoir, which indicates a lack of freon in the
circuit.
Drain and refill freon.

Check the wiring between:
- track 3 of relay 234 and track 1 for fan.
- track 5 of relay 234 and alternator.
Repair electrical wiring.

Replace relay 234 for
fan

Check wiring between:
- track 1 of relay 234 and track B1 of black
connector R28.
- track B1 of black connector R28 and track B5 of
grey connector R11.
- track B5 of grey connector R11 and track 8 on
fuse holder.
Repair electrical wiring.

Fault : The heating and ventilation fan is not working

Check the ventilation fan fuse.
Repair if necessary.
Does the fault persist?

no

Correct

yes

Check + 12 volts feed between fan terminals
Is this correct?

yes

Replace ventilation fan

no

Check + 12 volts feed on track 5 of fan control switch.
Is this correct?

no

Repair wiring between fuse and track 5 of switch

yes

Check switch continuities between tracks:
- 5 and 4 for 1st speed,
- 5 and 2 for 2nd speed,
- 5 and 1 for 3rd speed,
Is this correct?

no

Replace fan control switch

yes

On track 1 of ventilation fan control switch, check different ventilation speed voltages.
- 1st speed $U \approx 8$ volts,
- 2nd speed $U \approx 9$ volts,
- 3rd speed $U \approx 12$ volts.
Is this correct?

no

Check wiring between:
- fan control switch and resistance unit.
Replace resistance unit if necessary

yes

Repair wiring between:
- track 1 of fan control switch and track B5 of black instrument panel connector.
- track B5 of black instrument panel connector and track 1 on fan.

Fault : Water in the passenger compartment

Does the vehicle have air conditioning?

no

yes

Check the thermal insulation of the evaporator unit.
Repair if necessary.
Does the fault persist?

no

Correct

yes

Check the condensation drain pipe. Check the water is running out correctly.
Switch the A/C on and check for water under the vehicle.
Repair if necessary.
Does the fault persist?

no

Correct

yes

The customer has complained of water droplets being sprayed from the central ventilators or the front feet ventilators.
The evaporator may be freezing.
Are there water droplets?

yes

Carry out an air conditioning test:
Switch the A/C on to max. and the fan on at top speed, close all windows and doors, measure the temperature of the air blown through the central ventilators, it should be $\geq 2^{\circ}\text{C}$ when the compressor is running. Below this value, the evaporator may freeze.
Replace the evaporator sensor or electronic.

Check the leak is not from the heating radiator.
Replace the radiator if necessary.
Does the fault persist?

no

Correct

yes

The leak is not from the heating and ventilation system

no

Fault : Controls are stiff to operate

Check the cable path, remove and tight areas, kinks or limiting plastic collars, etc.....
Replace the cable if necessary.
Does the fault persist?

no

Correct

yes

Unhook the cable from the control panel or the assembly and check the operation of the flap control button (mixing or distribution).
Is this correct

no

Replace control panel or the heating/ventilation assembly (if flap stiffness is abnormal).

yes

If this stiffness seems to be exceptionally bad, contact the Technical Department.

Fault : Smells in passenger compartment

Check the air extraction openings are not blocked
Repair if necessary.
Does the fault persist?

no

Correct

yes

Check heating cross member sealing (water reservoir) and the bonnet seal on the engine compartment. (seals, bonnet plugs ...)
Repair if necessary
Does the fault persist?

no

Correct

yes

Check the operation of the recycling flap, which may be stuck in the recycling position.
Repair if necessary.
Does the fault persist?

no

Correct

yes

Is the smell present in the ventilation position (max cold)?

no

Is the smell present in the heating position (max. hot)?

yes

Remove the heating assembly and check the condition of the radiator (dirt, anti-freeze leak, poor radiator de-greasing...).
Repair if necessary.
Does the fault persist?

no

Correct

yes

If the vehicle is new the smell may be caused by the evaporation of solvents, plastifying agents etc.

Set the A/C in position max select a low fan speed and check for a freon leak at the central ventilator using a freon detector.
Is this correct?

no

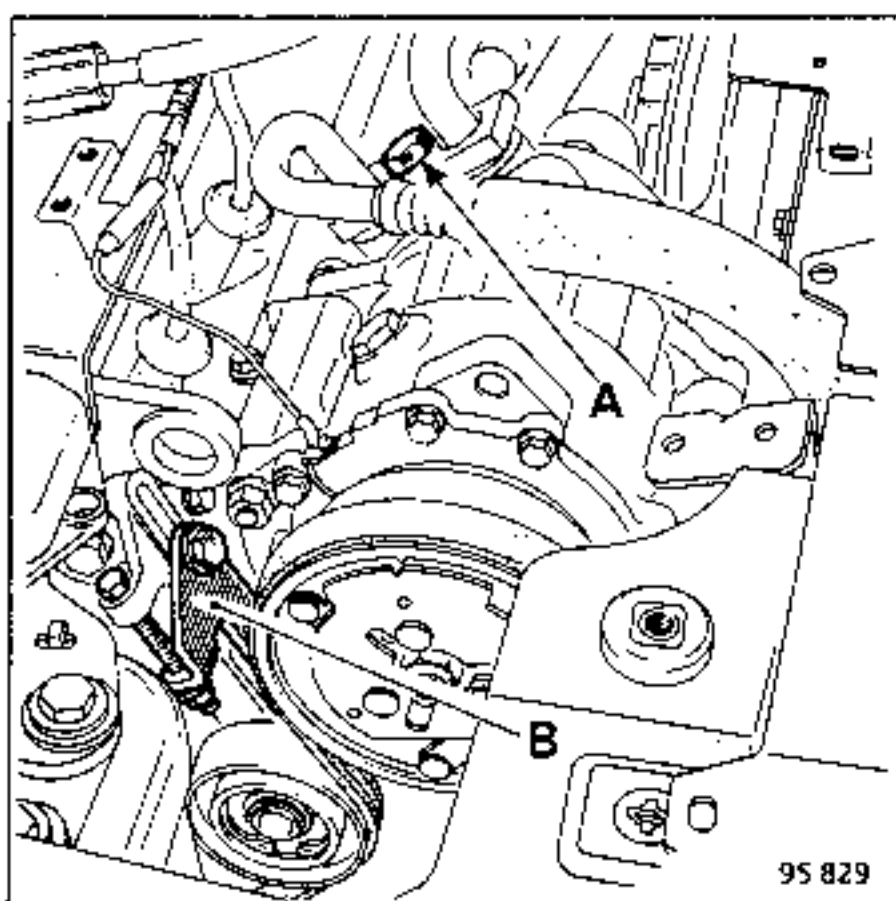
Replace evaporator unit.

yes

Remove the evaporator unit and check it is not dirty (leaves, insects ...), and also check the seals.
Clean or replace evaporator unit

REMOVAL

- Disconnect the battery.
- Remove the bonnet.
- Remove the upper cross member (without removing the radiator grille).
- Drain the freon circuit (see method in "Air conditioning" manual).
- Remove the retaining bolts (A) for the connection pipes.



- Loosen the tensioner mounting (B) and slacken the belt (the headlight bulb cover may have to be removed).
- Remove the drive belt
- Disconnect the compressor feed wiring
- Remove the two compressor mounting bolts and remove the compressor upwards.

REFITTING

Refitting is the reverse of removal.

When refitting, if fitting a new compressor, it is supplied ready filled with oil. It is advisable to check this nevertheless.

Replacing pipe sealing joints

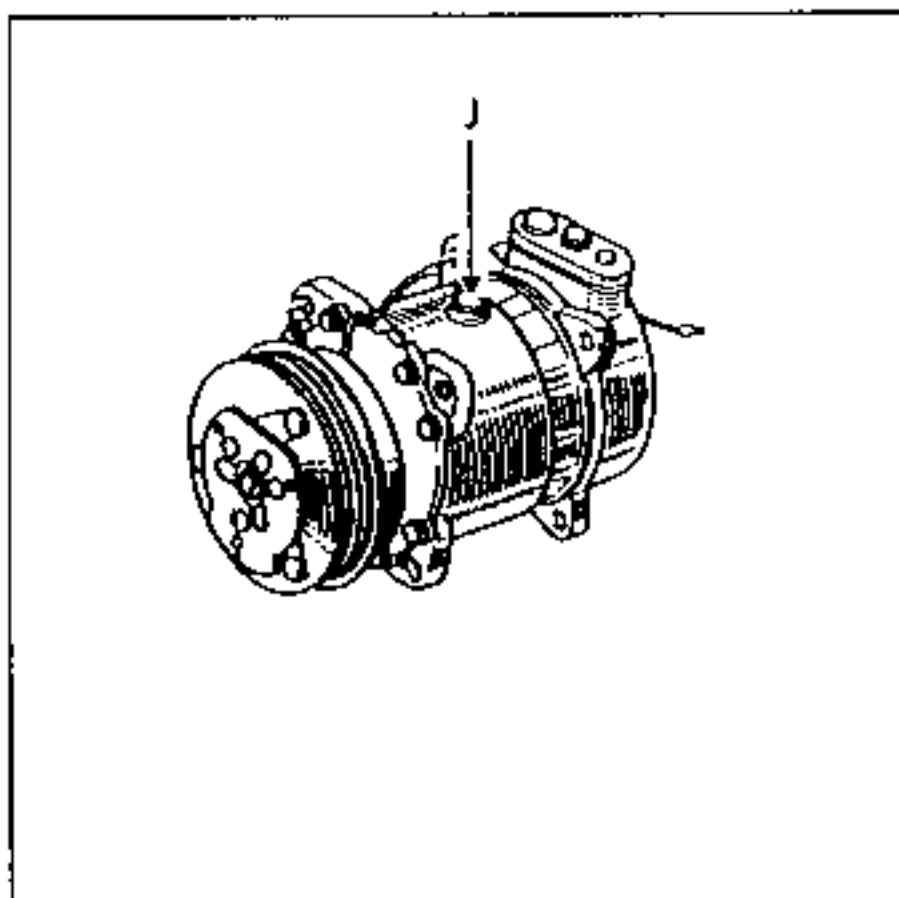
Torque tighten the pipe retaining bolts (A) to $3,5 + 0,5 \text{ daN.m.}$

Refill the freon circuit at the filling point (see method in "Air conditioning" manual).

LEVEL

The compressor must be removed

Unscrew and remove the oil plug (J).



Tip the compressor upside down and let the oil drain out from the housing (to drain as much oil as possible, turn the housing by hand).

Fill the compressor with 120 cm³ (15 cm³ is taken as remaining in the compressor after draining), of **ELF RIMA 100** oil (approx. 1 glass).

Refit the drain plug ensuring the seal and joint face are clean (torque tighten to 1 daN.m).

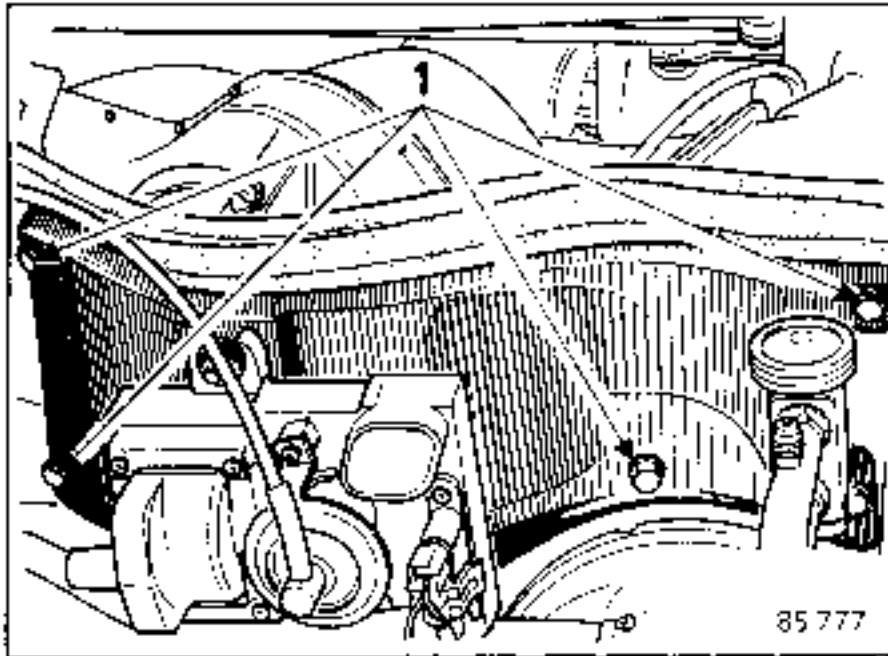
Refit the compressor.

Fill the circuit with Freon R12 (825g ± 25g).

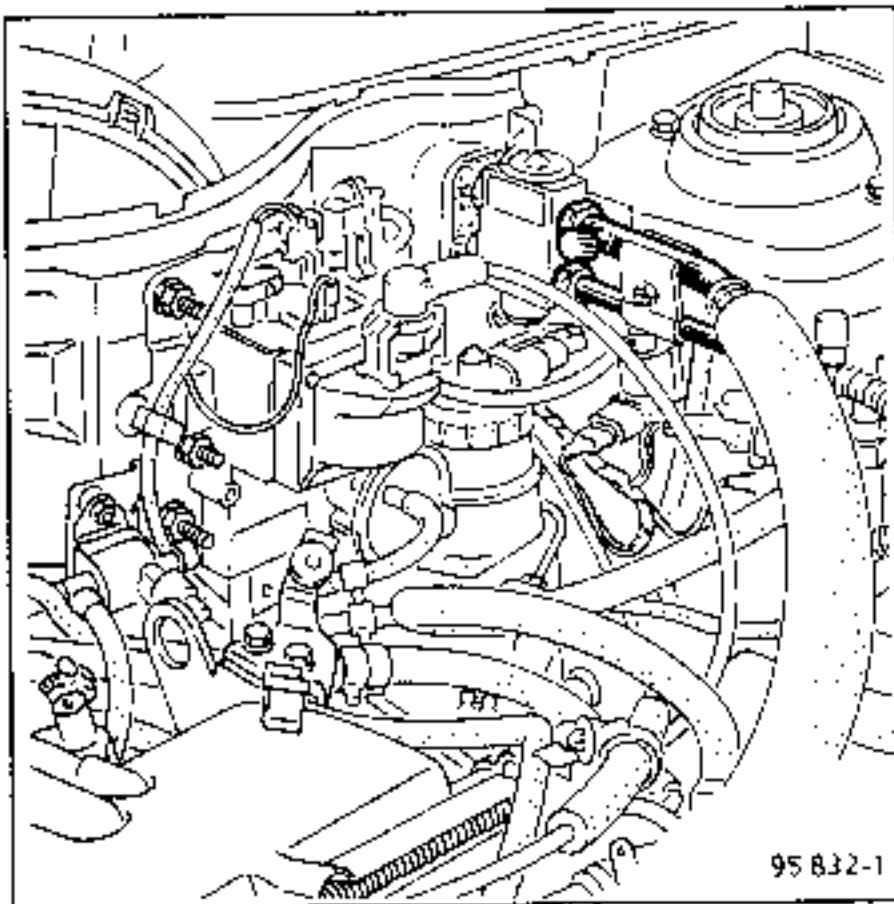
IMPORTANT : the compressor oil level must be topped up if a pipe has burst.

REMOVAL

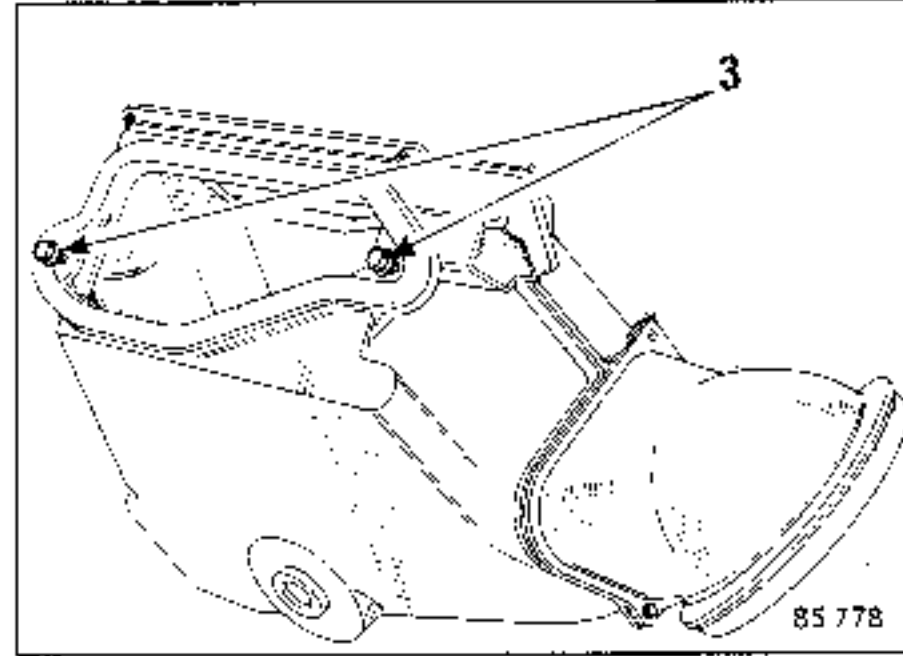
- Remove the battery.
- Remove the A.E.I (for carburettor versions) or the M.P.A (for injection versions).
- Remove the 6 mounting bolts (1) from the water reservoir section.



- Drain the freon circuit at the filling point (see method in "Air conditioning" manual).
- Disconnect the freon pipe connections



- Remove the two mounting bolts for the cooling fan assembly and remove the fan.
- Remove the two mounting bolts for the evaporator (3) (bolts can be removed from inside the vehicle without removing the dashboard).
- Remove the evaporator.



REFITTING

- There are no special notes for refitting. Refitting is the reverse of removal.

(ATTENTION: Ensure the two half housings of the evaporator unit are correctly sealed).

- Fill the freon circuit at the filling point (see method in "Air conditioning" manual).

IMPORTANT : When replacing the evaporator, add 30 cm³ of ELF RIMA 100 oil to the compressor (approx $\frac{1}{4}$ glass).

REMOVAL

- Disconnect the battery.
- Remove the bonnet.
- Drain the freon circuit at the filling point (see method in "Air conditioning" manual).
- Remove the radiator grille (the front bumper may need to be removed to gain access to the two lower mounting bolts).
- Remove the upper cross member.
- The freon pipes to the condensor (A) and the dehydrating bottle (B).

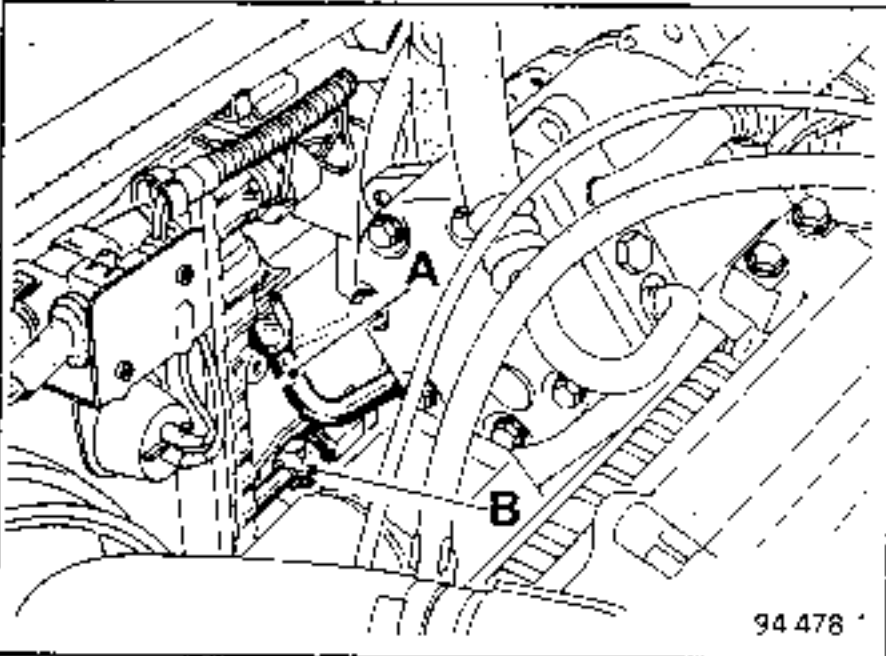
REFITTING

- There are no special points for refitting except when refitting the connection pipes to the condensor, when the pipes should be lubricated and held while the connections are tightened using an open wrench.

Replace the pipe seals.

- Refit all parts removed.
- Top up the engine cooling circuit (see corresponding chapter).
- Fill the freon circuit at the filling point (see method in "Air conditioning" manual).

IMPORTANT : When replacing the condensor, add 30 cm³ of ELF RIMA 100 oil to the compressor (approx $\frac{1}{4}$ glass).

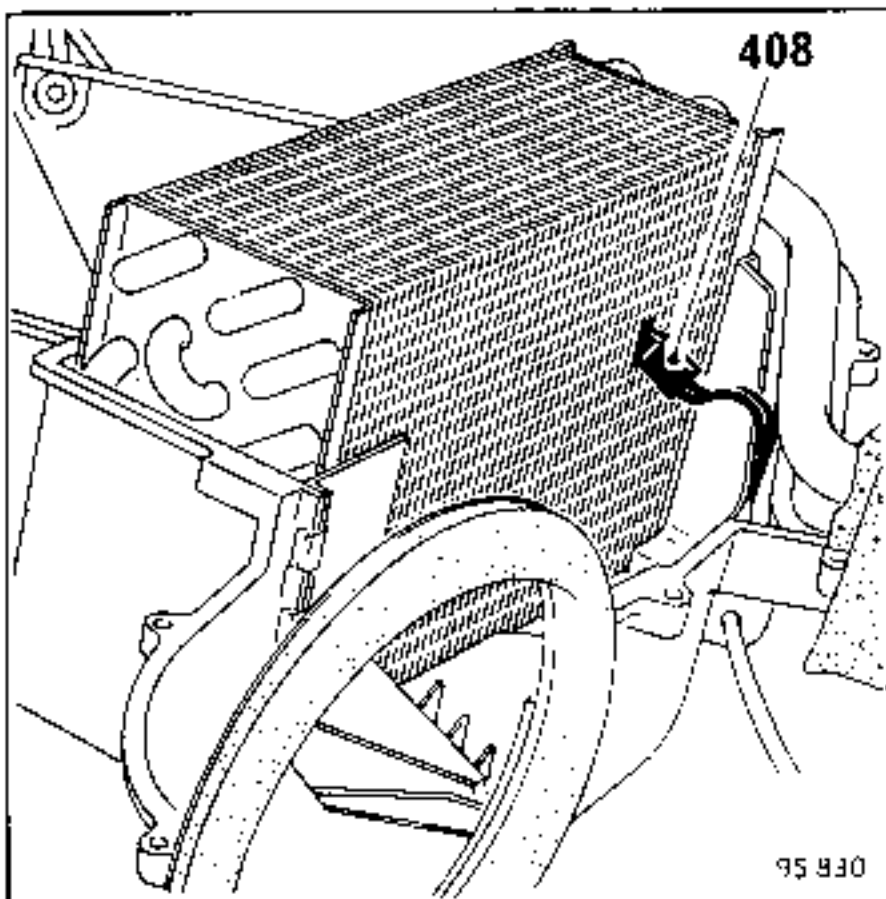


- Disconnect the fan feed connector
- Disconnect the radiator hoses.
- Remove the radiator / condensor assembly upwards.

EVAPORATOR SENSOR (408)

The evaporator sensor is mounted between two of the evaporator wings.

To reach the sensor, remove the evaporator unit (see corresponding chapter) and release the two half housings.



Sensor test values

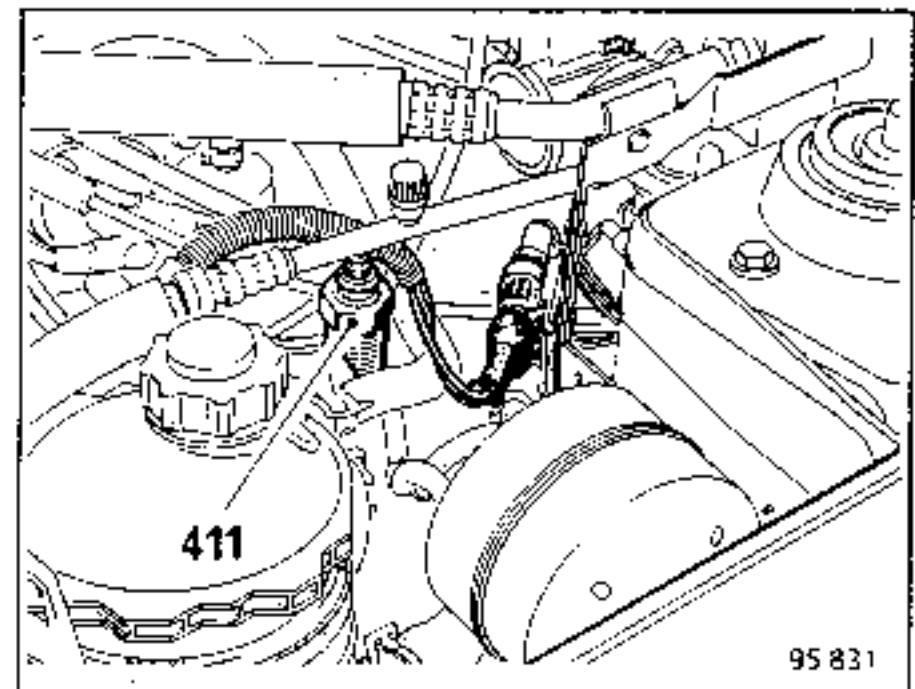
10° C	10 000 Ω
15° C	7 500 Ω
20° C	6 000 Ω
25° C	4 750 Ω
30° C	4 000 Ω
35° C	3 000 Ω

The sensor should be tested in place, with the fan running at high speed, between the two tracks of the connector on the water reservoir.

TRIFUNCTION PRESSOSTAT (411)

The pressostat ensures the min and max operating pressures for the cooling circuit.

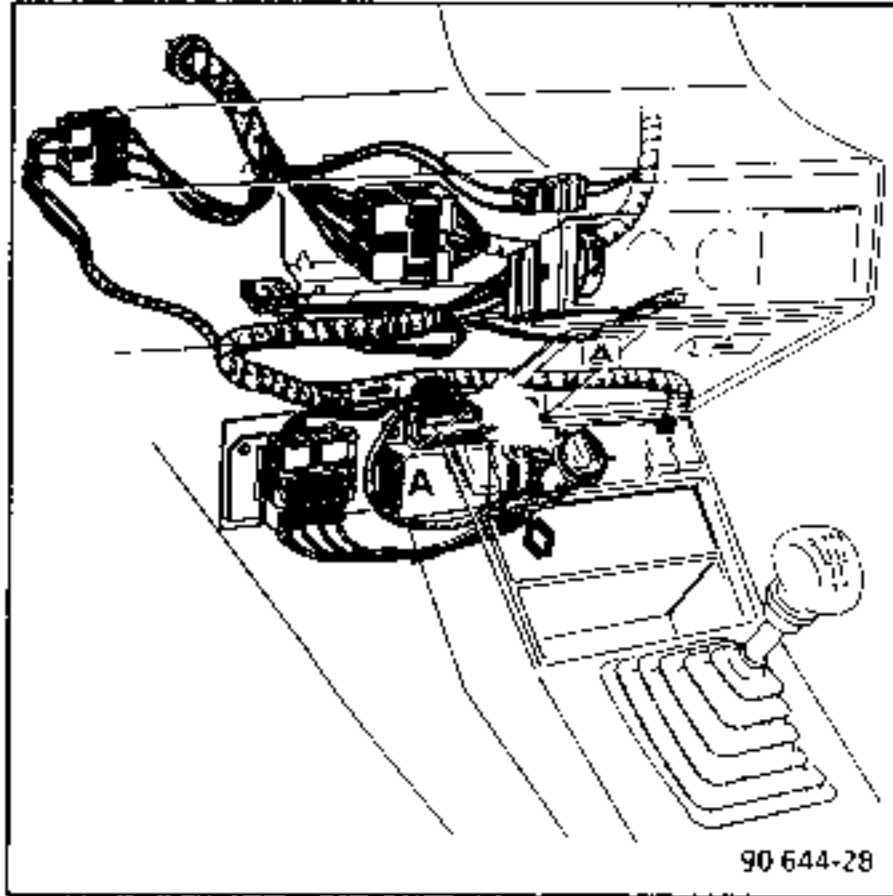
- Low pressure cut-off threshold **2 bars**.
- High pressure cut-off threshold **28 bars**.
- Fan high speed threshold **19 bars**.



ELECTRONIC MODULE (A)

The electronic module is mounted on the air distribution chamber body.

To reach the module, remove the centre console from inside the vehicle.



RECYCLING FLAP SOLENOID VALVE

The solenoid valve (169) when energised, activates the pneumatic valve (B) to close the external air entry flap.

