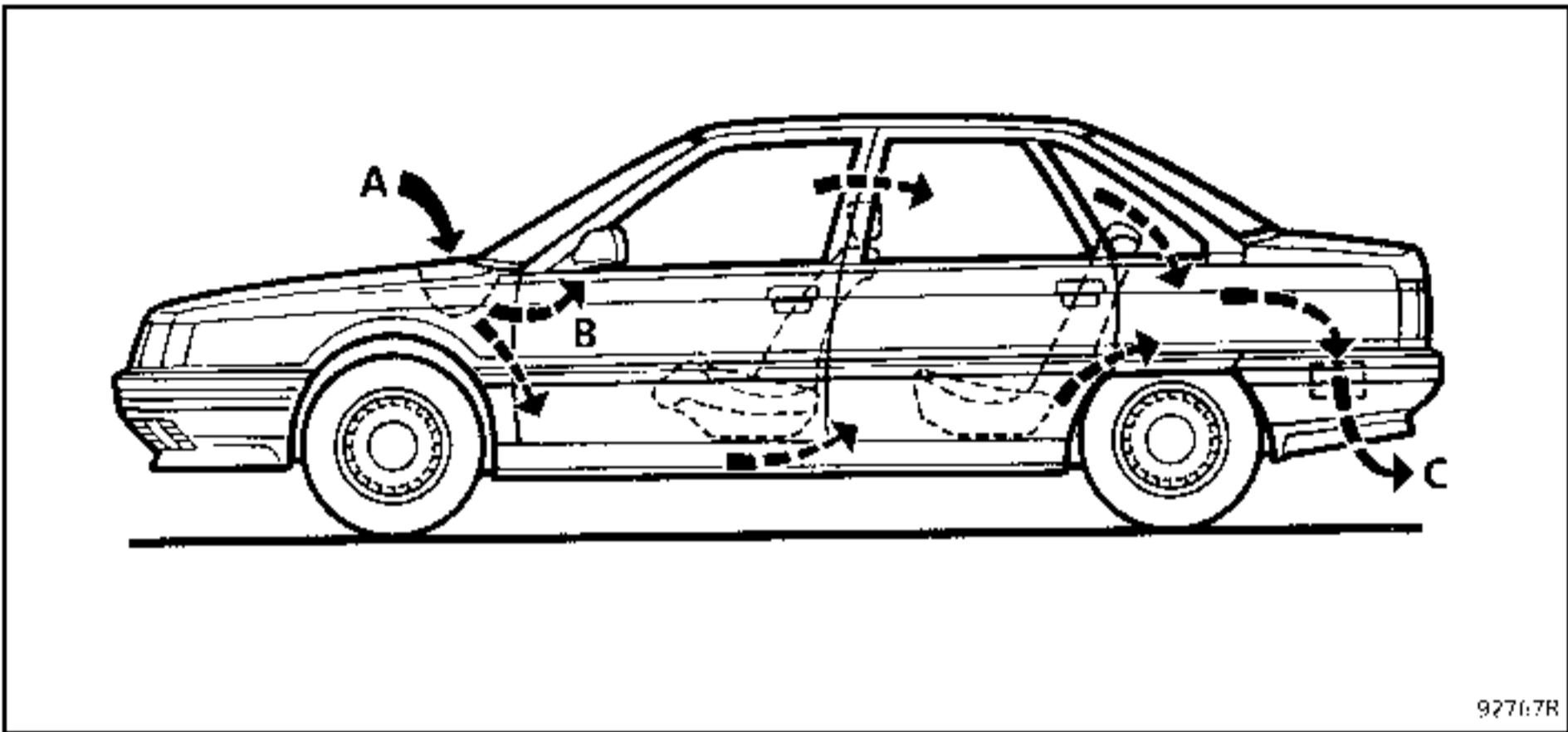
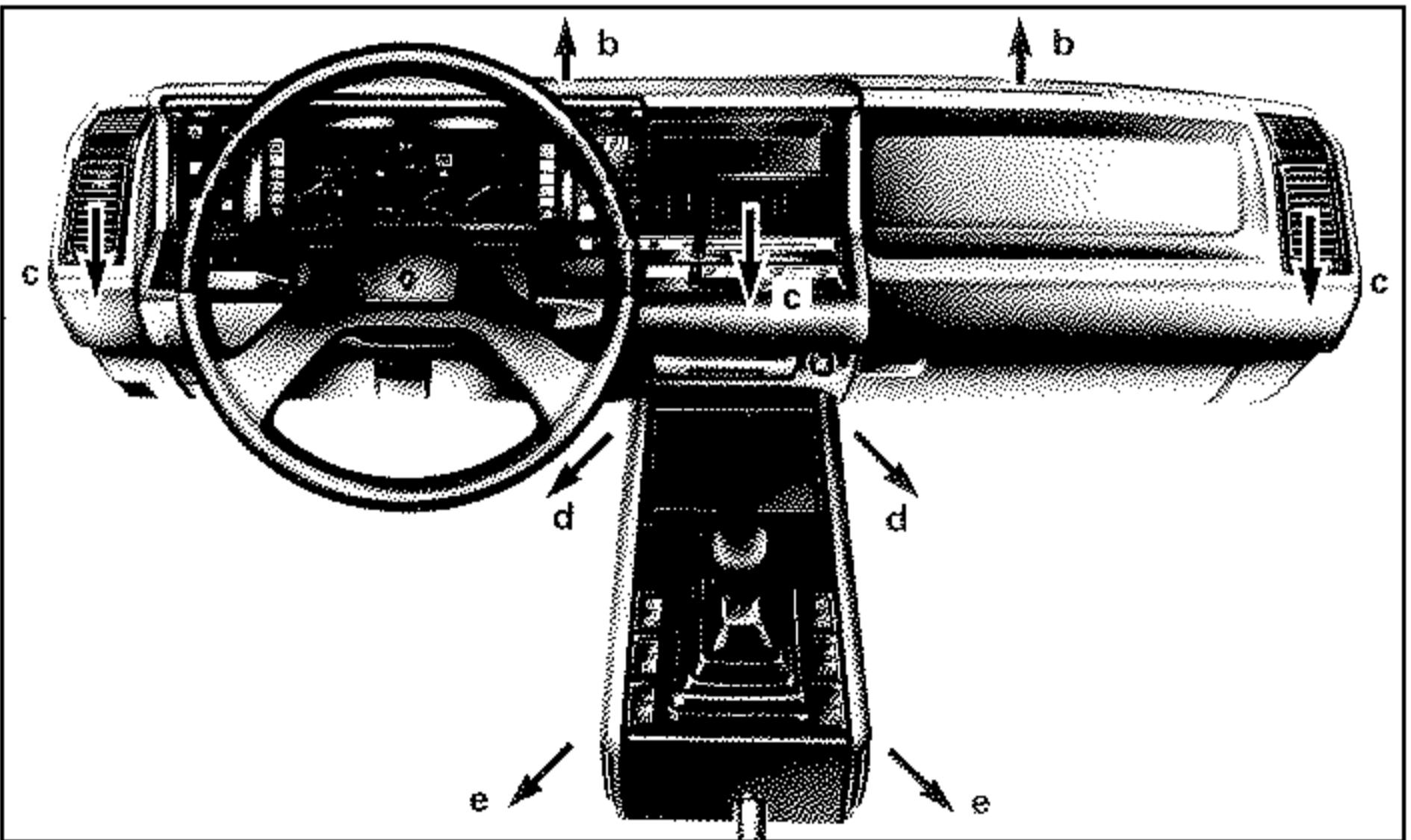


UP TO THE END OF MODEL YEAR 1989

AIR DISTRIBUTION



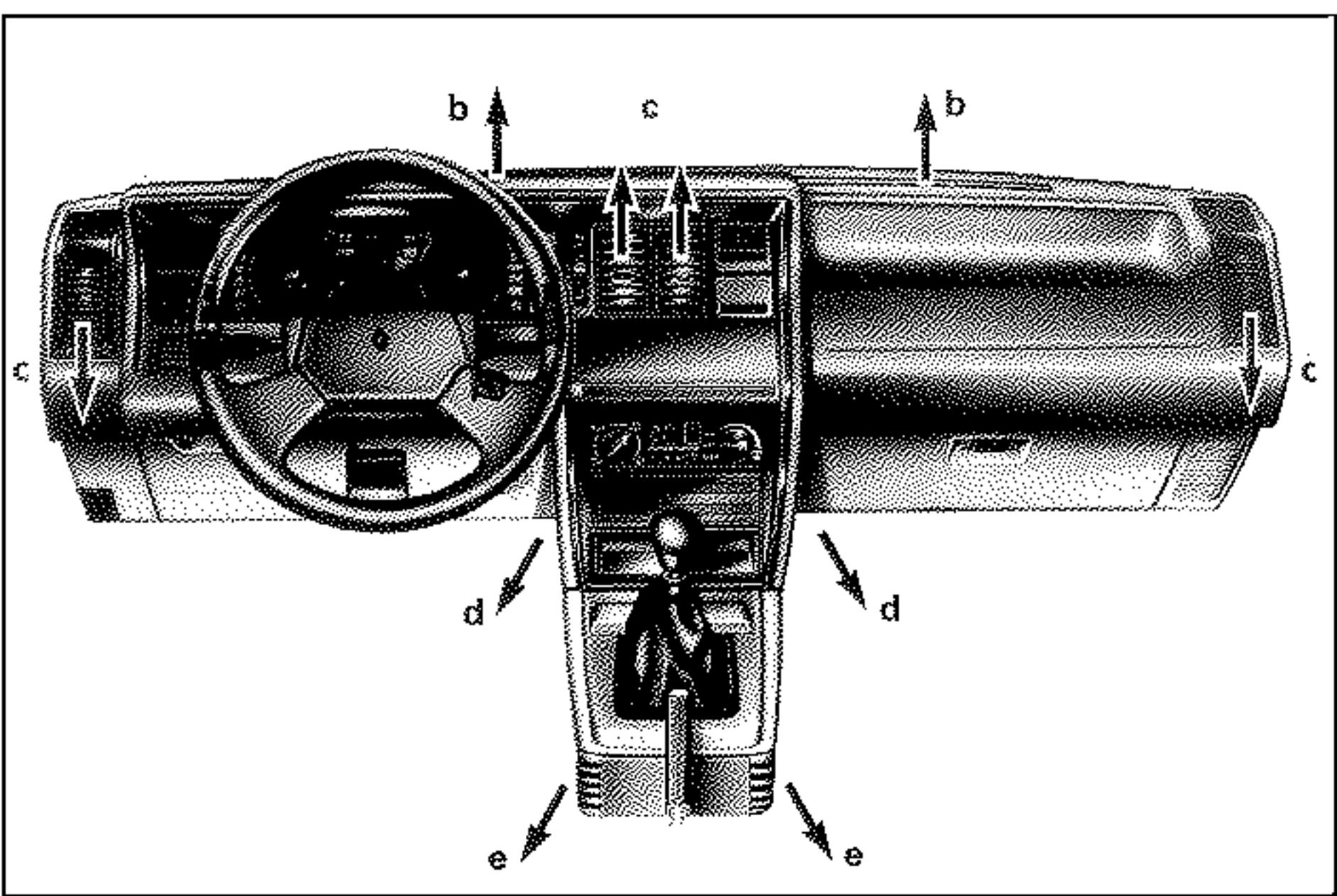
9276:7R



- A External air intake
- B Air distribution
- C Air extraction through rear lefthand and righthand wings

- b windscreen demisting outlets
- c dashboard ventilator outlets
- d lower ventilator outlets
- e rear seat ventilator outlets (depending on equipment level)

FROM MODEL YEAR 1990 ONWARDS



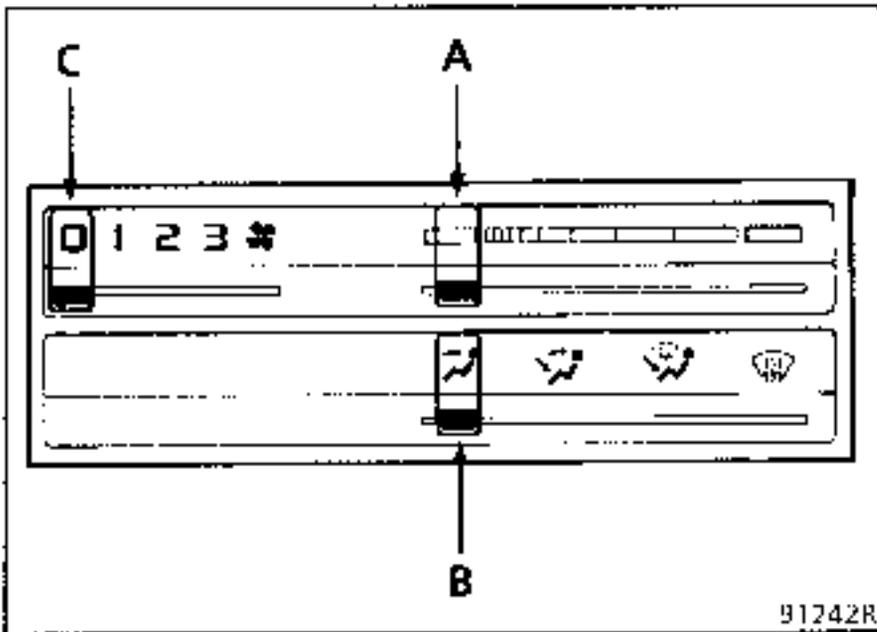
- b Windscreen demisting outlets
- c Dashboard ventilator outlets
- d Lower ventilator outlets
- e Ventilator outlets for the rear seats (depending on equipment level)

UP TO MODEL YEAR 1989

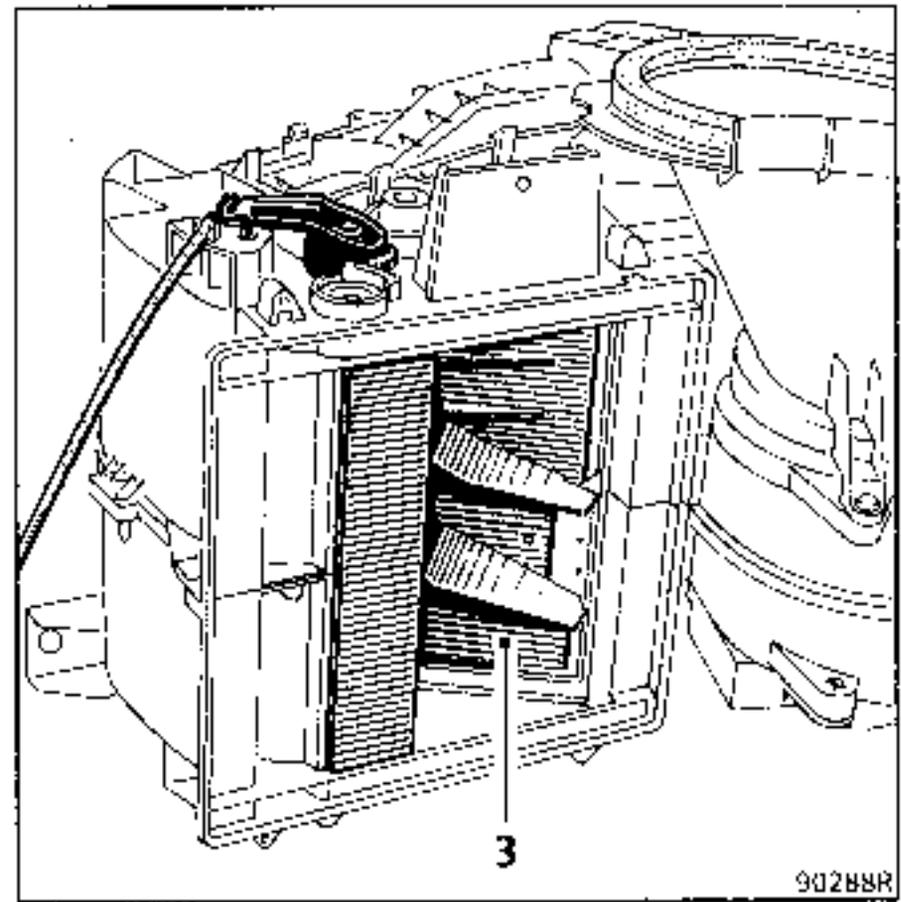
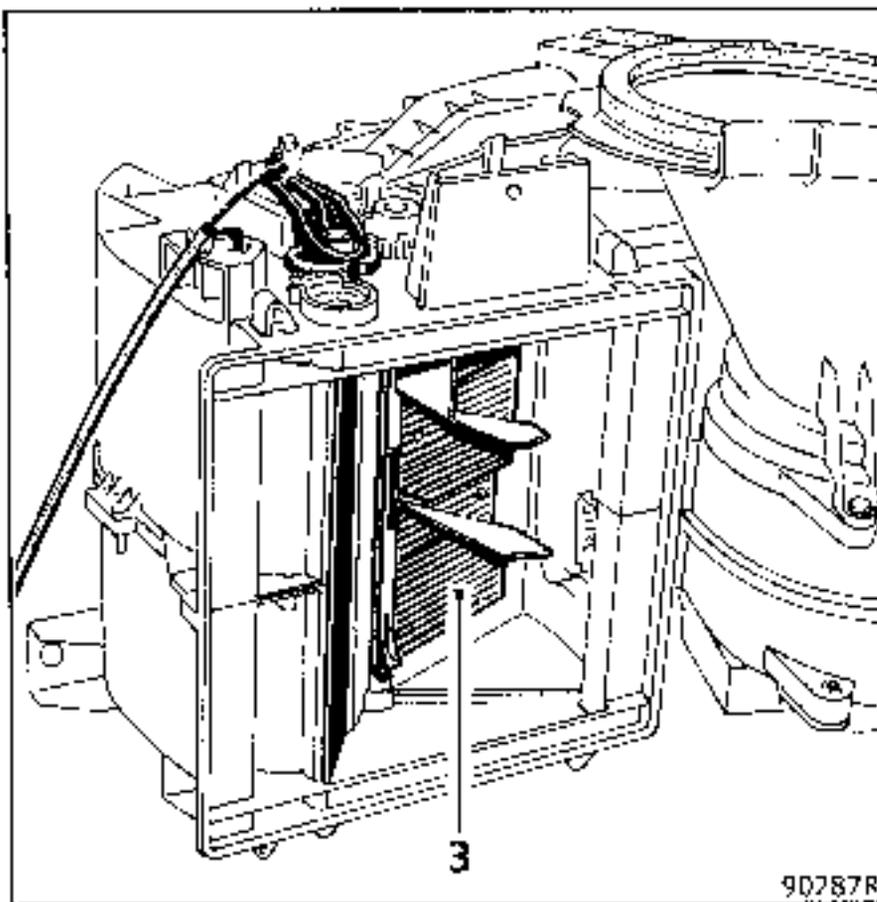
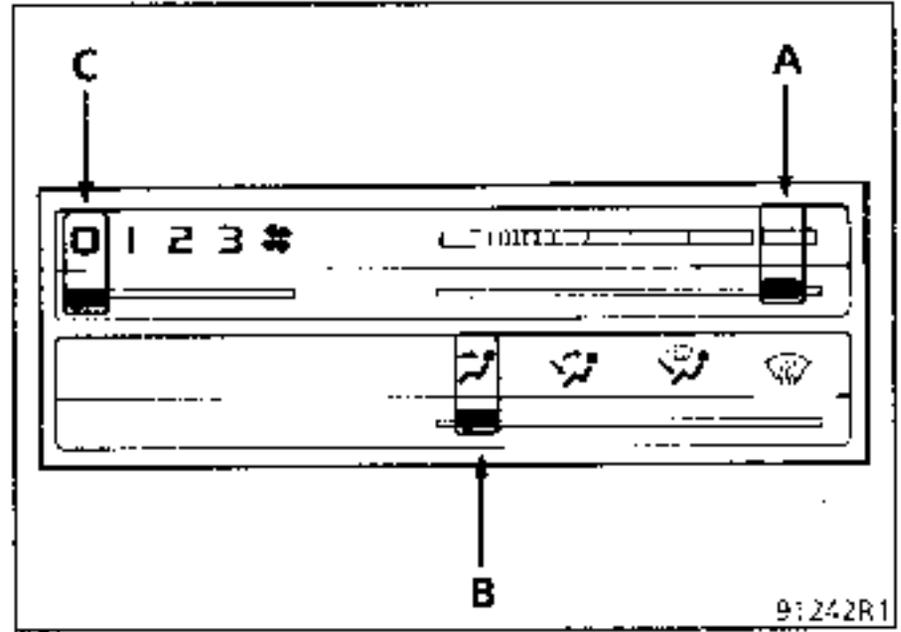
Temperature control slide (A)

Controls hot air / cold air flap (3).

COLD AIR



HOT AIR

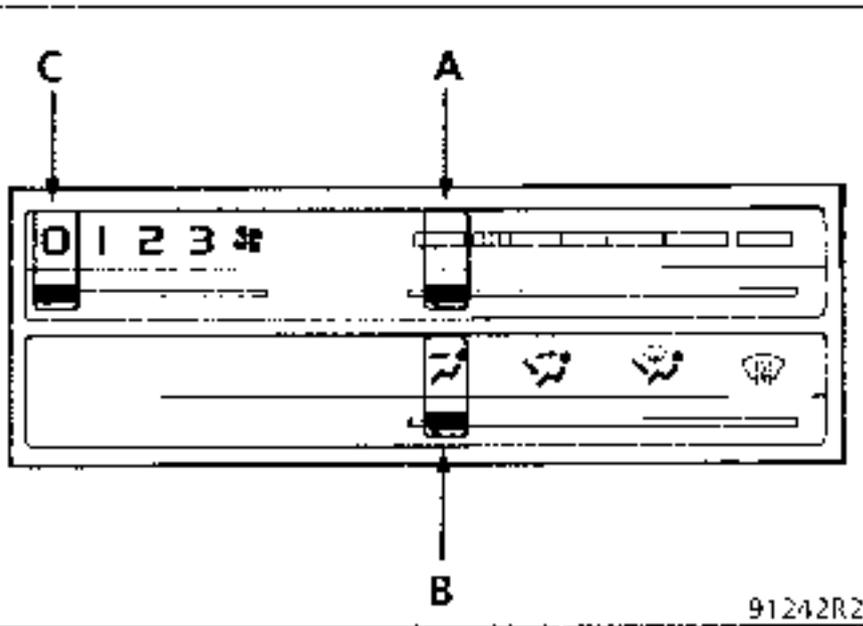


The blower does not have a heater valve and has a permanent current supply. Flap (3) controls the operation of the fresh air reheating system.

Air distribution slide (B)

Controls the air distribution flaps

VENTILATION

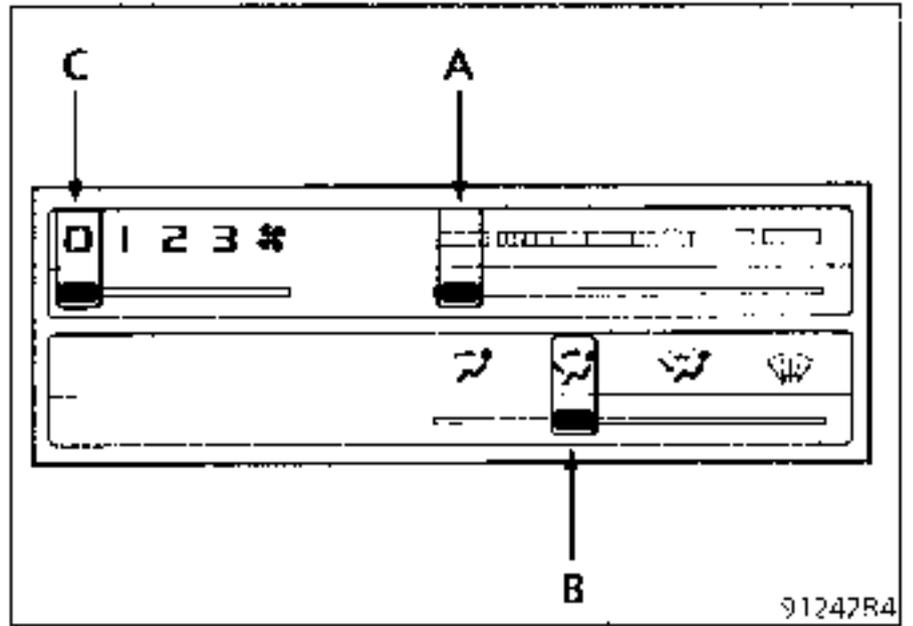


The air flow is only directed towards ventilators (c) in the dashboard.

There are 3 settings for each ventilator :

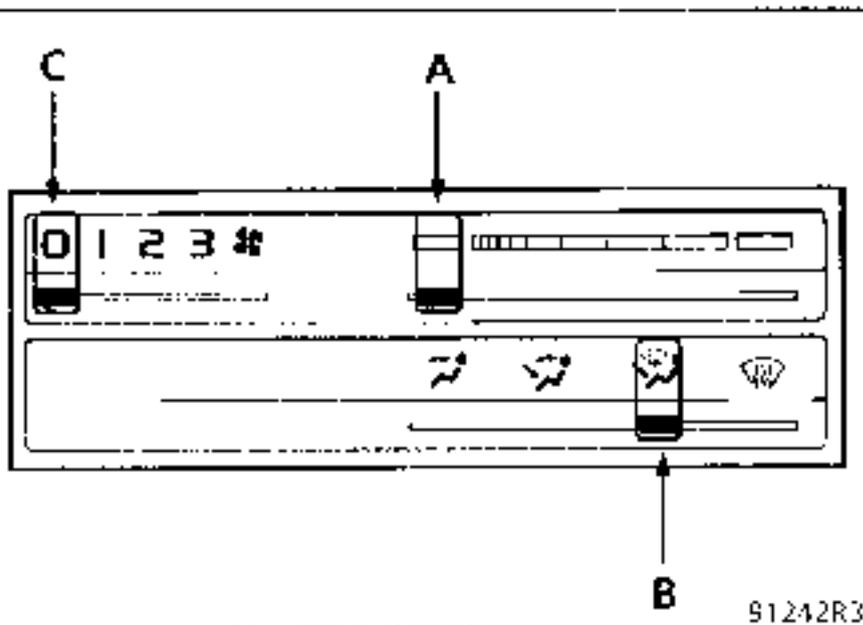
- open or closed,
- up or down,
- left or right.

HEATING - VENTILATION



The air flow is distributed between the dashboard ventilators (c) and lower ventilators (d) and (e). When the air is heated by altering the setting of control slide (A), the air temperature at the dashboard ventilators (c) is lower than that at ventilators (d) and (e).

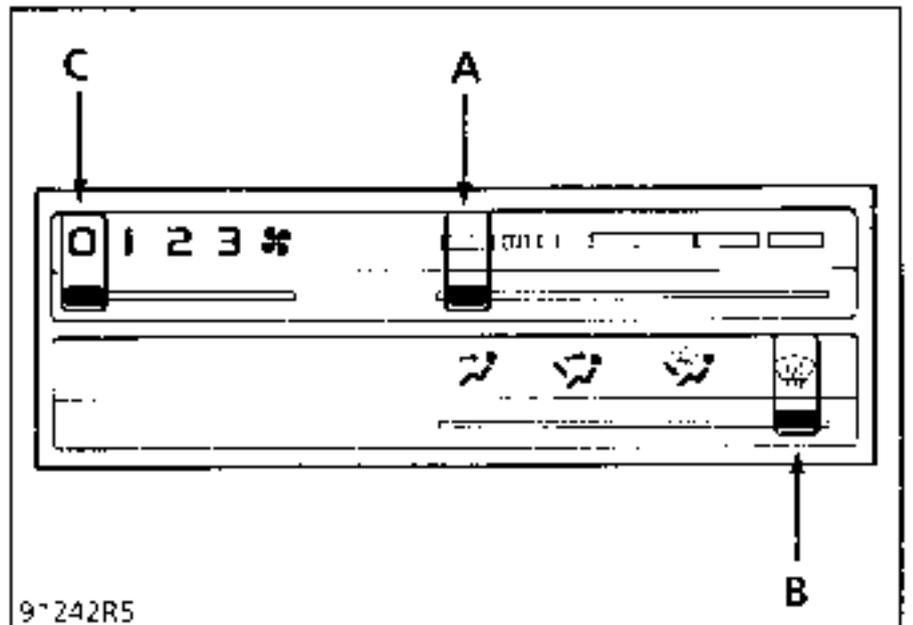
HEATING - DEMISTING



The air flow is distributed between ventilators (b), (d), and (e)

In this position, the dashboard ventilators (c) are supplied with air. They can be shut off using their own air flow control.

DEMISTING - DEFROSTING



The air flow is directed towards windscreen ventilator (b) and dashboard ventilators (c).

For improved efficiency, each of the dashboard ventilators may be activated as desired, in particular for demisting the side windows.

Ventilator control slide (C)

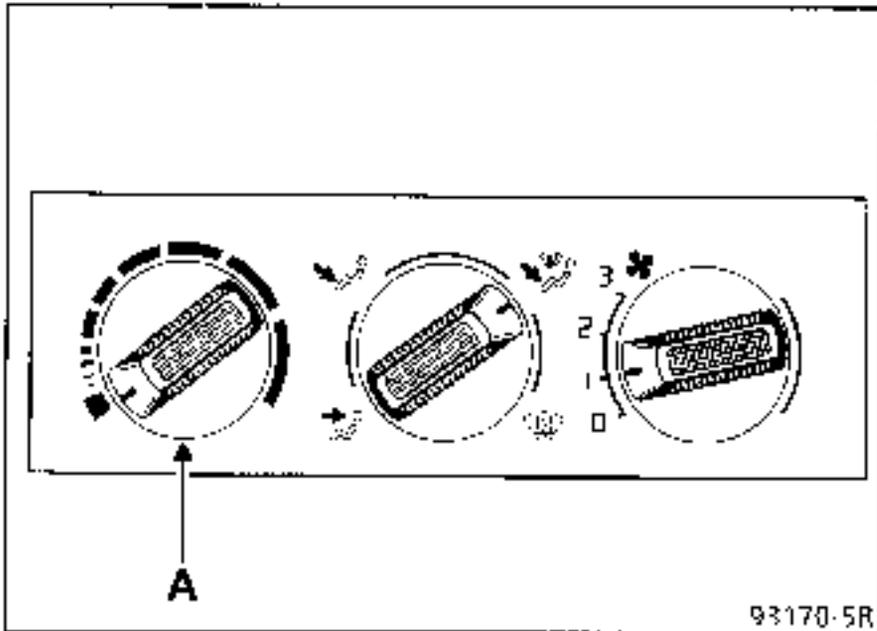
Ventilation is by means of "blown air". The flow of air inside the passenger compartment is determined by the settings of control slide (C).

FROM MODEL YEAR 1990 ONWARDS

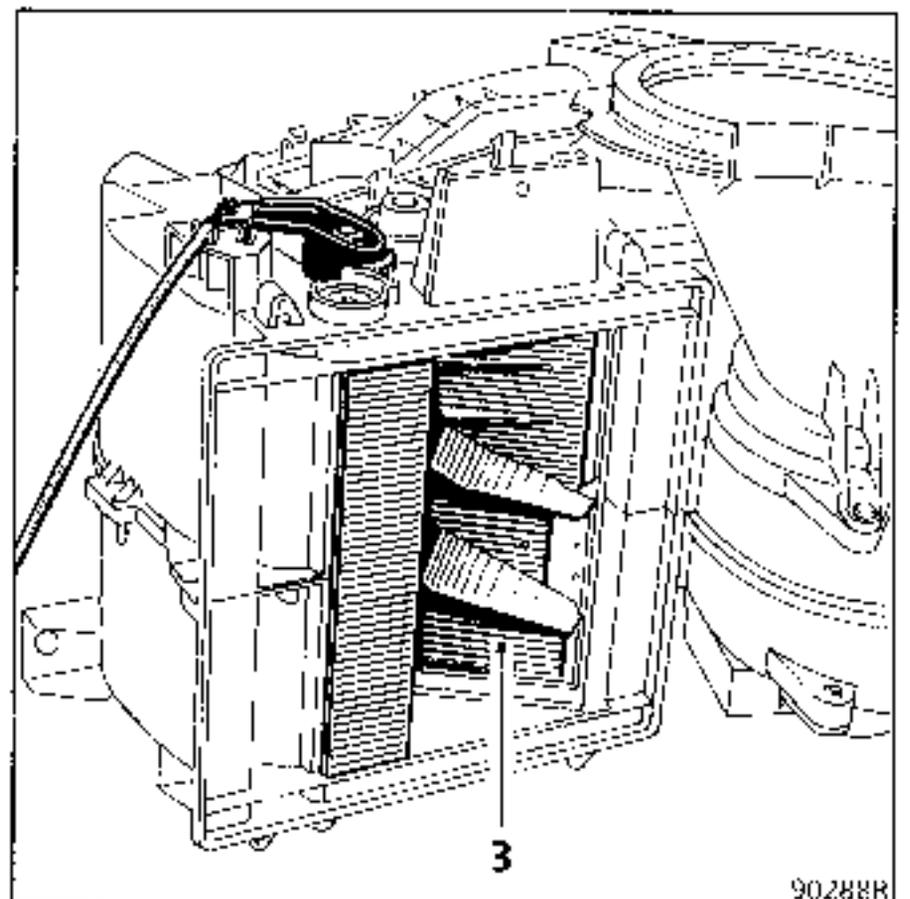
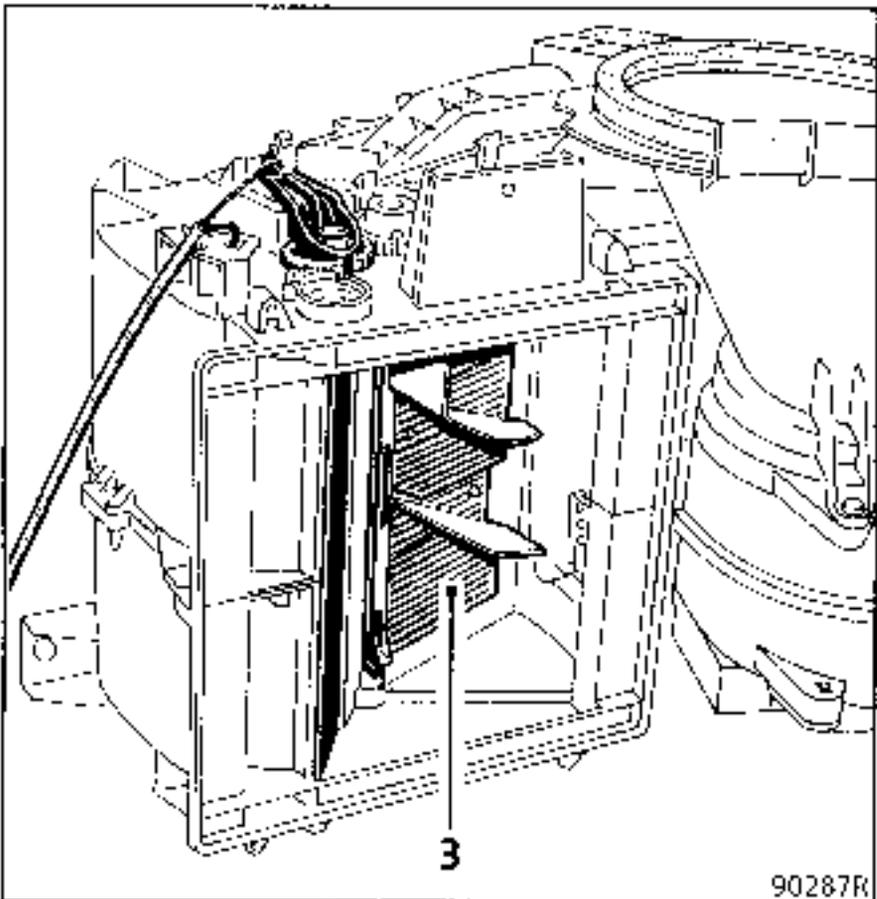
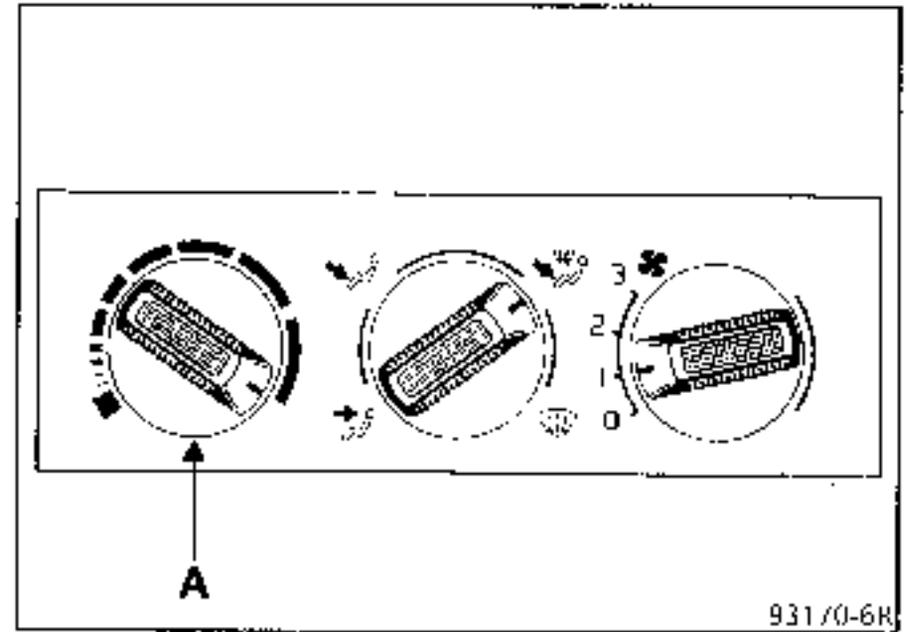
Temperature control dial (A)

Controls hot air / cold air flap (3).

COLD AIR



HOT AIR

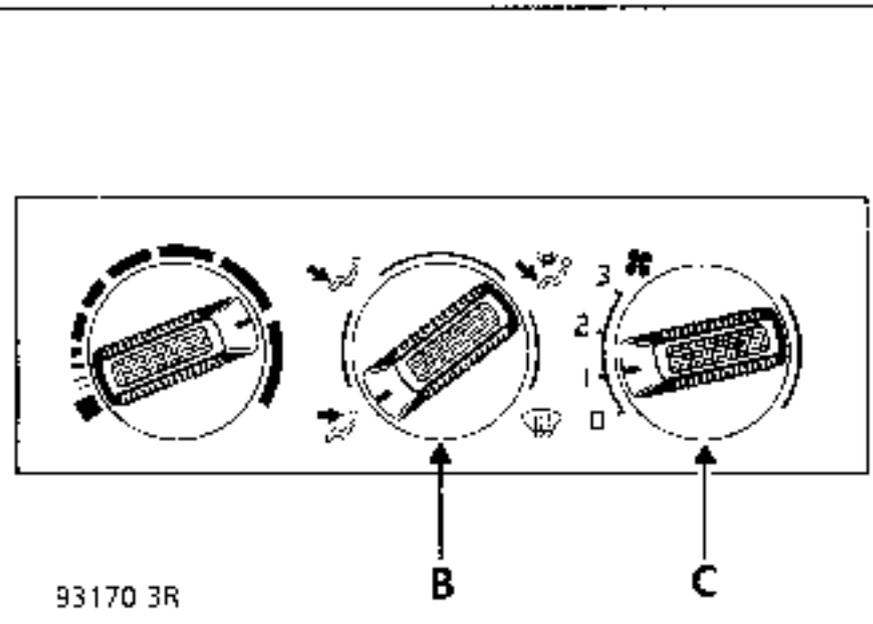


The blower does not have a heater valve and has a permanent current supply. Flap (3) controls the operation of the fresh air reheating system.

Air distribution dial (B)

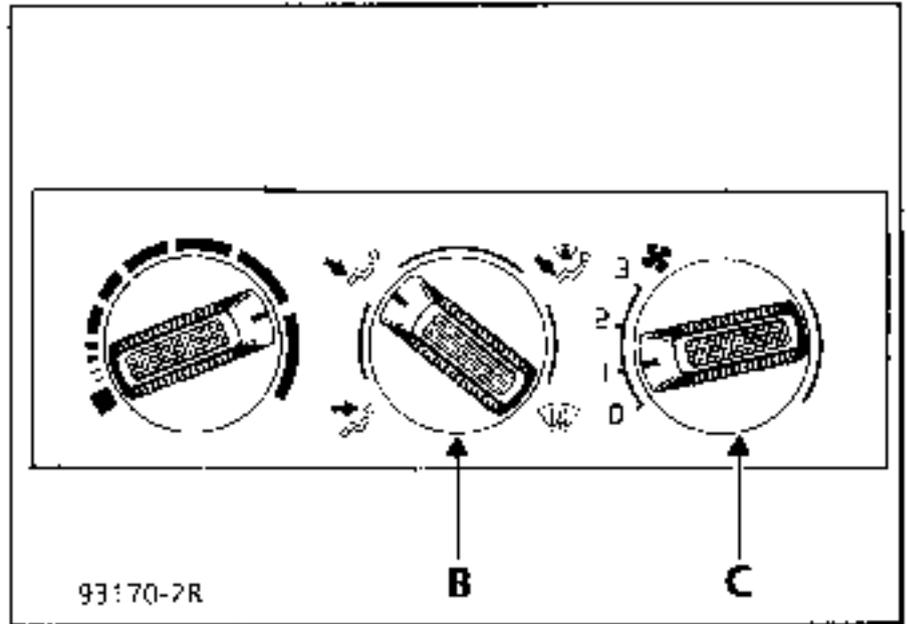
Controls the air distribution flaps

VENTILATION



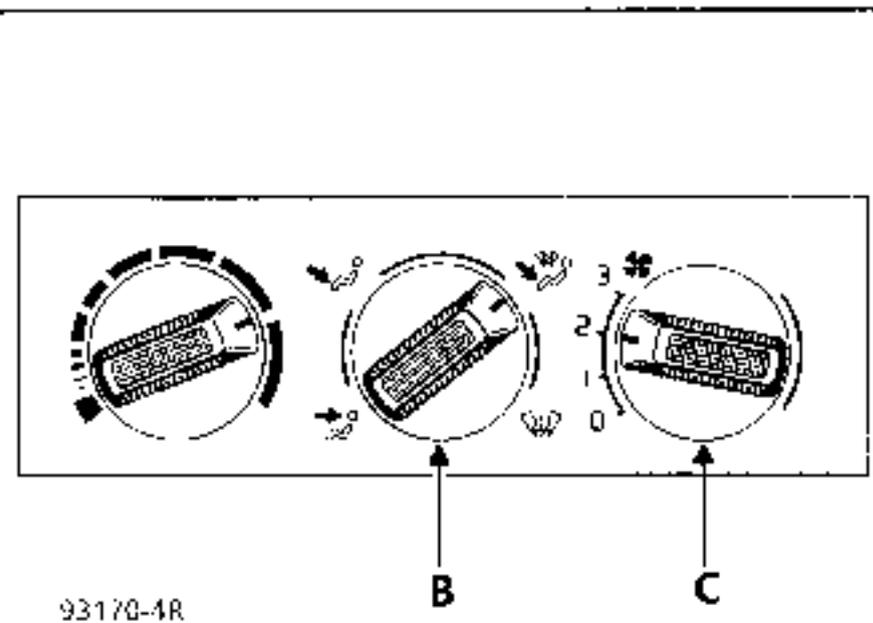
The air flow is directed only to the dashboard ventilators.

HEATING



The air flow is directed towards lower ventilators (d) and dashboard ventilators (c).

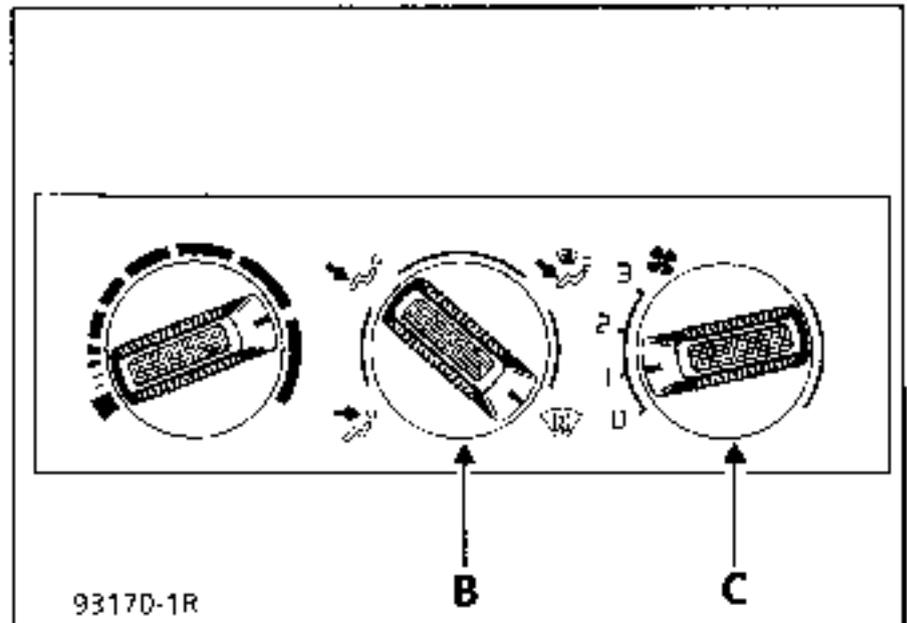
HEATING - DEMISTING



The air flow is distributed between all of the ventilators (b), (c), (d), (e).

To improve efficiency, each of the three dashboard ventilators (c) may be closed.

DEMISTING - DEFROSTING



The entire air flow is directed towards the windscreen demisting outlets and dashboard ventilators (c).

For improved efficiency, centre ventilators (c) in the dashboard may be closed.

Fan motor control knob (C)

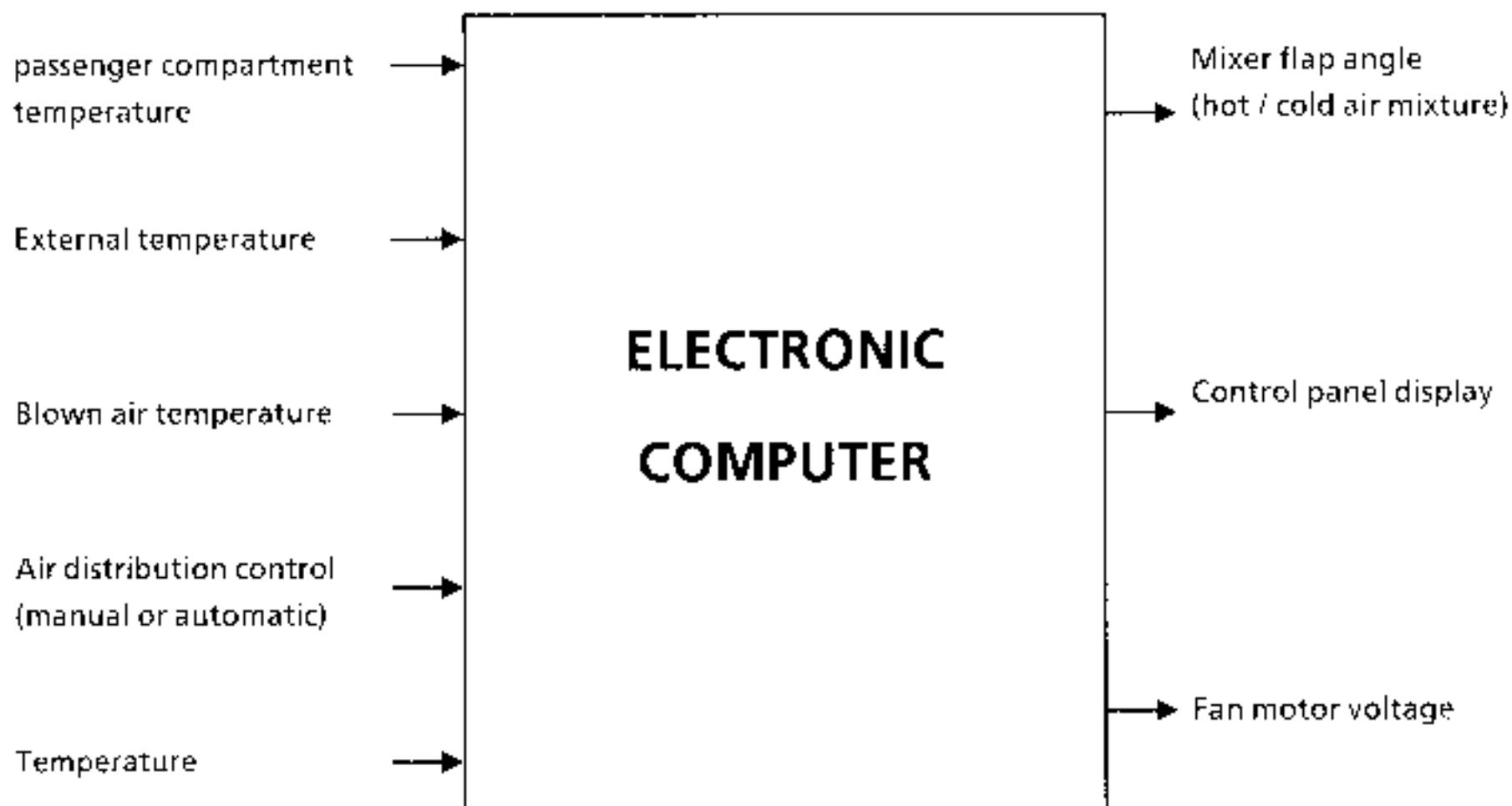
The passenger compartment is cooled by means of "blown air". The flow of air in the passenger compartment is determined by the positions of knob (C).

FROM MODEL YEAR 1990 ONWARDS - VERSION WITH REGULATED HEATING/VENTILATION

As from model year 1990, Renault 21 "Phase 2" vehicles may be equipped with a heating system with temperature regulation.

The aim of the temperature regulation is to make the temperature inside the vehicle as comfortable as possible for the occupants, taking account of the different conditions which can occur inside the passenger compartment.

The temperature regulation system is electronically controlled by means of a computer integrated in the control unit.



ADJUSTING THE TEMPERATURE



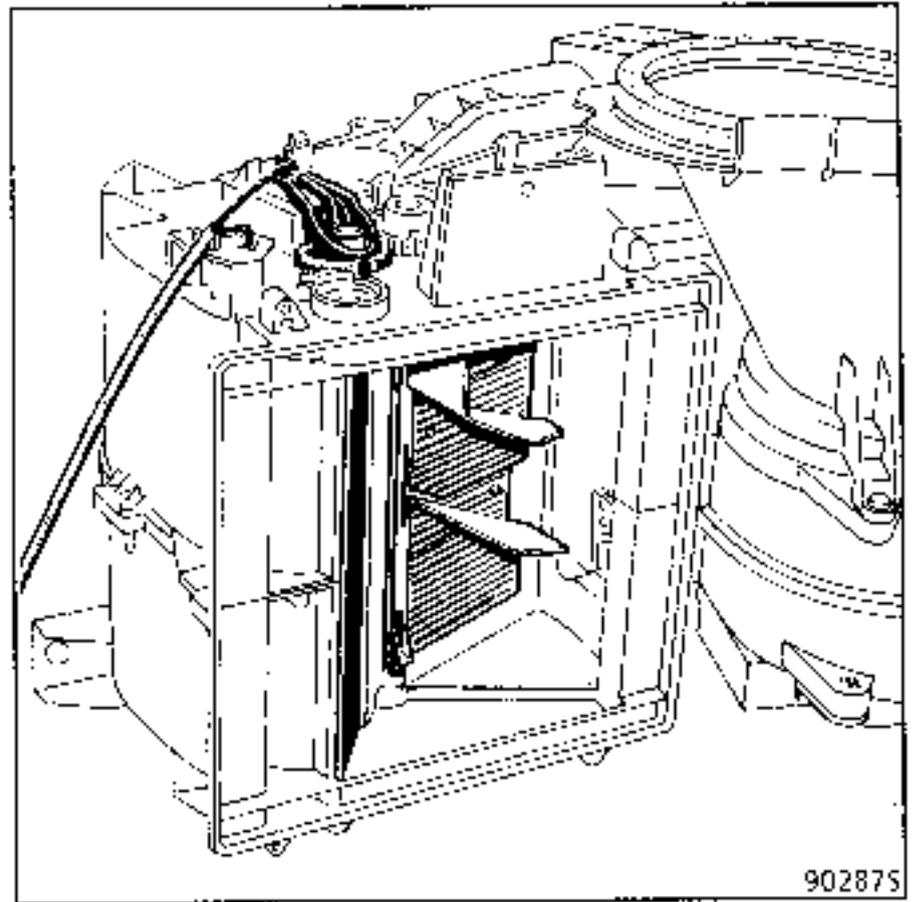
931725

The two "-/+ " keys enable the temperature to be adjusted (average temperature measured at head height of the front seat passengers) between **18 °C** and **28 °C**.

Depressing one or other of these keys enables the temperature to be increased or decreased by **2 °C** per second; brief pressure on the same keys will alter the level displayed by **1 °C**.

When the temperature has been adjusted, the regulating device ensures that the temperature in the passenger compartment remains stable, irrespective of the weather conditions and the speed of the vehicle.

The temperature regulation device controls the adjustment of the mixer flap (hot/cold air mixture).

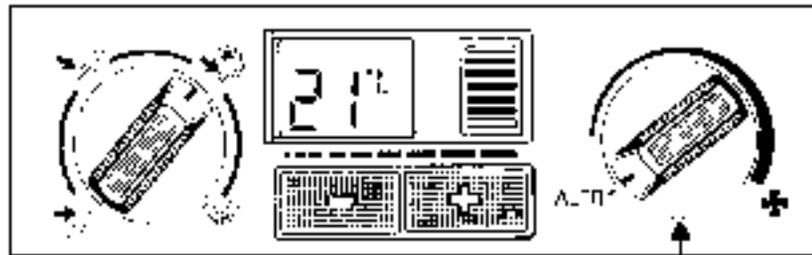


902875

When the temperature level selected is **28 °C**, the temperature cannot be regulated : the temperature is the one obtained as a result of the system giving maximum performance.

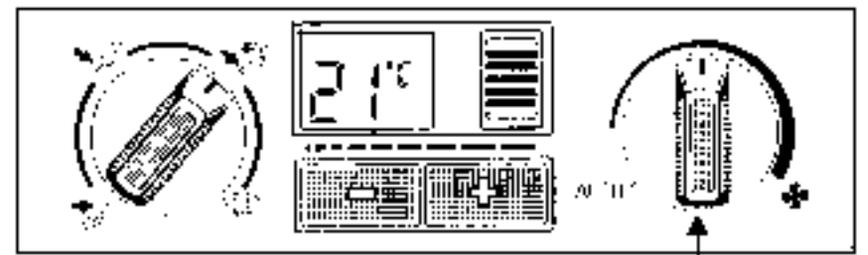
NOTE : When starting the vehicle in cold weather, increasing the temperature displayed (in particular above **21 °C**) will not increase the temperature more quickly. The system increases the temperature in an optimum manner irrespective of the information displayed.

AIR FLOW DIAL (C)

**AUTOMATIC SETTING**

In the automatic setting, the air flow is regulated automatically by the regulating system which controls the voltage (and thus the speed) of the fan.

When starting the vehicle in cold weather, the regulating device produces a very weak flow of air in the "AUTO" setting so as not to blow cold air into the passenger compartment.

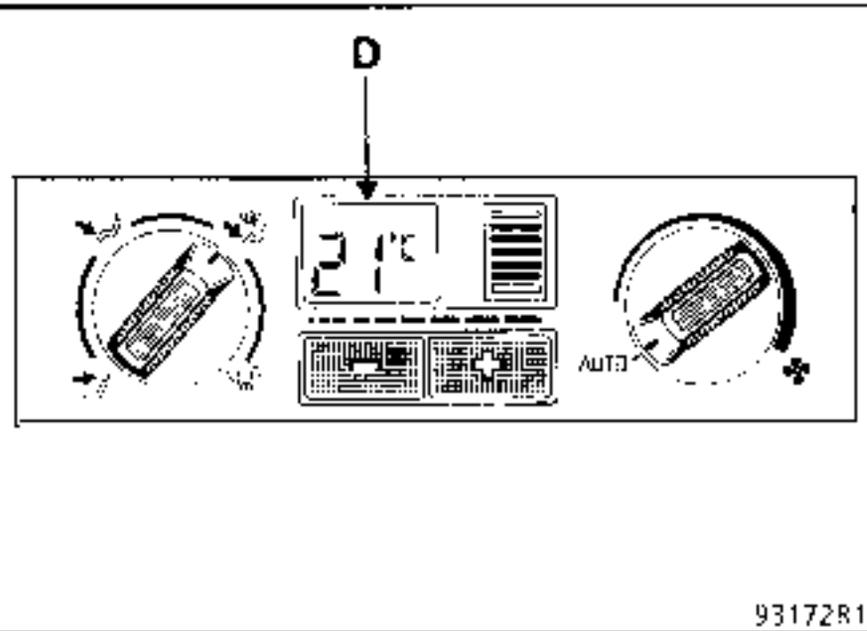
**MANUAL SETTING**

The air flow obtained when the system is in the "AUTO" setting ensures that the temperature is at a comfortable level.

For reasons of acoustics or air speed, this air flow level may be considered excessive (in particular in severe weather conditions). In this case, you can exit the automatic mode and switch to manual regulation.

Changing to manual regulation may reduce the performance of the system somewhat.

DISPLAY (D)

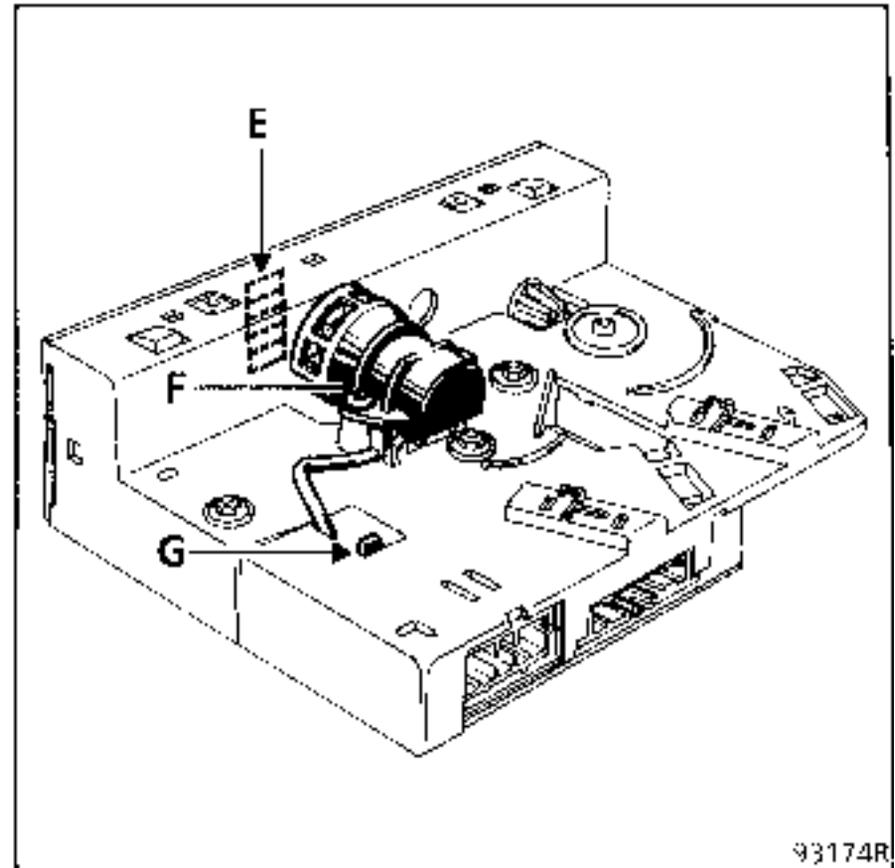


The temperature selected is displayed together with its unit of measurement (°C or °F).

The last temperature selected before the ignition was switched off is stored in the system's memory and is displayed after a two second delay when the vehicle is restarted.

When an incident is detected on the system, the message "SERVICE" appears on the display. The system must then be examined to determine the fault.

Internal temperature sensor (E)

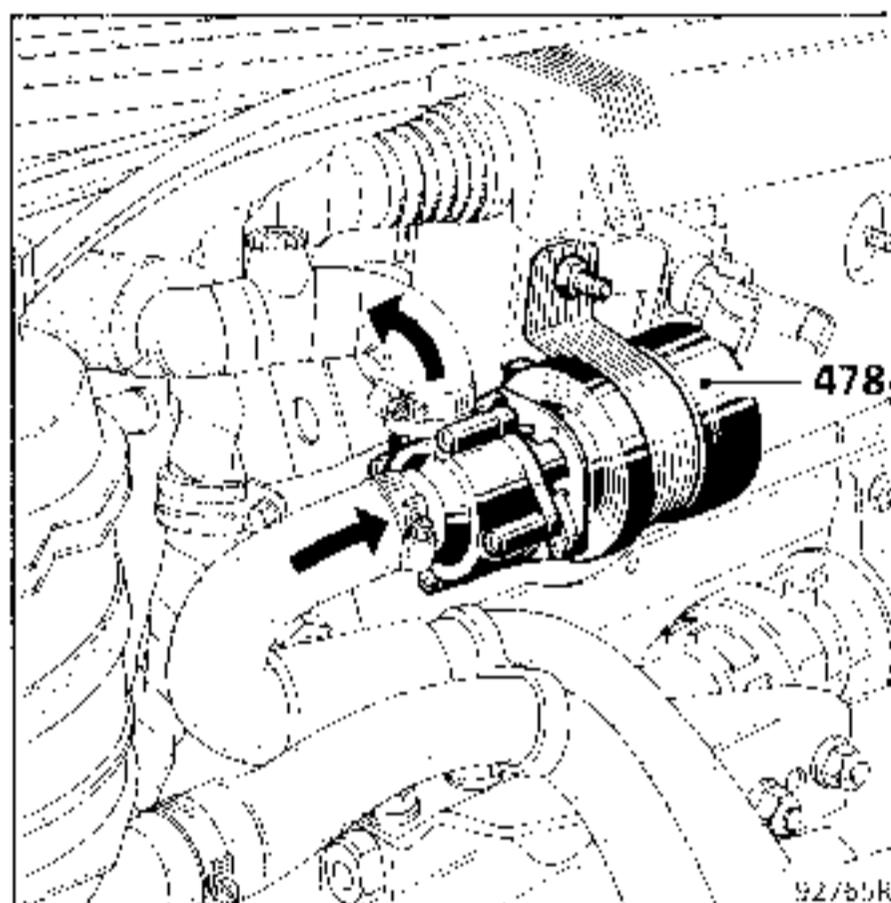


A thermistor with a negative temperature coefficient is integrated in the control panel with the sensor ventilation system (F). If there is a sensor failure, the control panel will have to be replaced.

As from model year 1989, Renault 21 Diesel X486, X488 and X48V are equipped with an electric pump (478) circulating the coolant in the heating system.

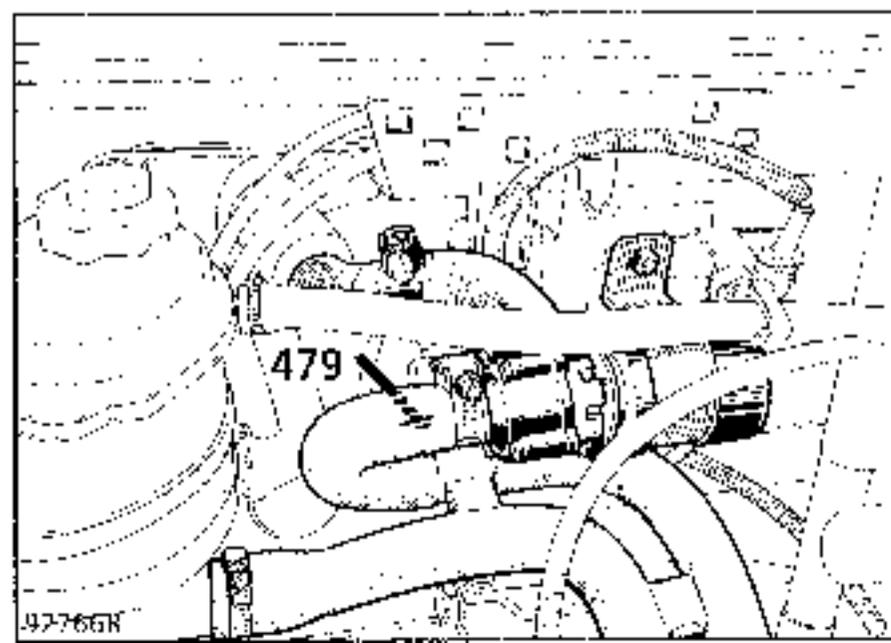
This pump is controlled up to a temperature of 77 °C at the heater radiator inlet. Above this temperature, the circuit is established in the normal way.

The pump is only activated again when the temperature drops to below 67 °C.

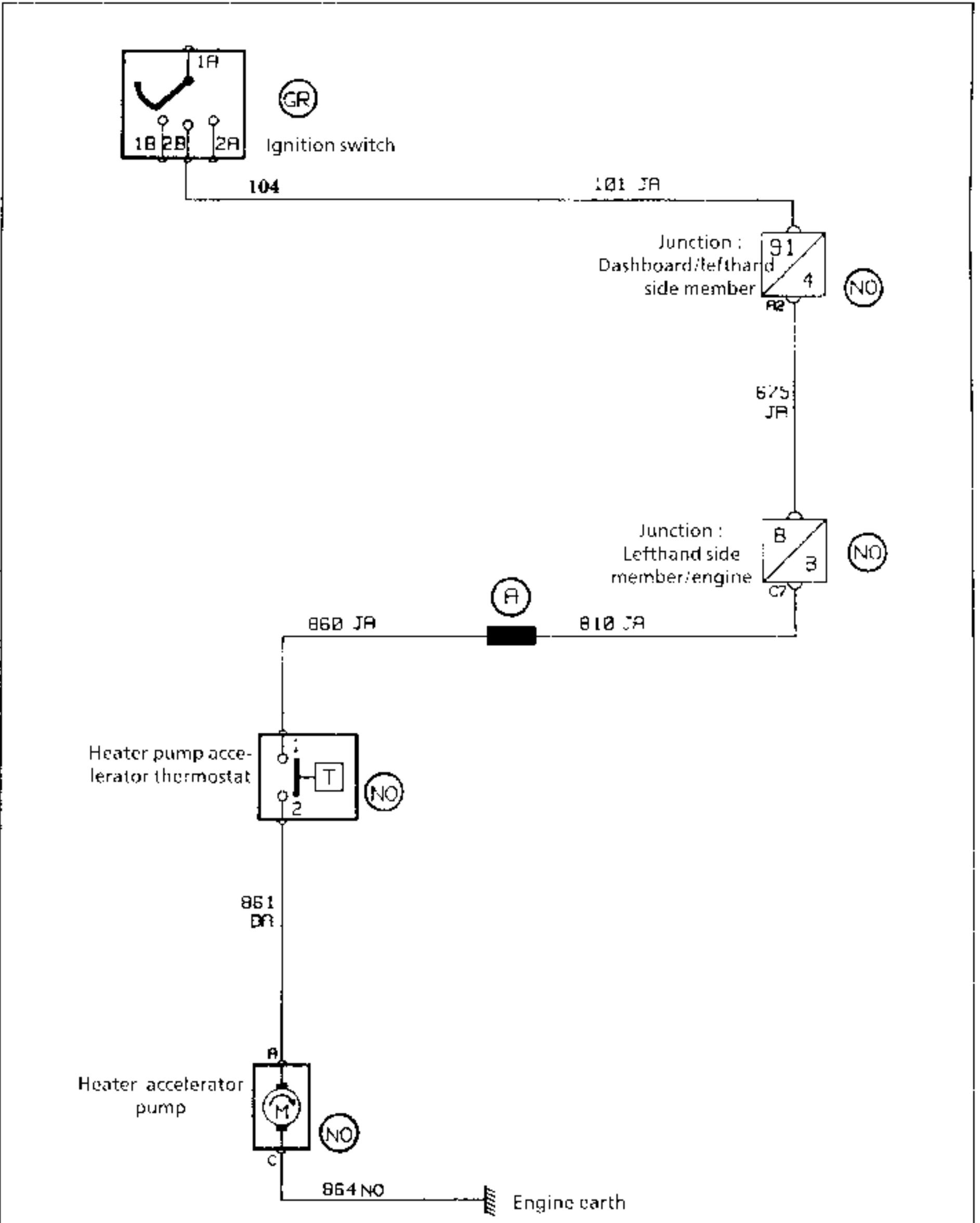


This pump is located on the engine compartment bulkhead and is connected in production in the coolant system.

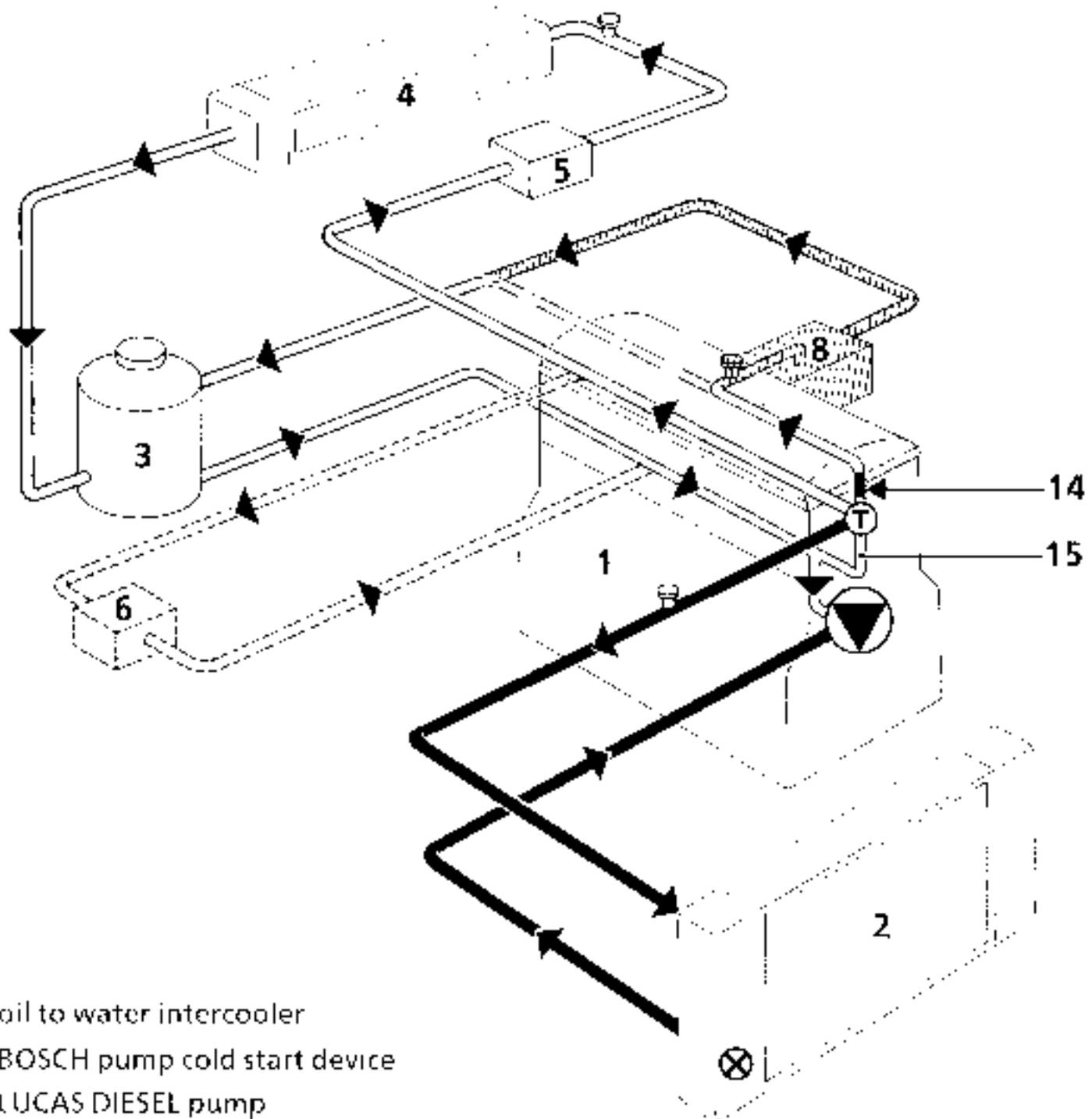
Thermostatic sensor (479) is screwed onto the electric pump inlet tube.



Wiring diagram for the X48 heating system coolant pump



Special feature of the X48 with auxiliary heating system coolant pump.



901/4.1R

- 1 Engine
- 2 Radiator
- 3 "Hot type" expansion chamber with permanent defuming
- 4 Heater matrix
- 5 Electric coolant pump
- 6 "Modine" oil to water intercooler for Turbo diesel engine
- 8 BOSCH pump cold start device
- 14 \varnothing 3.5 mm restrictor
- 15 P circuit (see thermostat operation)

-  Coolant pump
-  Dual action thermostat
- Bleed screws :
 -  - 2 for : LUCAS DIESEL pump
 -  - 3 for : BOSCH pump
-  Thermal switch

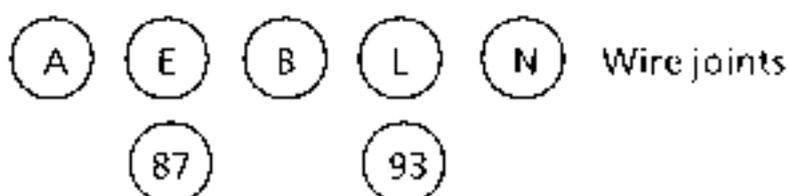
- 6 Electronic module for fan motor assembly
- 18 Blown air temperature sensor
- 104 Ignition switch
- 124 Heater control
- 209 Combined lighting/direction indicators switch stalk
- 234 Fan motor assembly relay
- 245 External temperature sensor
- 260 Fuse box
- 298 Blower device
- 320 Fan motor assembly
- 418 Passenger compartment temperature sensor ventilator
- 420 Mixer flap

LIST OF JUNCTIONS

- R5** Dashboard/heater bulkhead harness
- R11** Dashboard/left hand side member harness
- R99** Dashboard/heater harness

LIST OF EARTHS

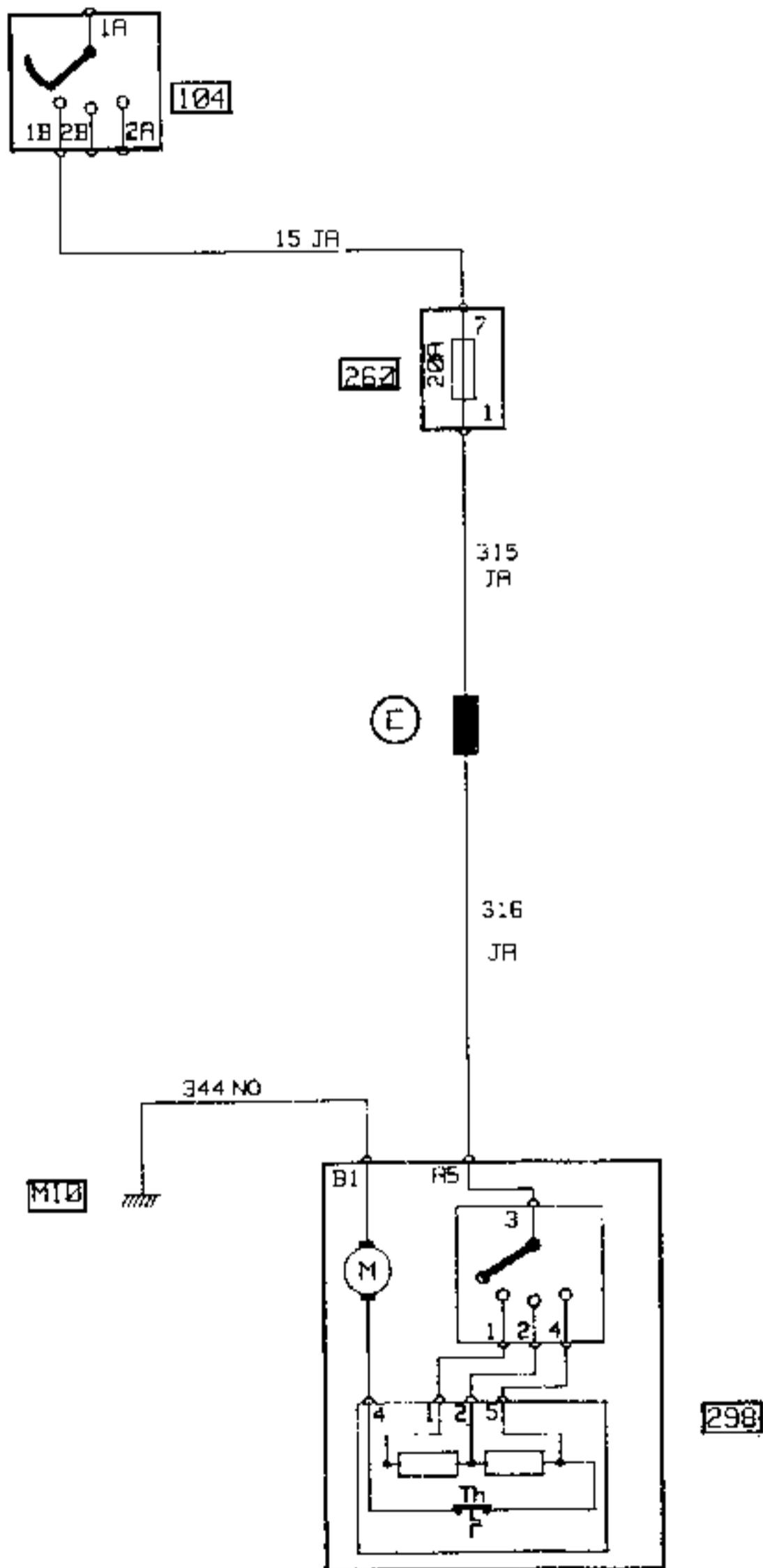
- M9** Front righthand pillar earth
- M10** Front lefthand pillar earth



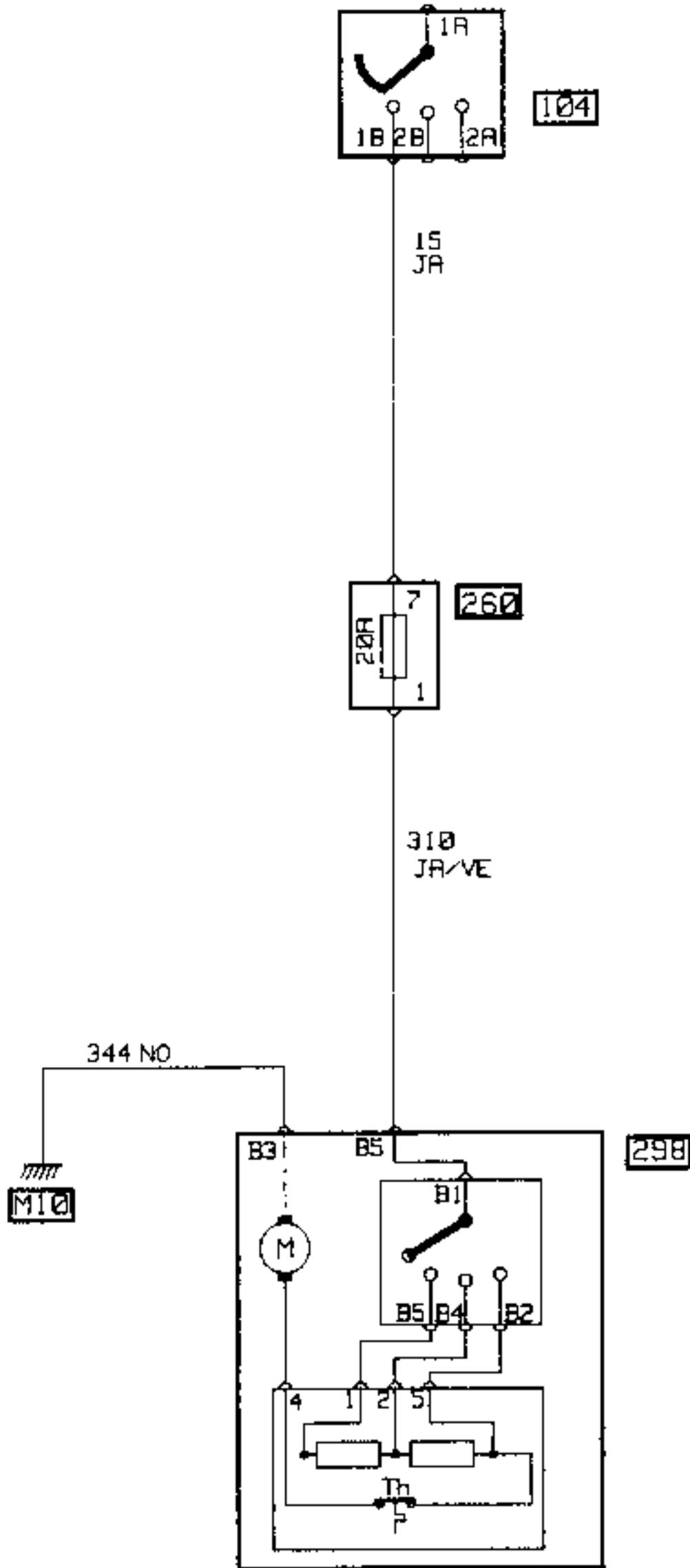
Connection bars

ALL TYPES UP TO MODEL YEAR 1989

WIRING DIAGRAM

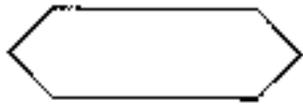


AS FROM MODEL YEAR 1990



ALL TYPES UP TO MODEL YEAR 1989

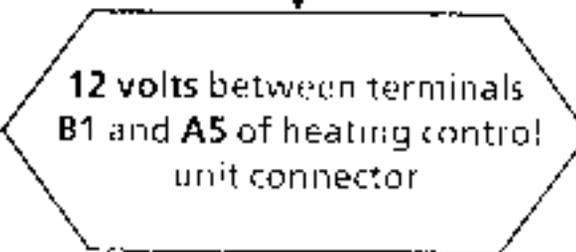
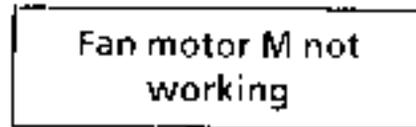
Key :



Operations to be performed

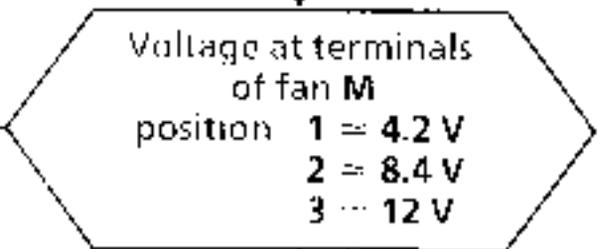
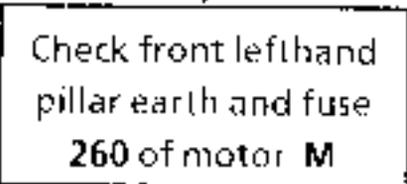


Checks



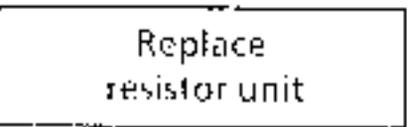
no

yes

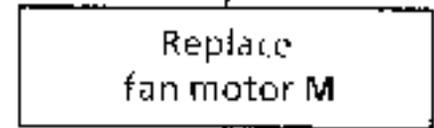
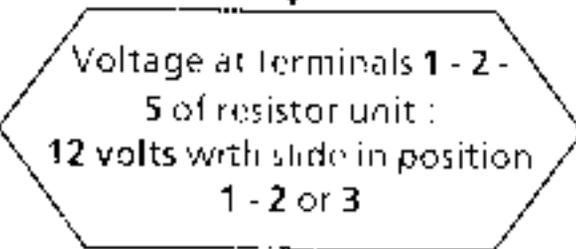


no

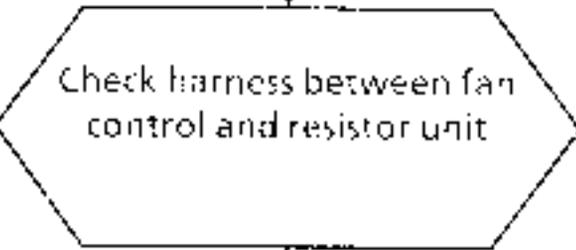
yes



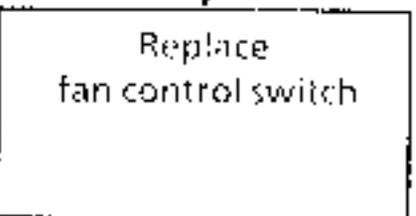
yes



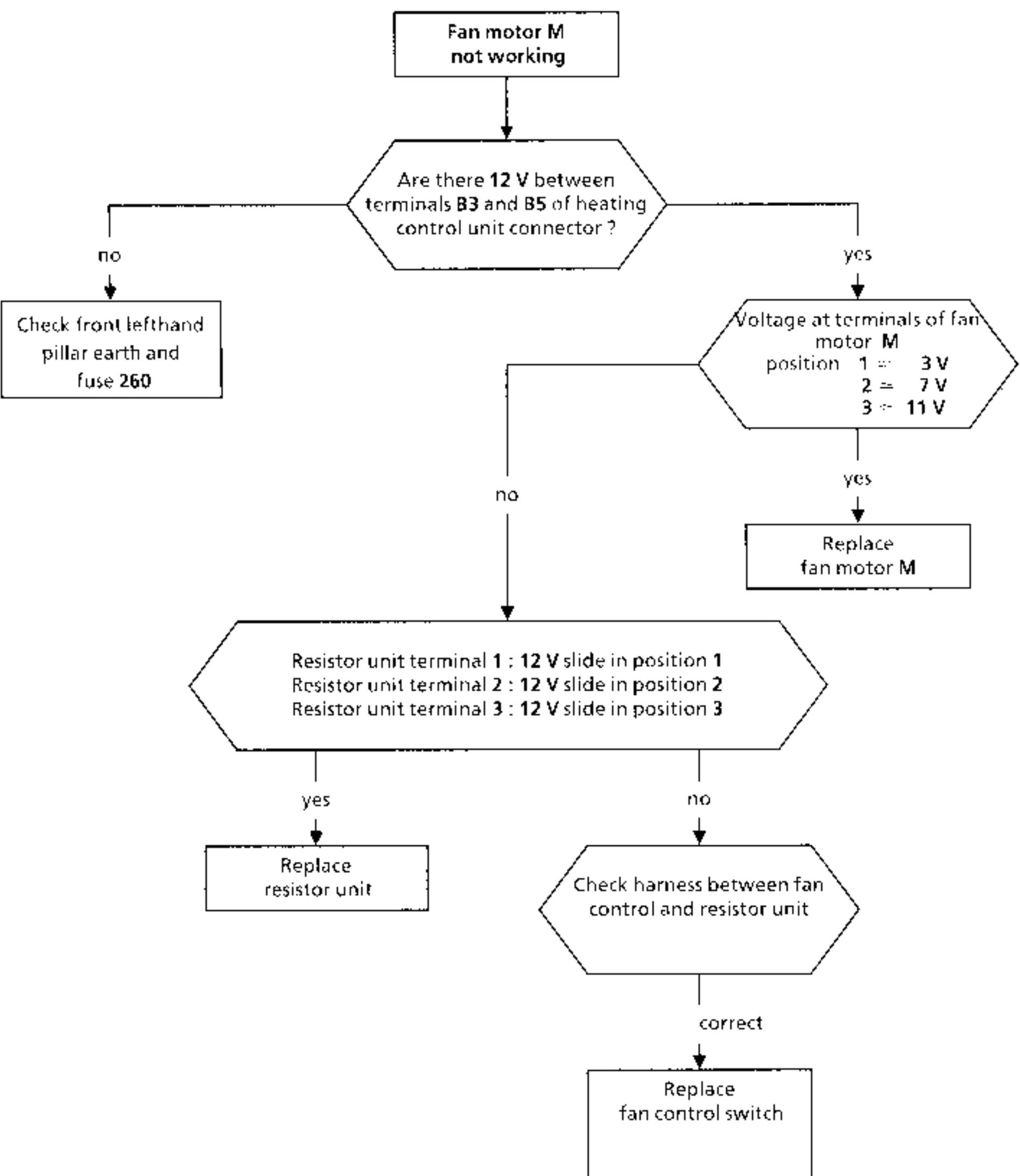
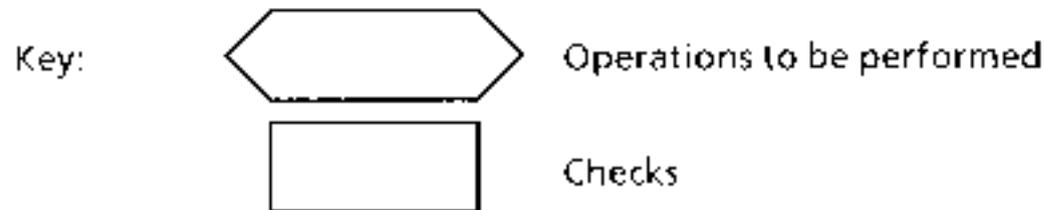
no



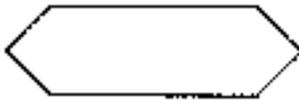
correct



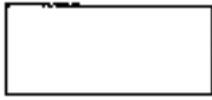
AS FROM MODEL YEAR 1990 (except version with regulated temperature)



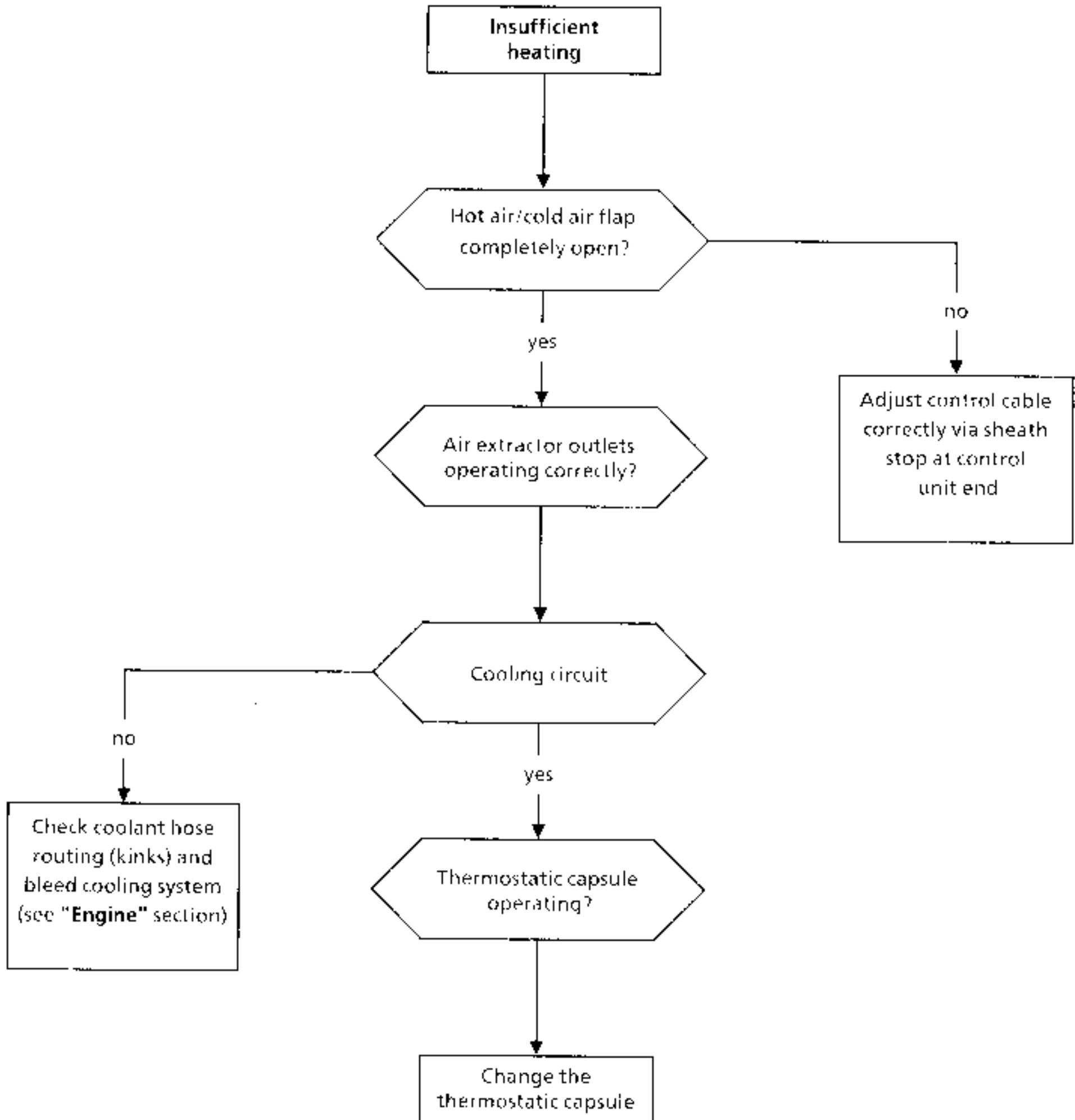
Key:



Operations to be performed



Checks



GENERAL

The computer integrated in the control unit has a self-diagnostic system for the peripheral units of the heating/ventilation system with regulated temperature.

If one of the units fails, a warning light is triggered and the **"SERVICE" warning light** on the instrument panel illuminates.

At the same time, operation of the system in **"defect mode"** is triggered and this enables the driver to reach the nearest workshop without major damage being caused to the system.

The incident causing the warning light to illuminate can be displayed by using the diagnostic plug, **XR 25** test box and the appropriate cassette.

When an incident has occurred it is stored in the computer's **"non-volatile memory"** when the ignition has been switched off. This memory can be consulted at any time using the **XR 25** test box and the appropriate cassette.

If one of the peripheral units of the temperature regulating system fails, the computer will instruct the "SERVICE" warning light to illuminate and the system to operate in defect mode, which may differ according to the components at fault.

DEFECT MODES FOR DIFFERENT INCIDENTS

Incident detected	Warning light illuminated	Corresponding defect mode
Internal temperature sensor	"SERVICE"	<ul style="list-style-type: none"> - Value imposed : 21 °C - Imposed fan voltage : minimum
External temperature sensor	"SERVICE"	Value imposed : external temperature stored at the time the incident occurred.
Blown air temperature sensor	"SERVICE"	Value imposed : blown air temperature stored at the time the incident occurred.
Fan control potentiometer	"SERVICE"	- AUTO instruction for the air flow operating mode.
Mixer flap copying potentiometer	"SERVICE"	- Extreme hot or extreme cold depending on external temperature
Mixer motor	"SERVICE"	- Motor stops: fan voltage : minimum
Fan motor	"SERVICE"	- Motor stops

The XR 25 test box is essential for all fault finding on the heating system irrespective of the origin of the incidents.

It has a microprocessor and provides access to all the data supplied by the various sensors and enables the diagnostic message sent by the computer to be read.

It enables the "non-volatile memory" contained in the computer to be erased after each operation on the heating system.

FICHE B9 C	
1	CODE PRESENT B
2	M + APC FAIBLE LANTERNES ALLUMÉES B
3	B - CONTROLE DES COMMANDES STOP B
4	B + + AC AUTO B
5	B AC AUTO STOP MINI B
6	B (S'ALLUME SOUS L'ACTION DES COMMANDES)
7	CO DEFAULT TEMPERATURE INTERIEURE CC
8	CO DEFAULT TEMPERATURE EXTERIEURE CC
9	CO DEFAULT TEMPERATURE EVAPORATEUR CC
10	CO DEFAULT TEMPERATURE AIR SOUFFLE CC
CLIMATISATION REGULEE CODE D 0 7 (S8) (EFFACEMENT MEMOIRE : G 0 + +) (FIN DE DIAGNOSTIC : G 1 3 +)	
11	M GMV (POT) → V MIXAGE M
12	CO MOTEUR GMV CC
13	CO MOTEUR TURBINE CC
14	CO MOTEUR MIXAGE CC
15	CO MOTEUR RECYCLAGE CC
16	CO LIGNE COM. EMB. AC CC
17	RECYCLAGE FORCE (1) B
18	POSITION VOLET (1) B
19	COMMANDE DE L'AC (1) REGULATION REFRIGERANTE (1)
20	DEMANDE MEMORISATION XR25 (0)
(1) VOIR CONDITIONS D'ESSAIS DANS M.F.	

TOUCHES #

TEMPERATURES (°C)

01 EXTERIEURE
02 INTERIEUR
03 EVAPORATEUR
04 AIR SOUFFLE
05 POT DE RECOPIE VOLET MIXAGE (%)
06 POT COMMANDE VITESSE GMV (%)
07 TENSION COMMANDE SUR GMV (VOLTS)

92656S1

216201

USING CASSETTE N° 8

- Connect the test box to the diagnostic socket.
- Position the selector knob on **S8**
- Switch on the ignition.
- Enter the special code for regulating the temperature **0 0 7** on enter

followed by two figures to access the various data sent by the computer.

IMPORTANT : fault-finding the temperature regulating system using the XR 25 slows the system down to approximately one third is normal operating speed.

0 1

20

EXTERNAL TEMPERATURE : Value given in degrees Celsius

All versions with regulated temperature

0 2

25

INTERNAL TEMPERATURE : Value given in degrees Celsius

All versions with regulated temperature

0 3

18

EVAPORATOR TEMPERATURE : Value given in degrees Celsius

Only on versions with air conditioning and regulated temperature

0 4

22

BLOWN AIR TEMPERATURE : Value given in degrees Celsius

All versions with regulated temperature

0 5

0

MIXER FLAP COPYING POTENTIOMETER

Value given as a %
All versions with regulated temperature
0 % is the extreme cold setting

100

100 % is the extreme hot setting

0 6

50

FAN MOTOR SPEED CONTROL POTENTIOMETER

Value given as a %
All versions with regulated temperature

0 6

12.8

CONTROL VOLTAGE APPLIED TO FAN MOTOR

Value given as a %
All versions with regulated temperature

Shows where the bargraph can illuminate

N°7

☀ S8 code: **D 0 7** read: **TEL 1**

	<input type="checkbox"/>	1		CODE PRESENT	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2	+ APC Low	LIGHTS ON	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	3	---	SWITCH TEST	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	4	+	<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">-</div> <div style="margin: 0 5px;">+</div> <div style="border: 1px solid black; padding: 2px; margin: 0 5px;">AC</div> <div style="margin: 0 5px;">↻</div> </div>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	5	AC		<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	6	↻	Illuminates when switches activated	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	7	CO ←	INTERNAL TEMPERATURE INCIDENT	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	8	CO ←	EXTERNAL TEMPERATURE INCIDENT	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	9	CO ←	EVAPORATOR TEMP. DFF.	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	10	CO ←	BLOWN AIR TEMPERATURE INCIDENT (at heater radiator outlet)	<input type="checkbox"/>

REG. AIR COND.

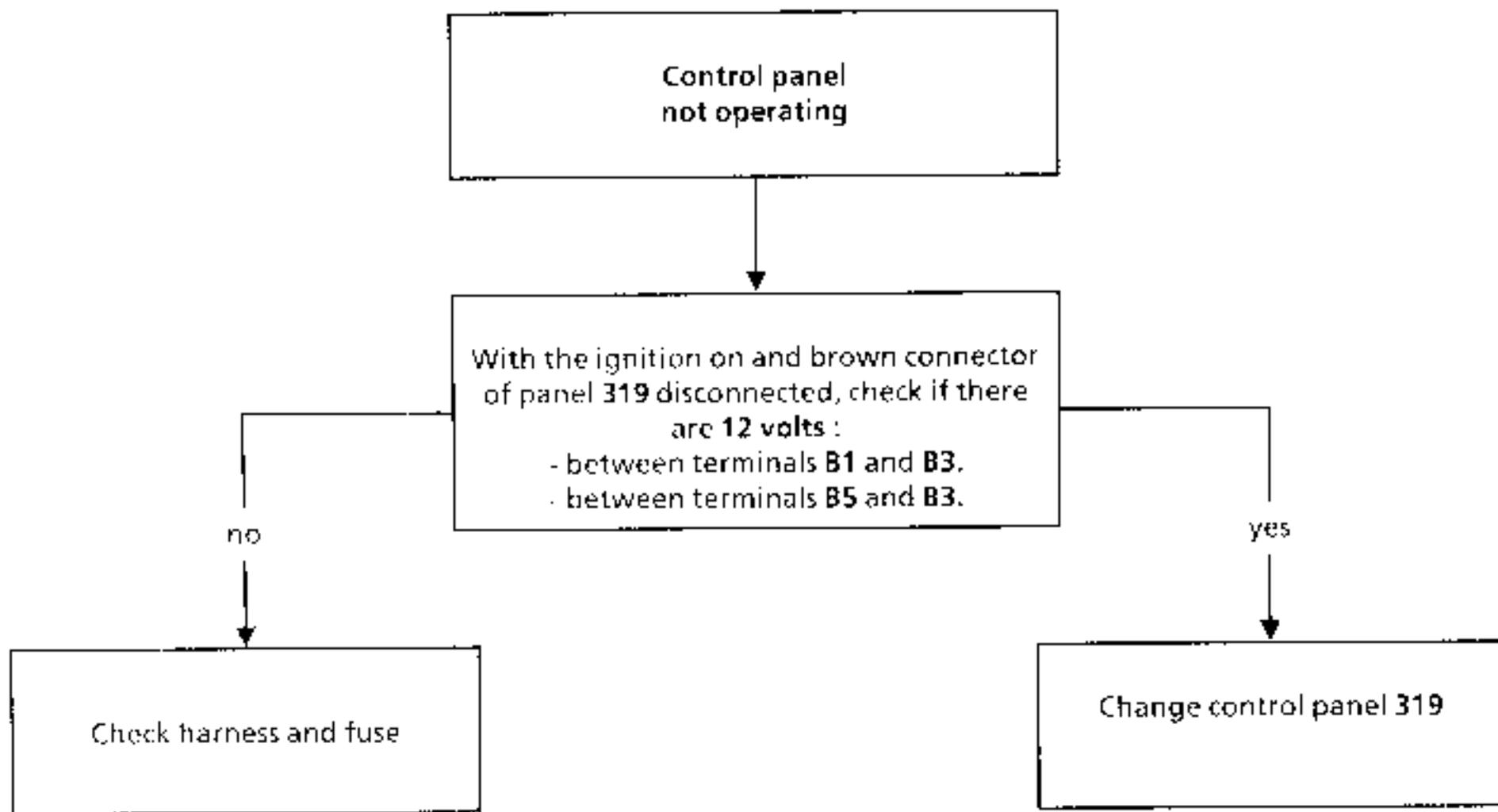
Memory del.: G 0 **
End of test: G 13 *

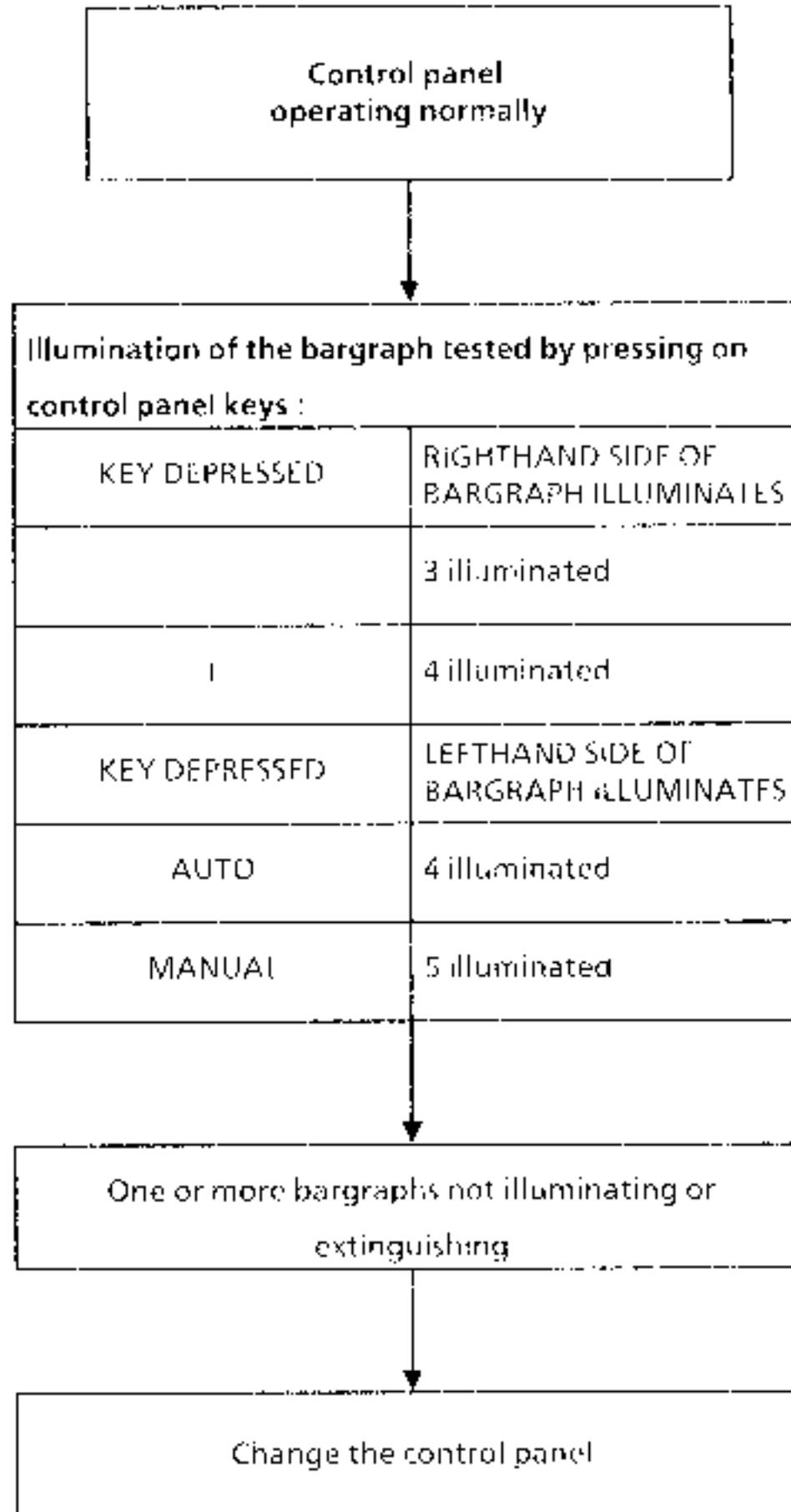
	<input type="checkbox"/>	11	FAN POT.	MIXER POT	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	12	CO ←	FAN UNIT MOTOR	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	13	CO ←	TURBINE MOTOR	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	14	CO ←	MIXER MOTOR	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	15	CO ←	RECIRC. MOTOR	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	16		AC CLUTCH CONT. LINE	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	17	IF LEFTHAND BARGRAPHS Should illuminate, ignore them.		
<input type="checkbox"/>	<input type="checkbox"/>	18	16 Left		
<input type="checkbox"/>	<input type="checkbox"/>	19	17		
<input type="checkbox"/>	<input type="checkbox"/>	20	XR25 MEMORY <input type="checkbox"/>		

ADDITIONAL CHECKS: # . .

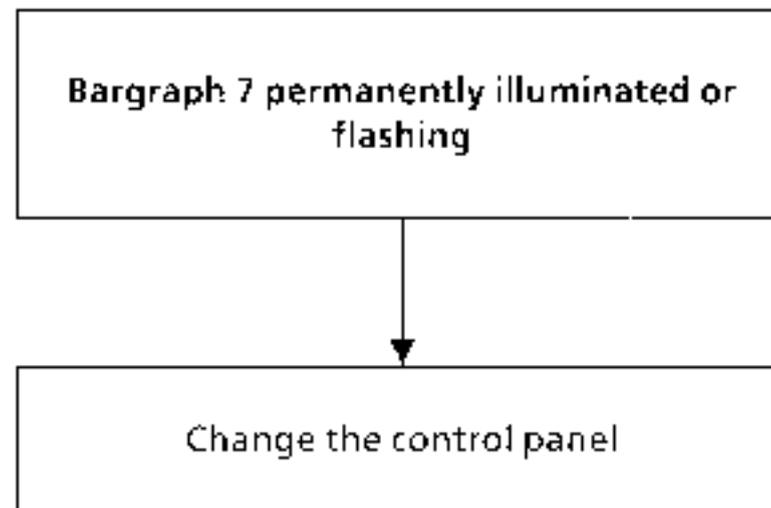
TEMPERATURES (°C)

- 01 External
- 02 Internal
- 03 Evaporator
- 04 Blown air (at heater radiator outlet)
- 05 Mixer flap recopy potentiometer (%)
- 06 Fan unit speed control pot. (%)
- 07 Fan unit ctrl voltage Volts

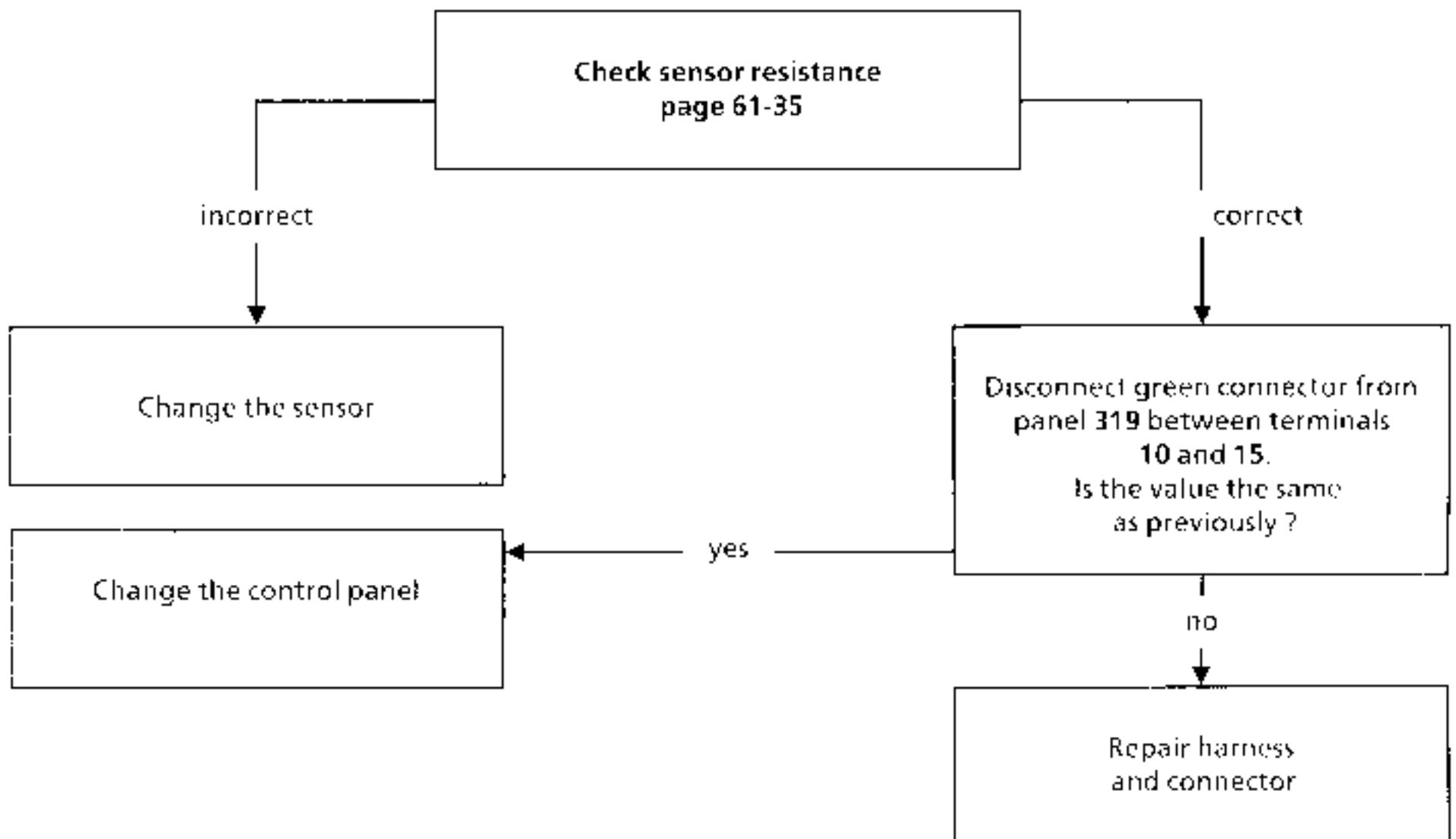




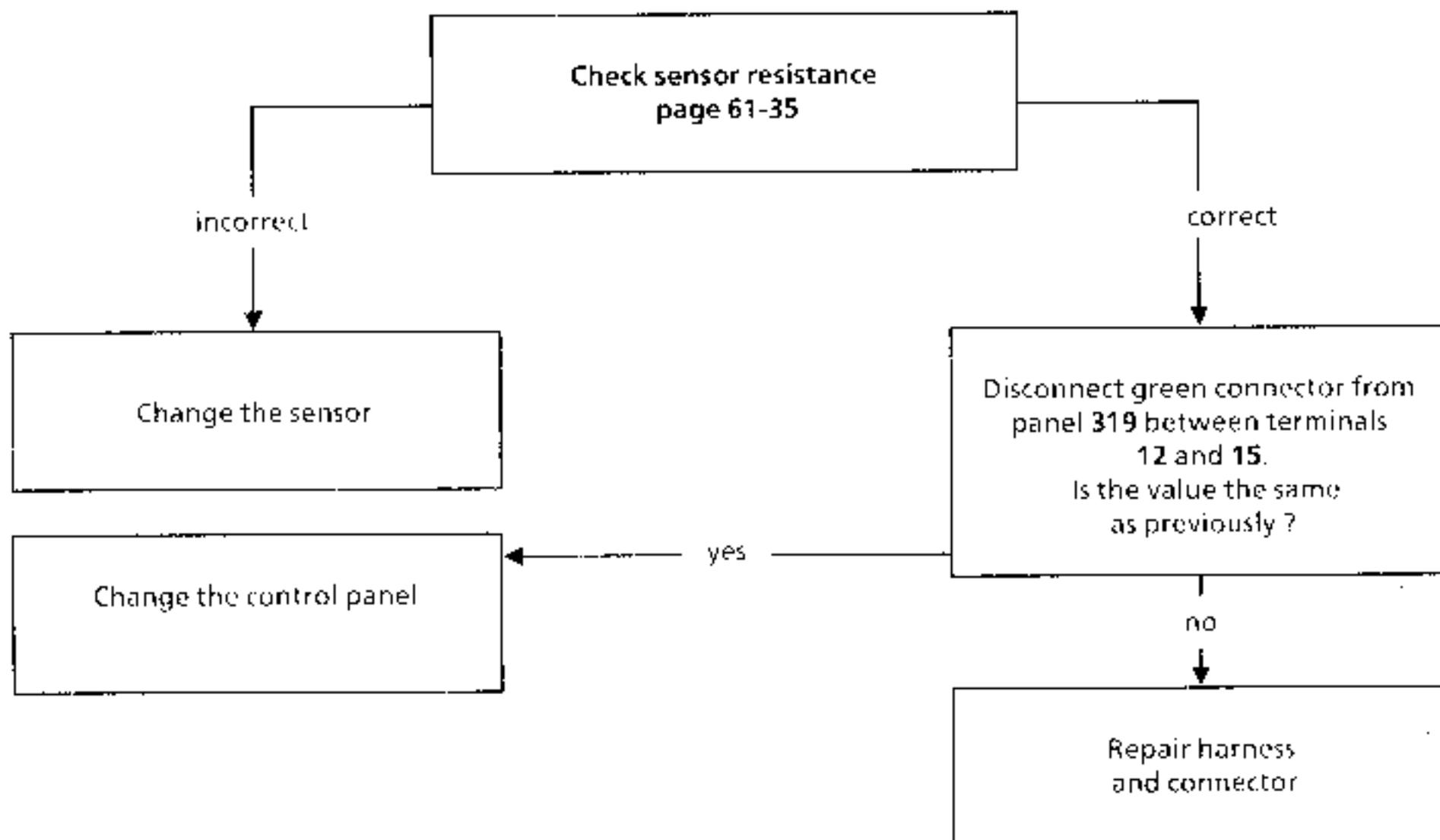
Incident : **BARGRAPH 7 ILLUMINATED** : (Internal temperature)



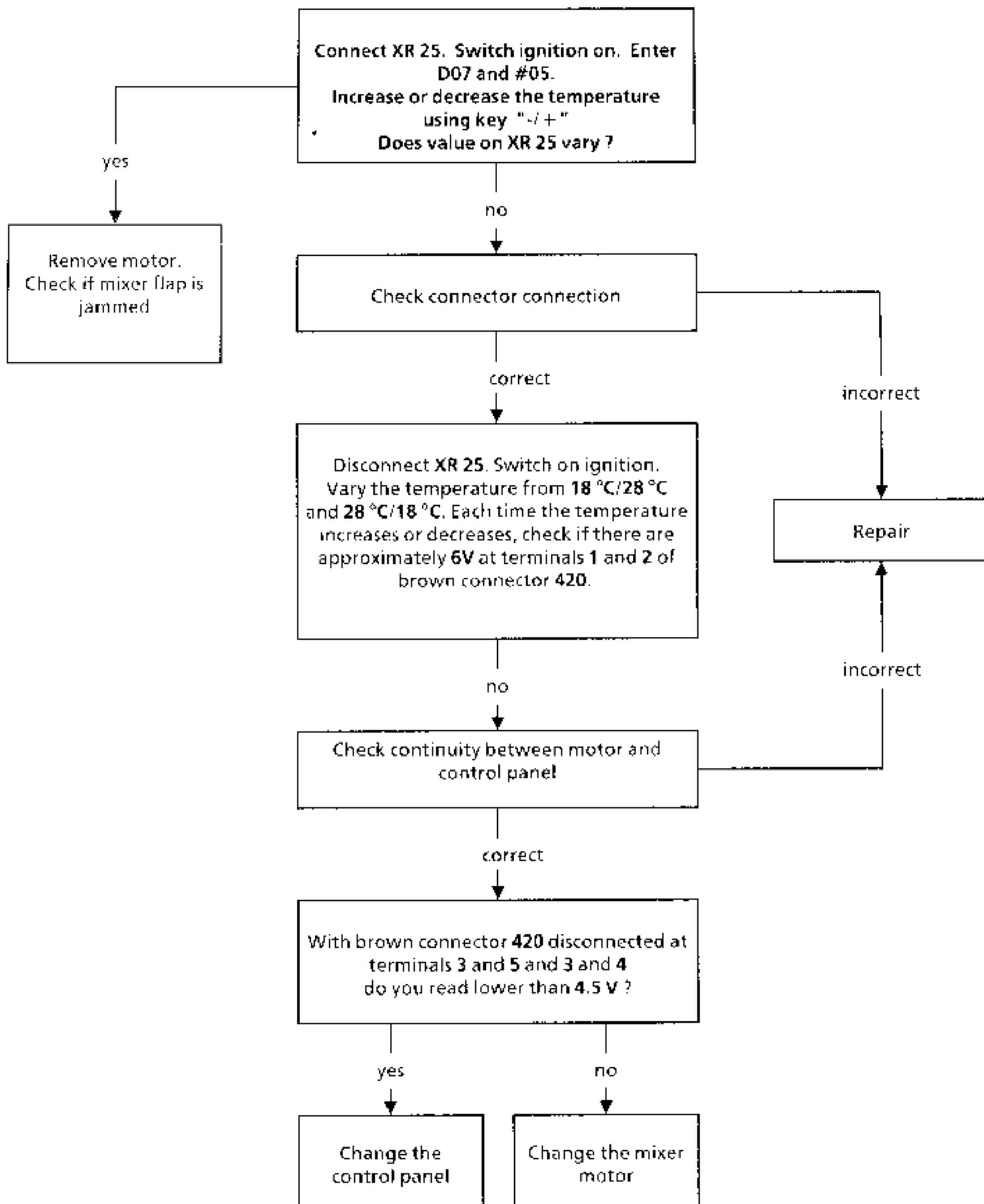
Incident : **BARGRAPH 8 ILLUMINATED** : (External temperature)



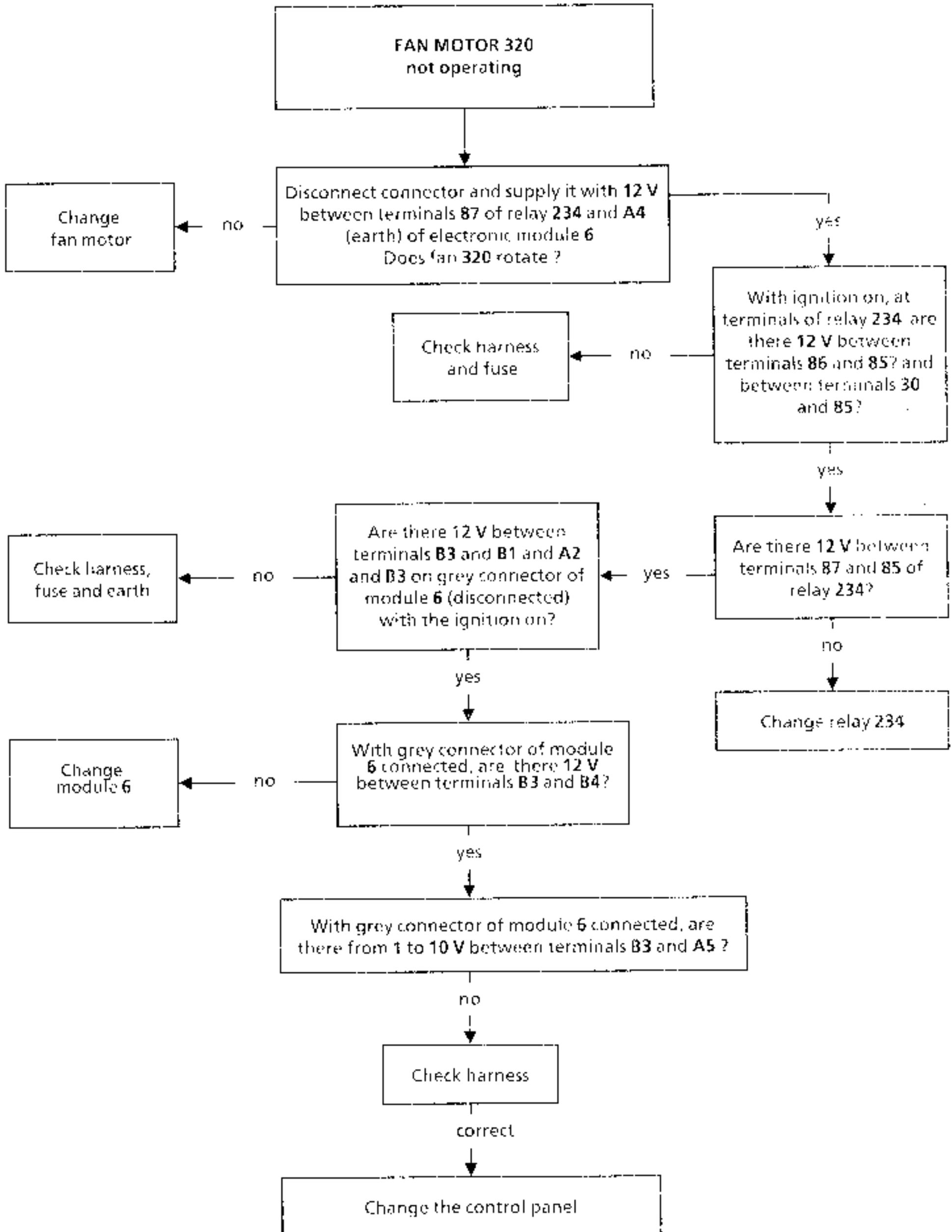
Incident : BARGRAPH 10 ILLUMINATED : (Blown air temperature)



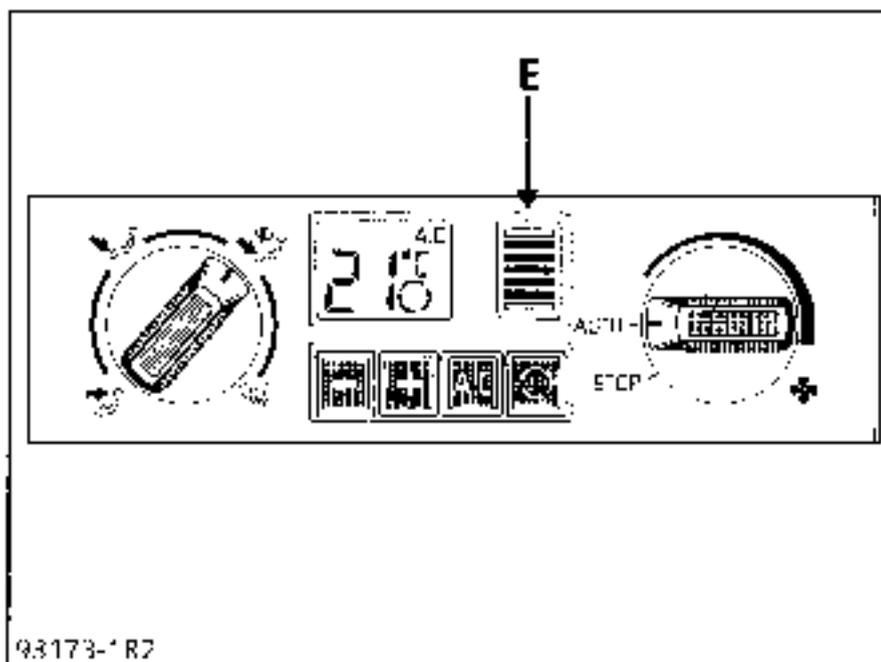
Incident : BARGRAPH 11 RIGHTHAND SIDE ILLUMINATED : (Mixer flap potentiometer)



Incident : BARGRAPH 12 ILLUMINATED : (Fan motor)

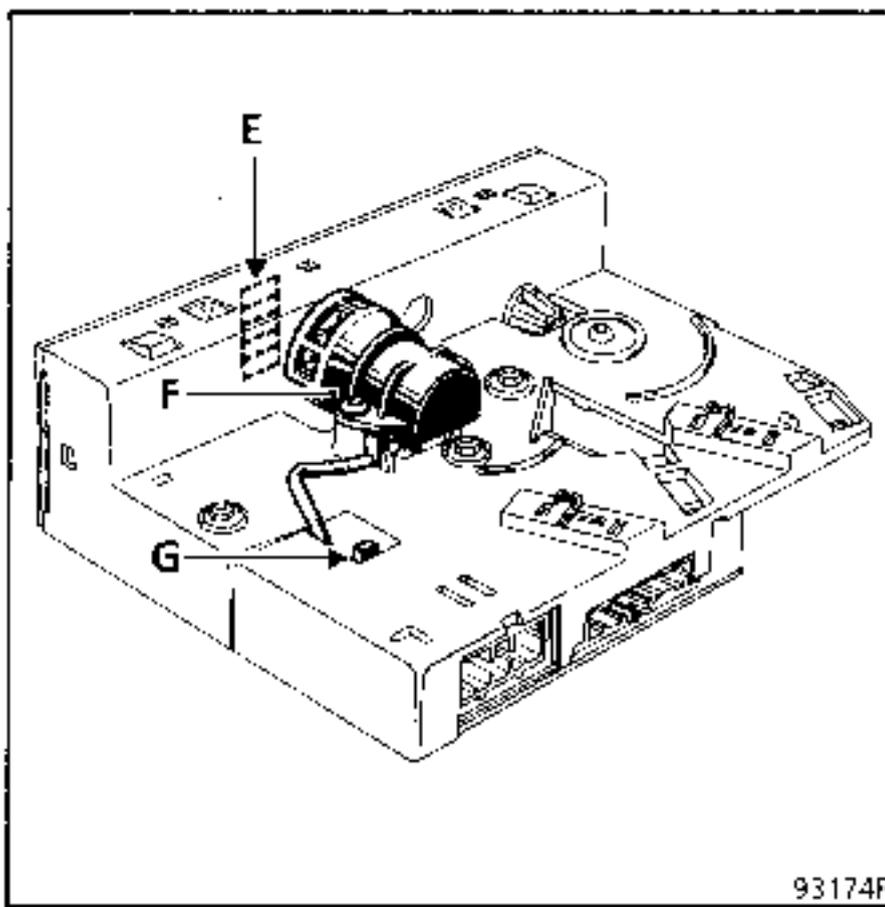
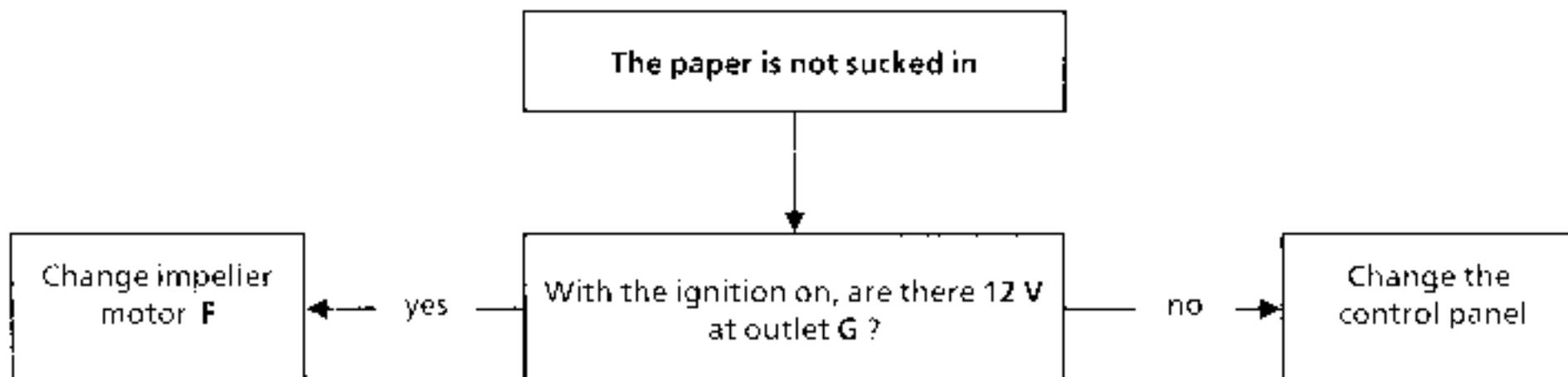


Incident : **BARGRAPH 13 LEFT OR RIGHT ILLUMINATED** : (Impeller motor)

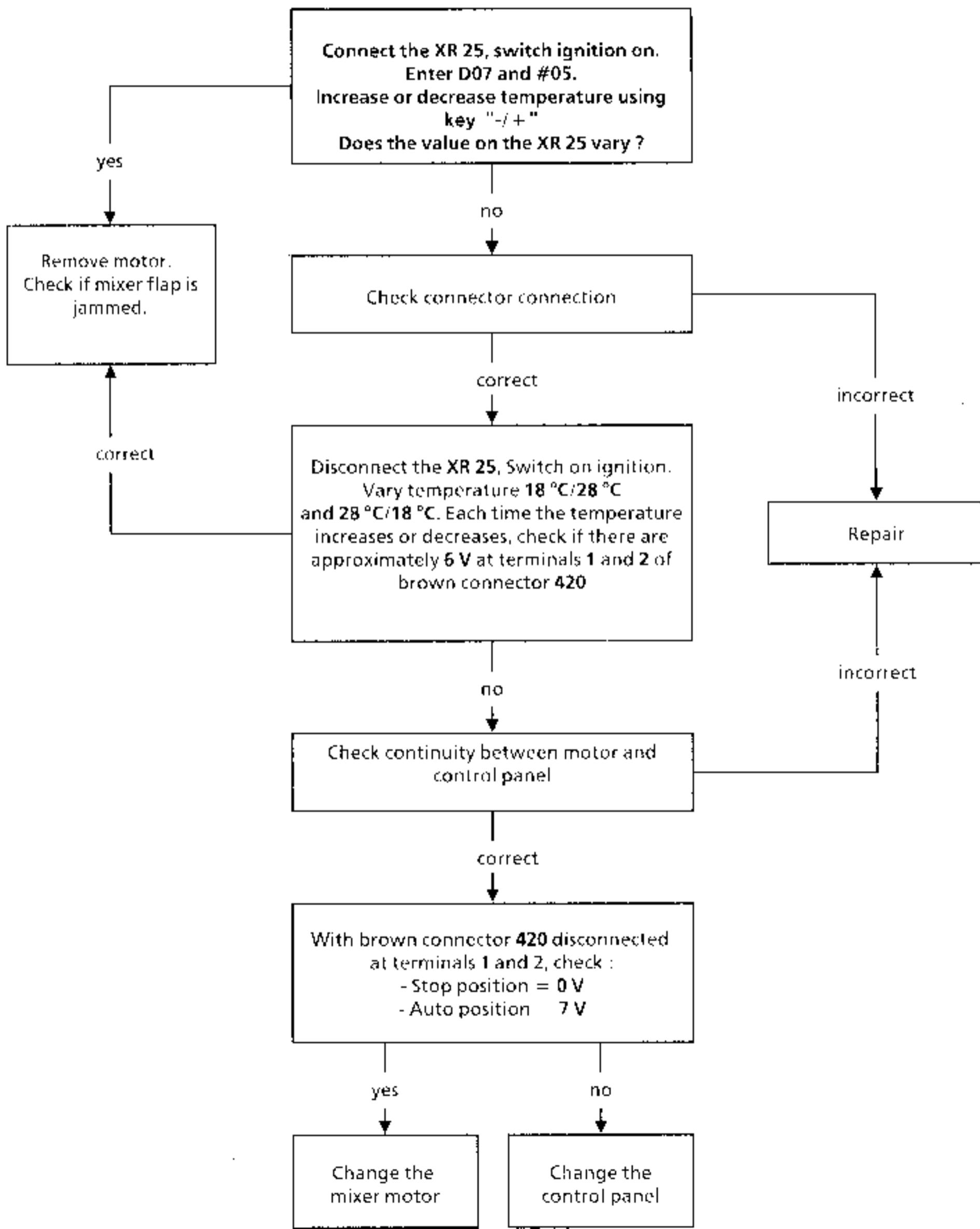


Checking ventilation of the passenger compartment temperature sensor

With the ignition on and using a small piece of paper (such as a paper handkerchief) placed in front of the internal temperature sensor (E) check that the paper is sucked in.



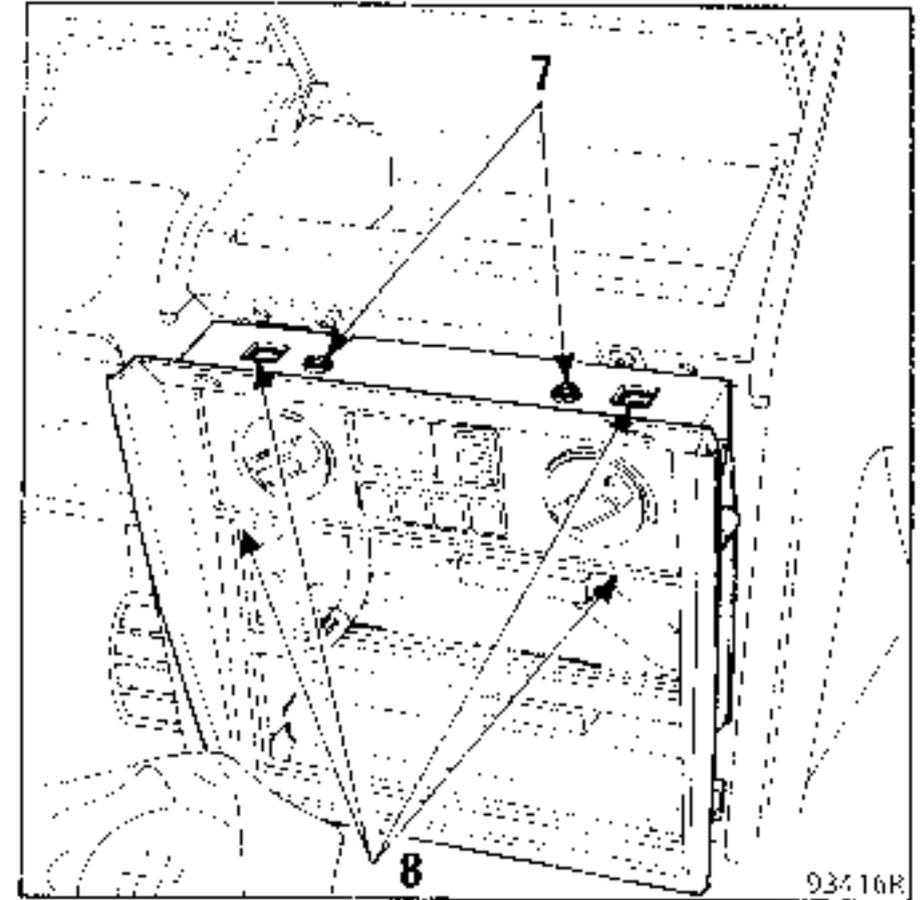
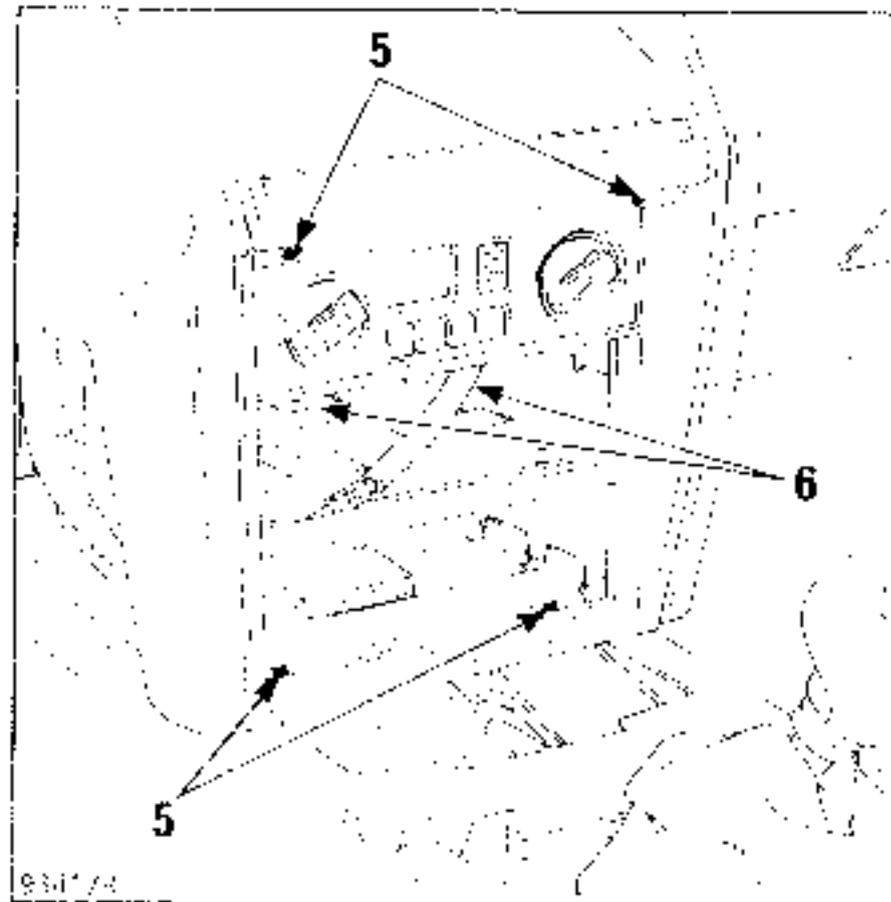
Incident : **BARGRAPH 14 LEFT OR RIGHT ILLUMINATED** : (Mixer motor)



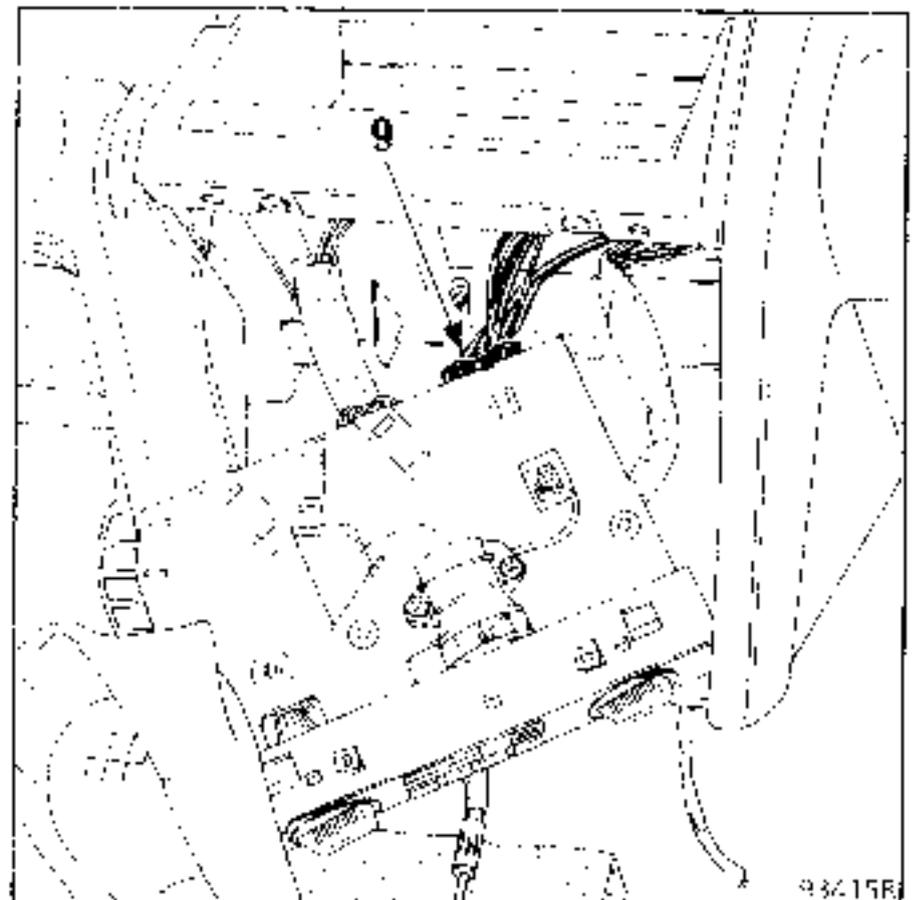
REMOVAL

Remove:

- the radio set or the radio compartment trim,
- the unit from the bottom compartment,
- the four front panel securing screws (5),
- the two securing nuts (6) from the back of the bracket.



Disconnect electrical feed connector (9) (brown) and 15-track connector (green) from the control panel.



Gently take the bracket out from the dashboard.

Remove the two screws (7) securing the control panel to the bracket.

Unclip the four support lugs (8) from the control panel and push the panel back in.

Remove the bracket by tilting it downwards.

REFITTING

Refit the control panel.

Re secure the bracket in reverse order to removal.

Reconnect the battery.

Reset all those functions interrupted when the battery was disconnected (clock...).

NOTE : So as to easily mark those vehicles which have been adjusted, a white mark should be placed inside the diagnostic socket cover (for example : Using a "white Stylo marker pen")

PERFORM A VEHICLE ROAD TEST.**CHECKING USING THE XR 25**

If one of the following bargraphs appears (permanently illuminated or flashing) :

Bargraph	N° 14 RH	} Permanent or flashing
	N° 14 LH	
	N° 15 RH	
	N° 15 LH	
	N° 11 RH	

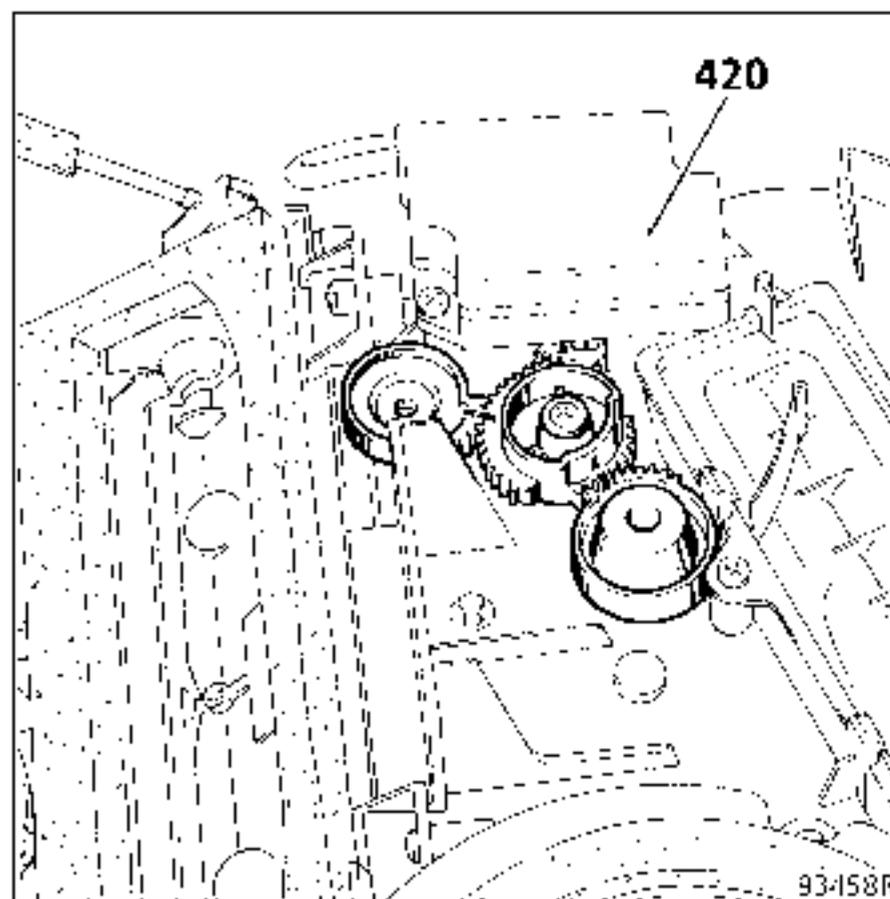
The following operations need to be carried out.

Changing the mixer micro-motor

Disconnect the battery.

Remove :

- the dashboard (MR 291 Section 8).
- the air conditioner (MR 291 Section 6),
- the mixer micro-motor (420).



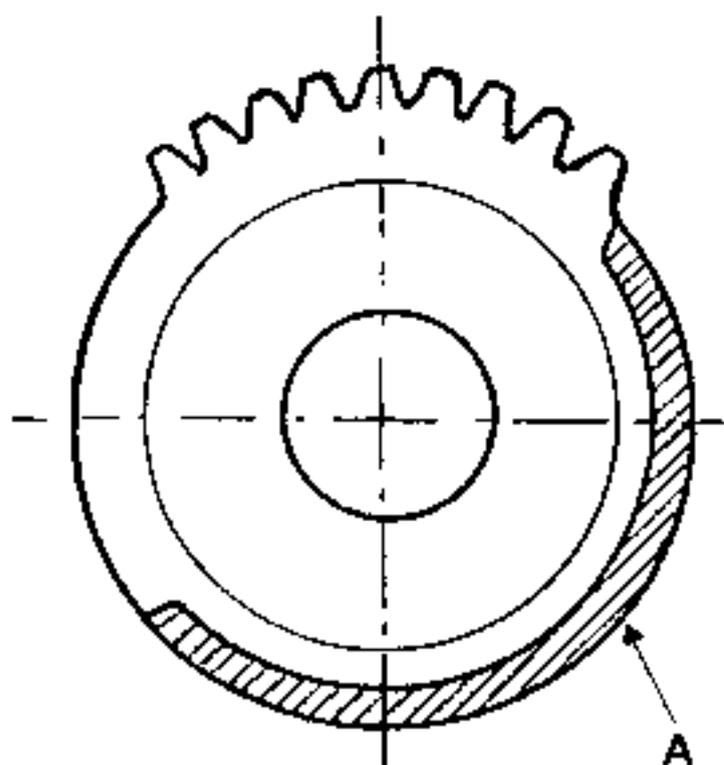
Fit a mixer micro-motor,
Part No : 77 01 034 351.

Mixer drive gear thickness reduction

This is to prevent any possible contact between the outer casing of the heater radiator and the drive gear (P).

Remove drive gear (P) (which is clipped onto its shaft).

Reduce the thickness of the edge of the drive gear.



216137

Modified drive gear

Refit the modified drive gear, making sure that the marks are correctly aligned.

Replacing the recycling micro-motor

The motor is supplied with a connector and lever.

Remove the recycling micro-motor (475).

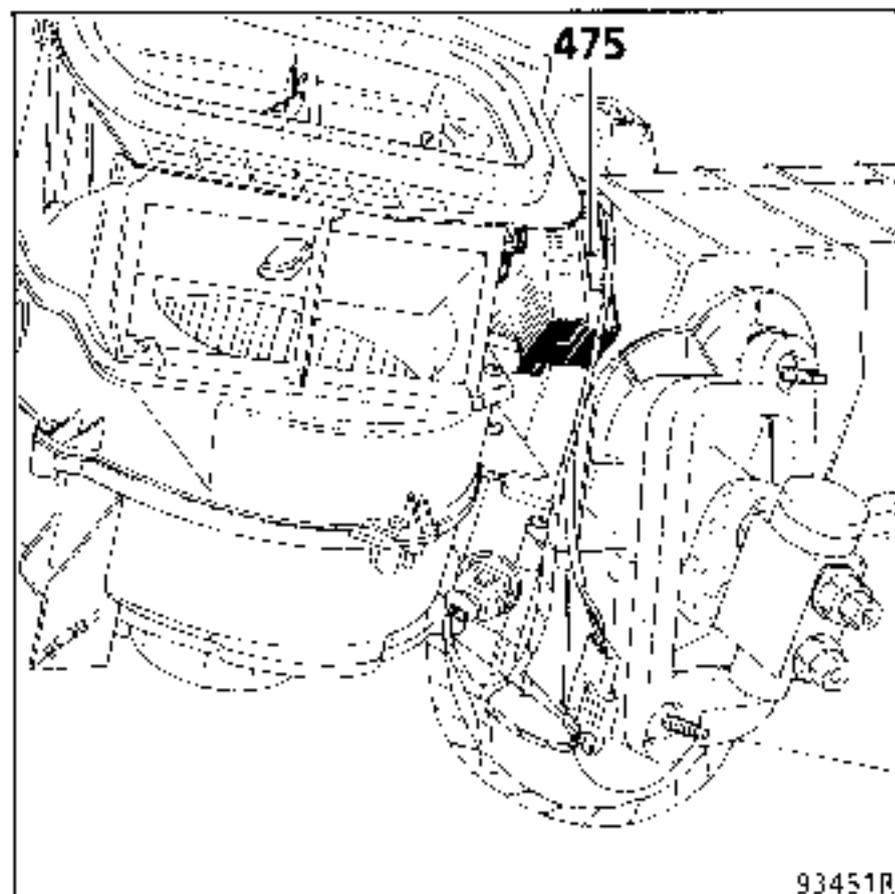
Fit the new recycling micro-motor.

Refit :

- the air conditioner,
- the dashboard.

Reconnect the battery.

Reset all those functions interrupted when the battery was disconnected (clock, etc.).



93451R

REMOVAL - REFITTING

Only the **air distributor unit control cable** can be removed without the dashboard having to be removed.

Removing the air distributor unit cable (J) :

For vehicles up to the end of model year 1989

Disconnect the **battery**.

Remove :

- the lower trim from the dashboard (**K**) (see "Electrical" section),
- breather pipe (**L**).

Unclip the temperature scale markers from the control slides.

Remove the screw holding the control assembly (see the section on removing the blower device).

Free the control assembly by moving the side retaining clips apart.

Remove cable (**J**).

For vehicles as from model year 1990

Disconnect the battery.

Remove :

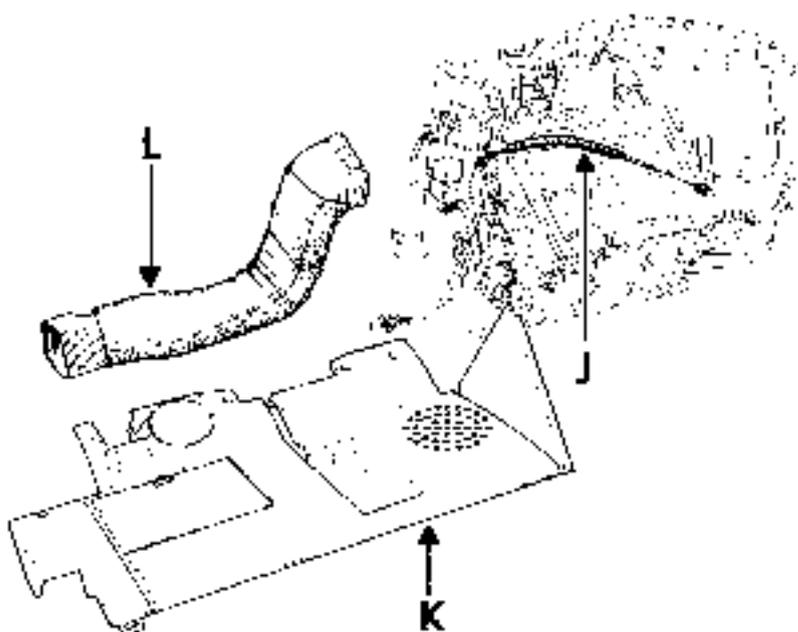
- the lower trim from the dashboard (**K**),
- breather pipe (**L**),
- cable (**J**).

REMOVING THE HOT AIR / COLD AIR AIR FLAP CABLE

Disconnect the battery.

Proceed as for the removal of the air blower device and remove the dashboard.

On refitting, proceed in the reverse order to removal.



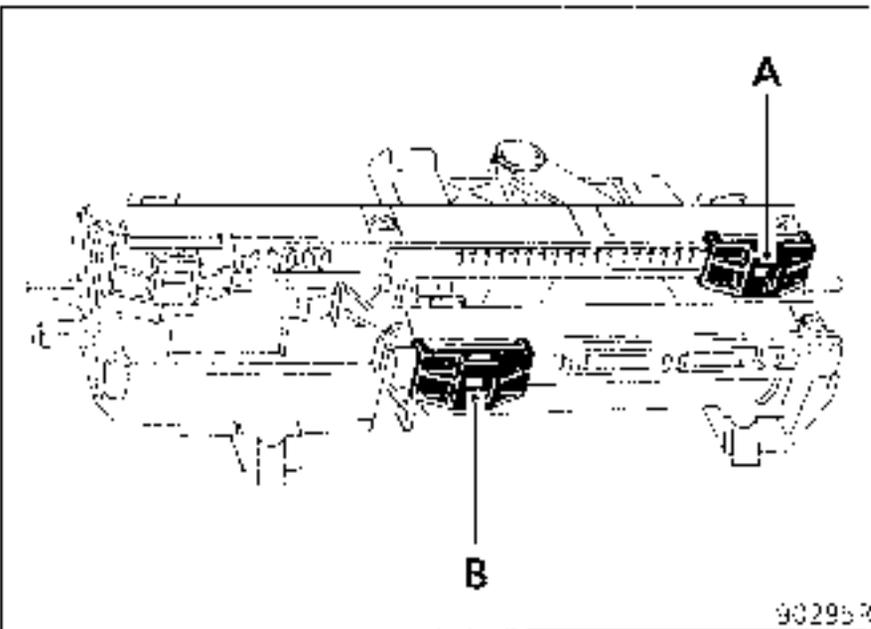
The cables can be adjusted simply by removing the control slides.

Air mixer slide (A) on the hot setting.

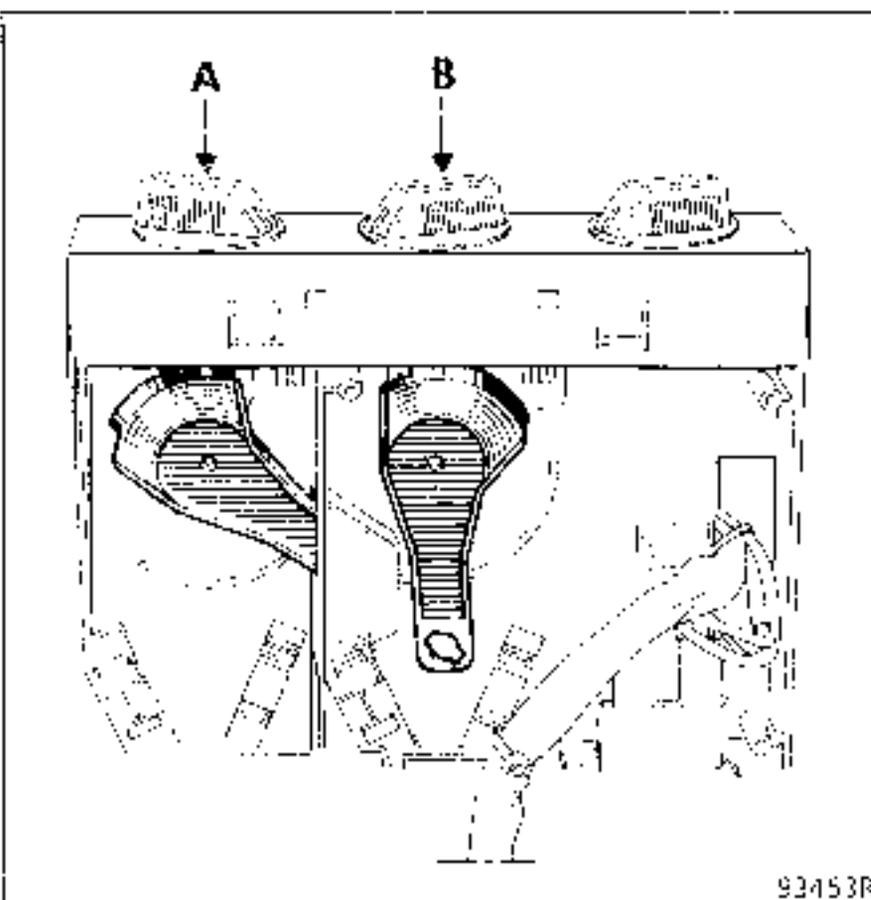
Air distribution slide (B) on the ventilation setting.



Up to the end of model year 1989



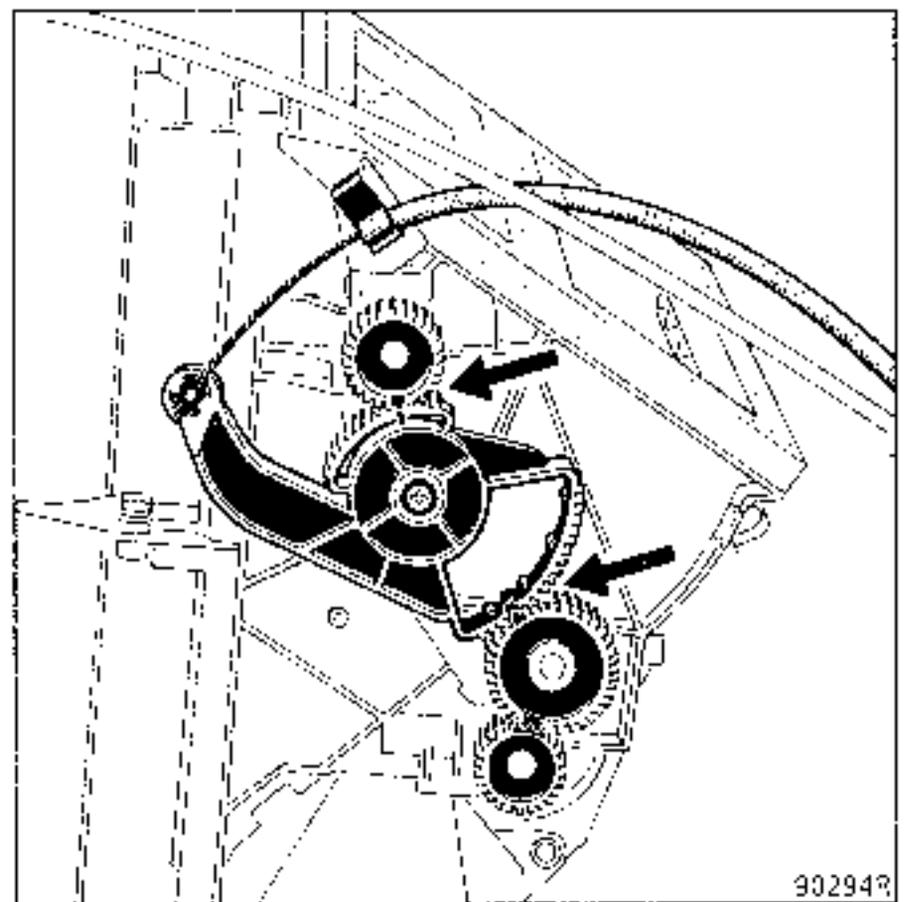
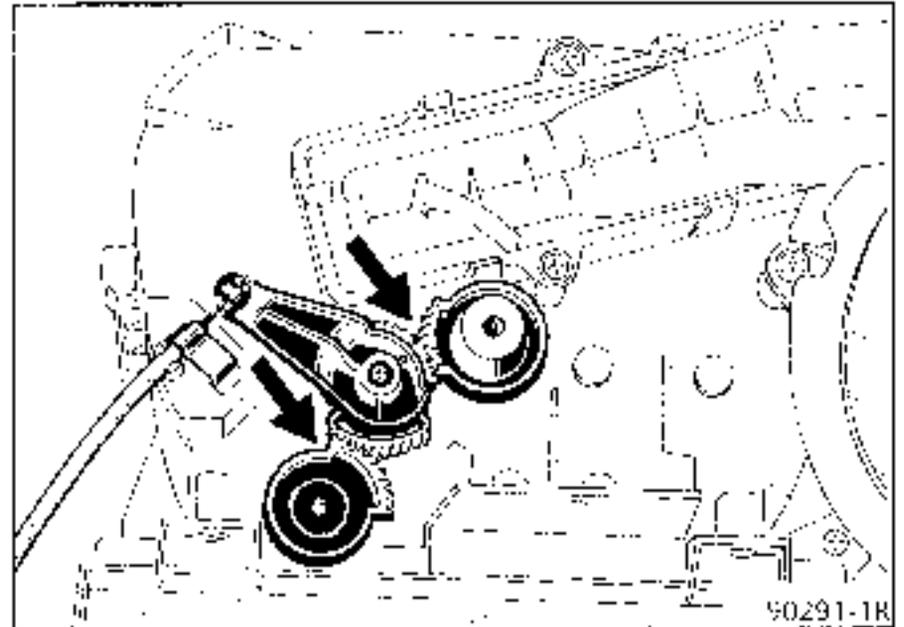
As from model year 1990



Air mixer flap marks aligned.

Air distribution flap marks aligned.

Clip the sleeve stops in place.



If the cables cannot be adjusted by moving the slide control assembly, proceed in the same way by adjusting them at the blower unit end.

In this case, the mixer flap cable can only be adjusted after the dashboard has been removed.

ESSENTIAL SPECIAL TOOLING

Mot.	453-01	Hose clamps
M.S.	583	Hose clamps

REMOVAL

Disconnect the battery.

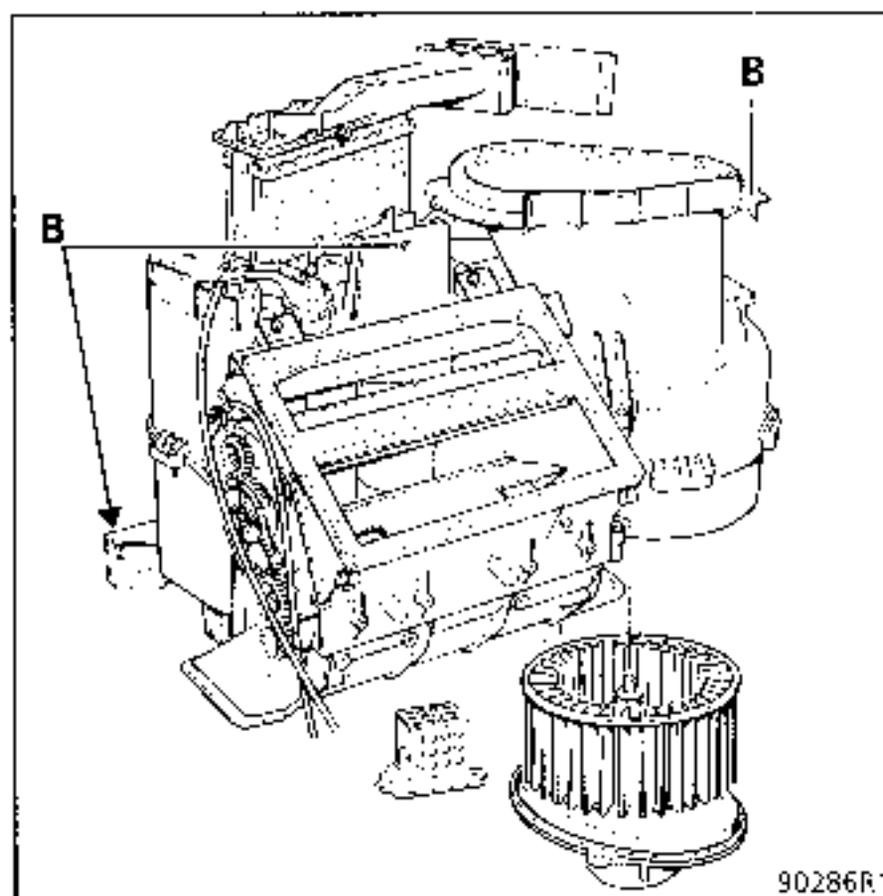
Remove the dashboard (see "Electrical" section).

Leave the cable-controlled assembly coupled to the blower device.

Disconnect the block connectors.

Clamp the heater coolant hoses using tools Mot. 543-01 or M.S. 583.

Disconnect the hoses.



90286R.1

REFITTING

Offer up the air blower to the bulkhead, tilting it so that the sealing lips can be put back in the correct place.

Secure the blower device by means of screws (B).

Ensure that the sealing lips are in place.

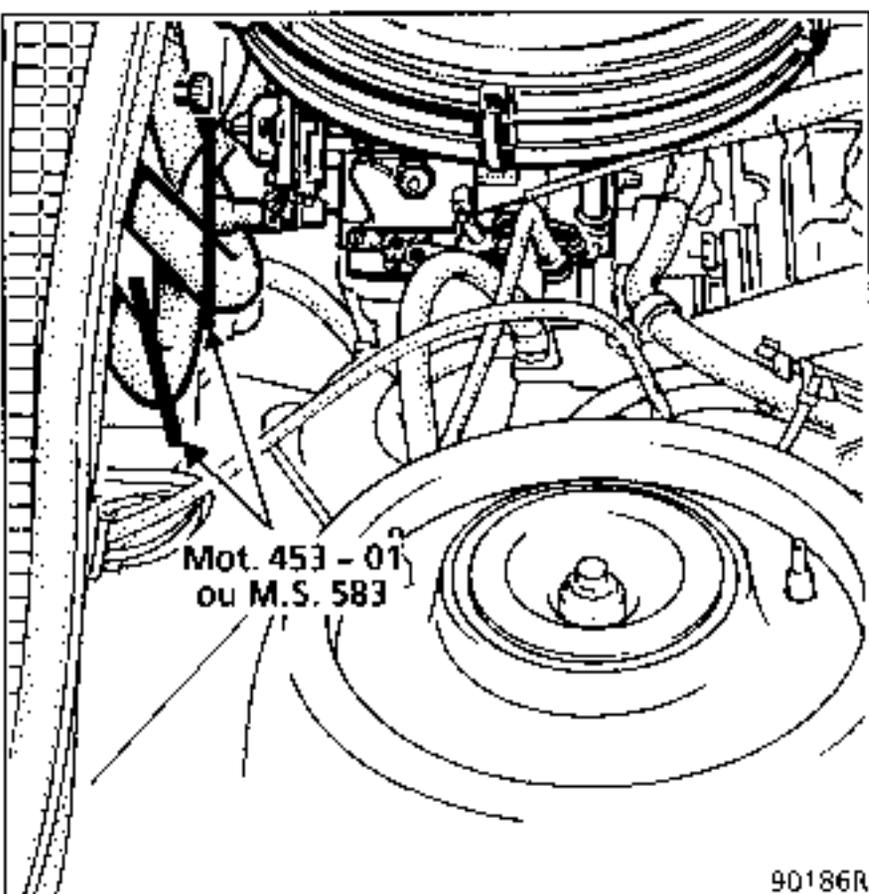
Refit the dashboard.

Adjust the flap control cables.

Secure the cable-controlled device under the dashboard.

Connect the coolant hoses.

Fill and bleed the engine cooling system (see "Engine" section).



90186R

Remove the three mounting screws (B) from the bulkhead blower.

Disengage the blower assembly at the rear to remove it.

REMOVAL

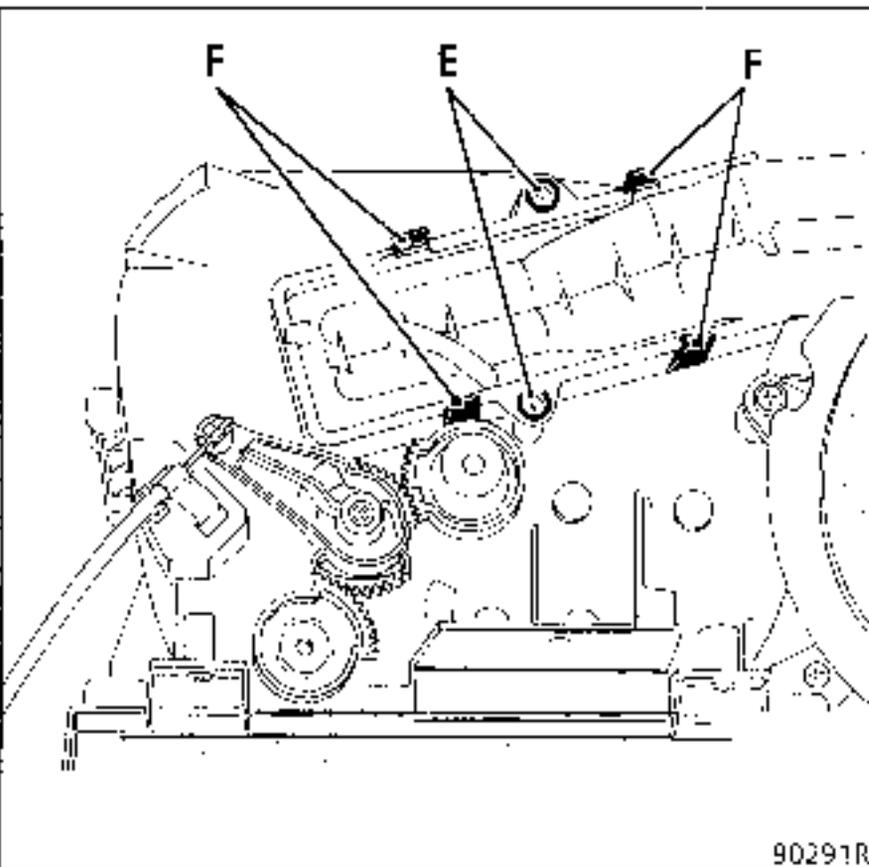
Remove :

- the blower assembly,
- the screws securing the radiator on to the blower device (E).

Pull the four support clips apart (F).

Take out the radiator by disengaging it in an upwards direction.

NOTE : Be very careful not to damage the radiator fins.

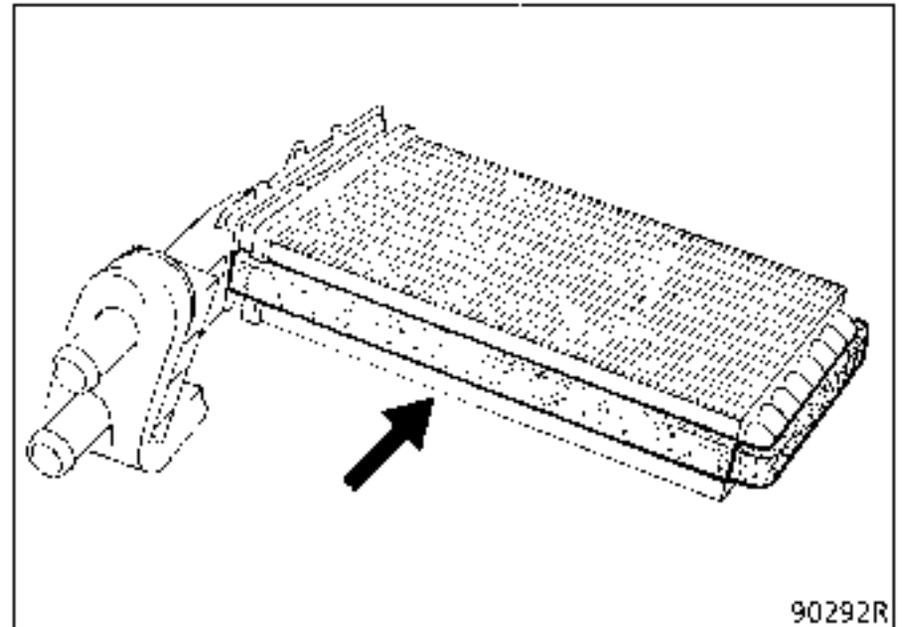


REFITTING

Fit the radiator complete with its foam spacer bands into the body of the blower device.

Make sure that the 4 tabs are clipped.

Fit the mounting screws onto the body of the blower device.

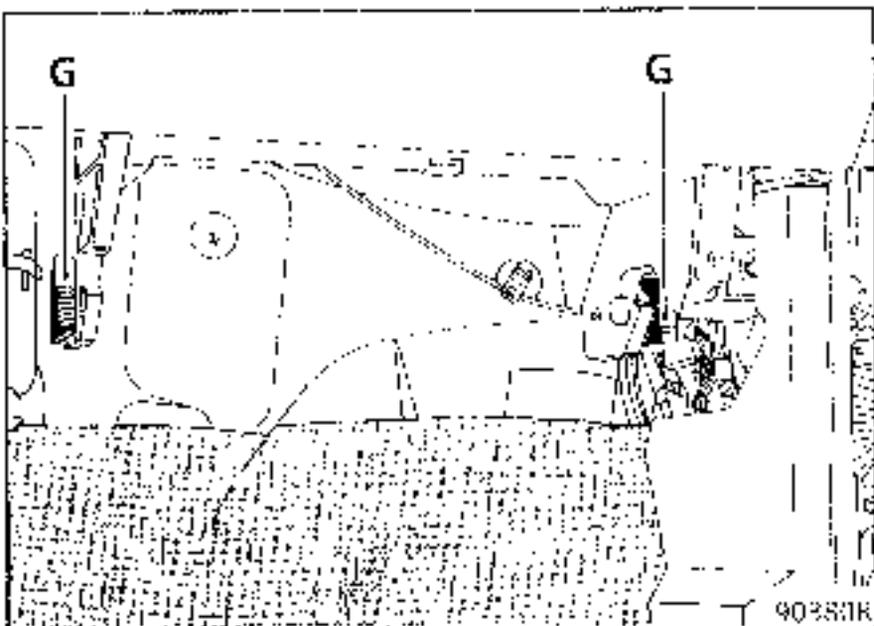


REMOVAL - REFITTING

The fan motor is reached through the passenger compartment.

Disconnect the battery.

Remove the righthand glovebox (move the righthand and lefthand locking clips away from the hinge pins (G)).



NOTE : Pull the fan motor to free it from its mounting.

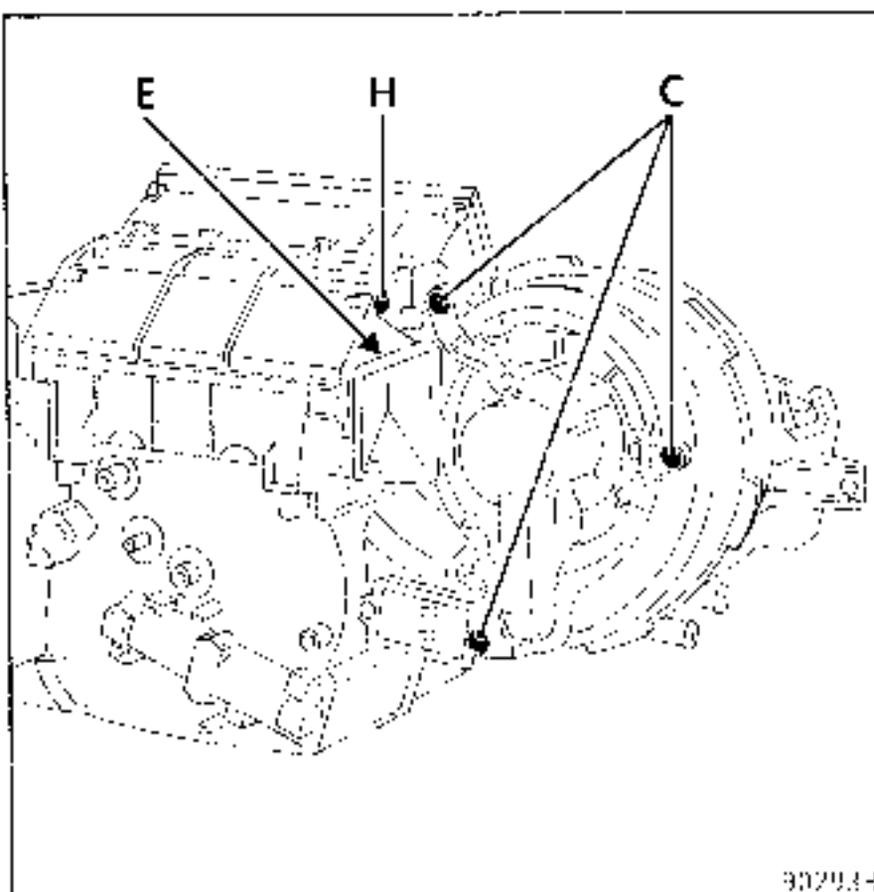
When reassembling the motor on its mounting, follow the identification marks to ensure that the connector is positioned correctly.

If the ventilator clips break, fit a mounting screw at (H).

Unclip fan outlet (E) on the righthand side of the blower device.

Remove the three mounting screws (C) from the fan motor.

Take out the impeller/fan assembly from the blower device.



REMOVAL - REFITTING

The electrical resistors for the fan motor can be reached through the passenger compartment.

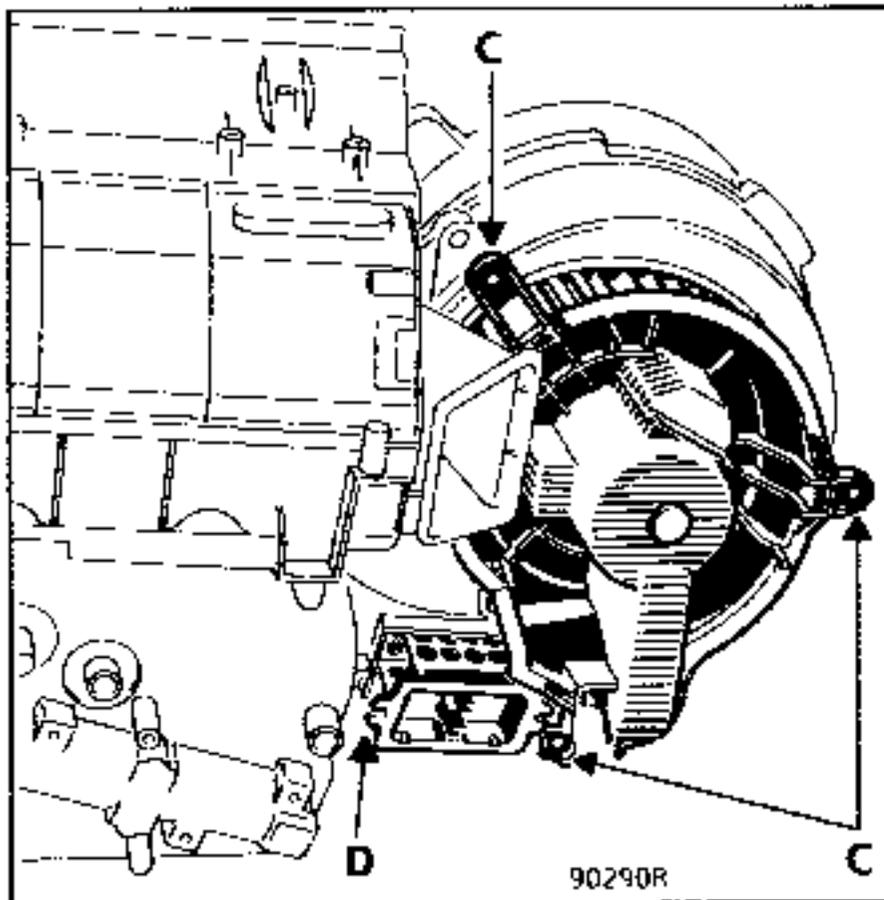
Remove :

- the righthand glovebox,
- the fan mounting screws (C).

Leave the fan motor hanging.

Remove the screw (D) securing the resistor mounting.

Take out the resistors from the bottom.



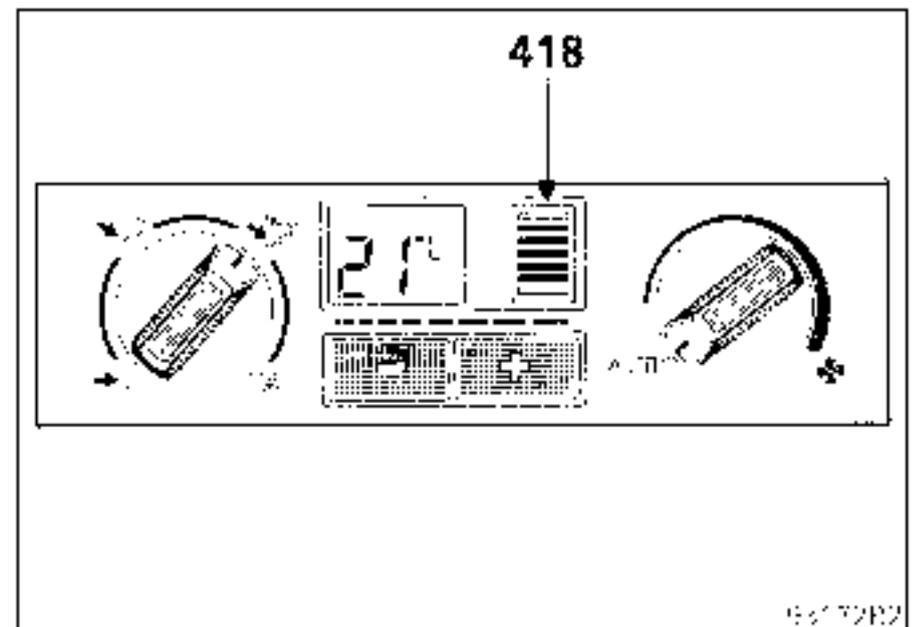
Checking the blown air, external and internal temperature sensors

DEGREES CELSIUS	THERMAL RESISTANCE (Ω)
-10	49000 to 60000
5	37300 to 45700
0	29000 to 35500
5	22500 to 27500
10	18000 to 21600
15	14000 to 17000
20	11300 to 13800
25	9000 to 11000
30	7300 to 8500
35	5800 to 7000
40	4700 to 5600
45	4000 to 4500

These values are given as guide, but have no significance for fault finding as they present too great a thermal spread.

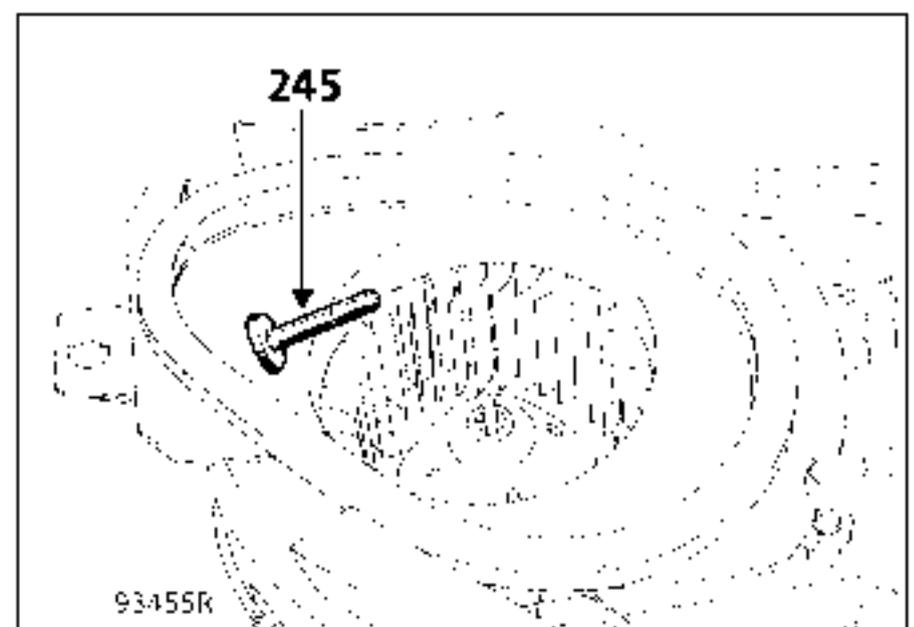
Internal temperature sensor (418)

This is a thermistor with a negative temperature coefficient, integrated in the control panel printed circuit. If the sensor is faulty, the control panel will have to be replaced.

**External temperature sensor (245)**

This is a thermistor with a negative coefficient located in the air conditioner air intake.

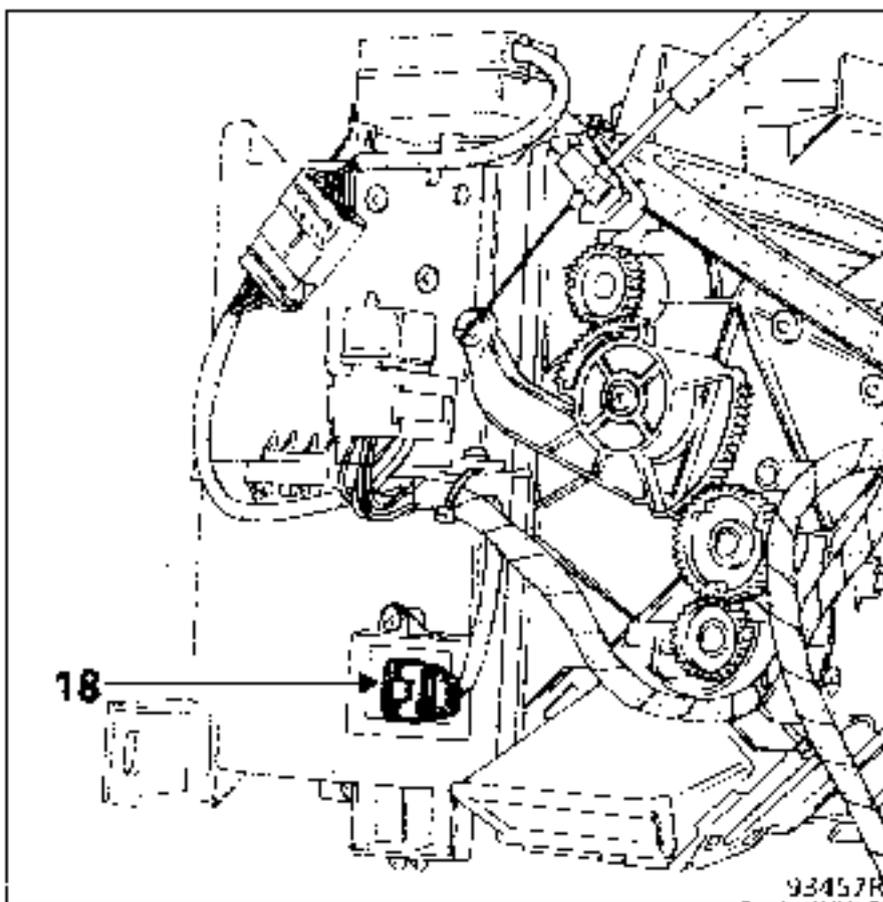
It is interchangeable and can be reached through the air intake duct at the water box end.



Blown air temperature sensor (18)

This is a thermistor with a negative temperature coefficient located downstream of the radiator.

It can be reached directly from inside the vehicle, at the pedal assembly end and is located on the heater device.

**MIXER MOTOR (420)**

The mixer flap is assisted by an electric motor with a potentiometre for checking the position of the flap.

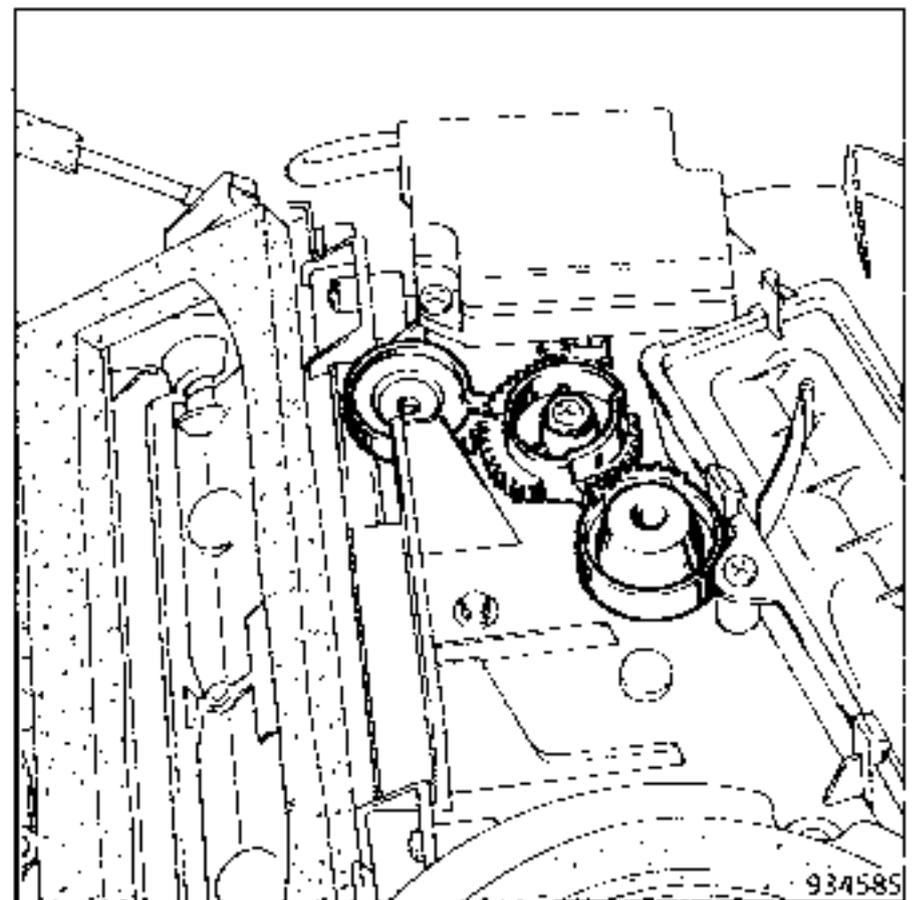
The motor is permanently supplied with approximately 7 volts power in the extreme **HOT** or **COLD** settings.

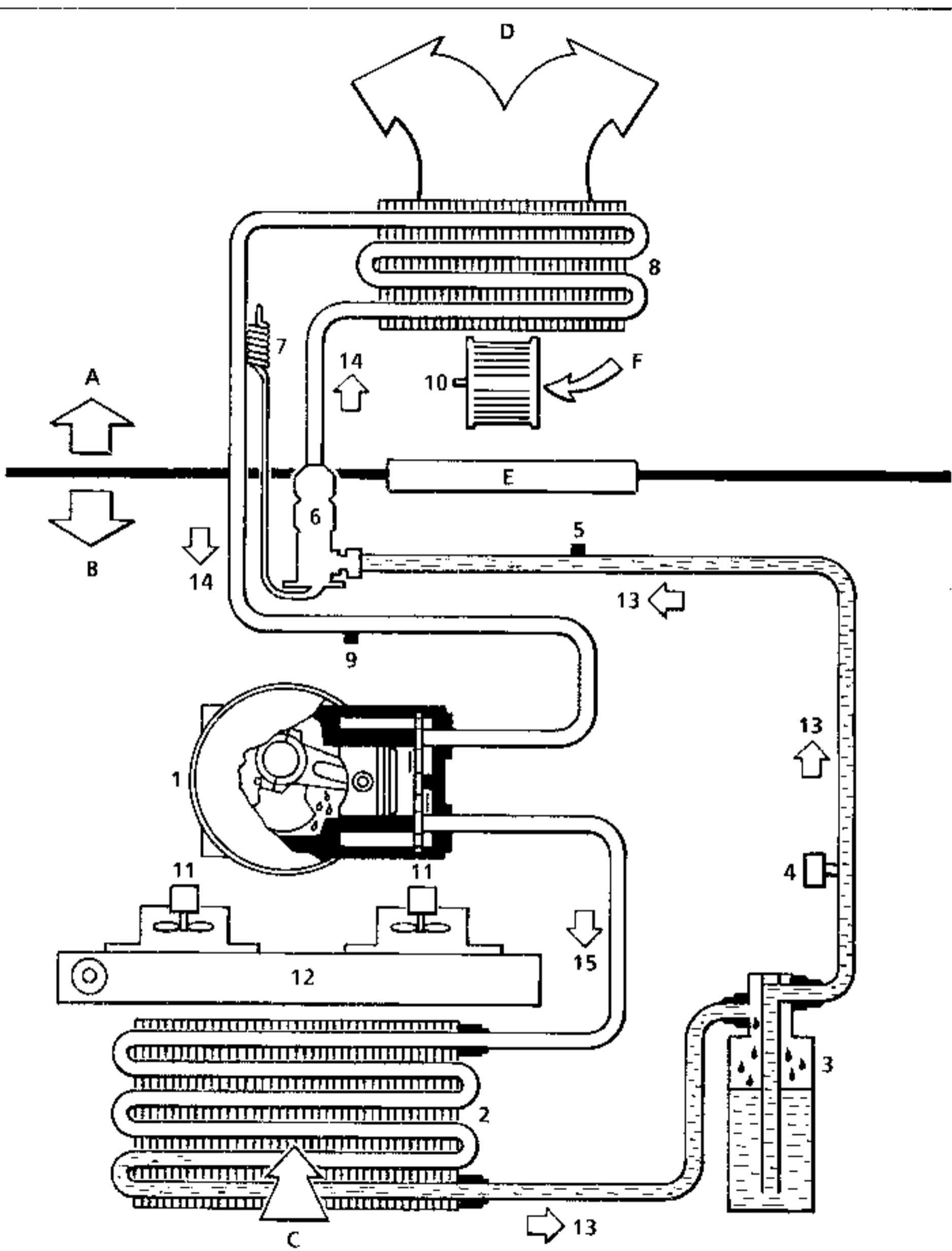
In the intermediate setting, the voltage is 0 volts.

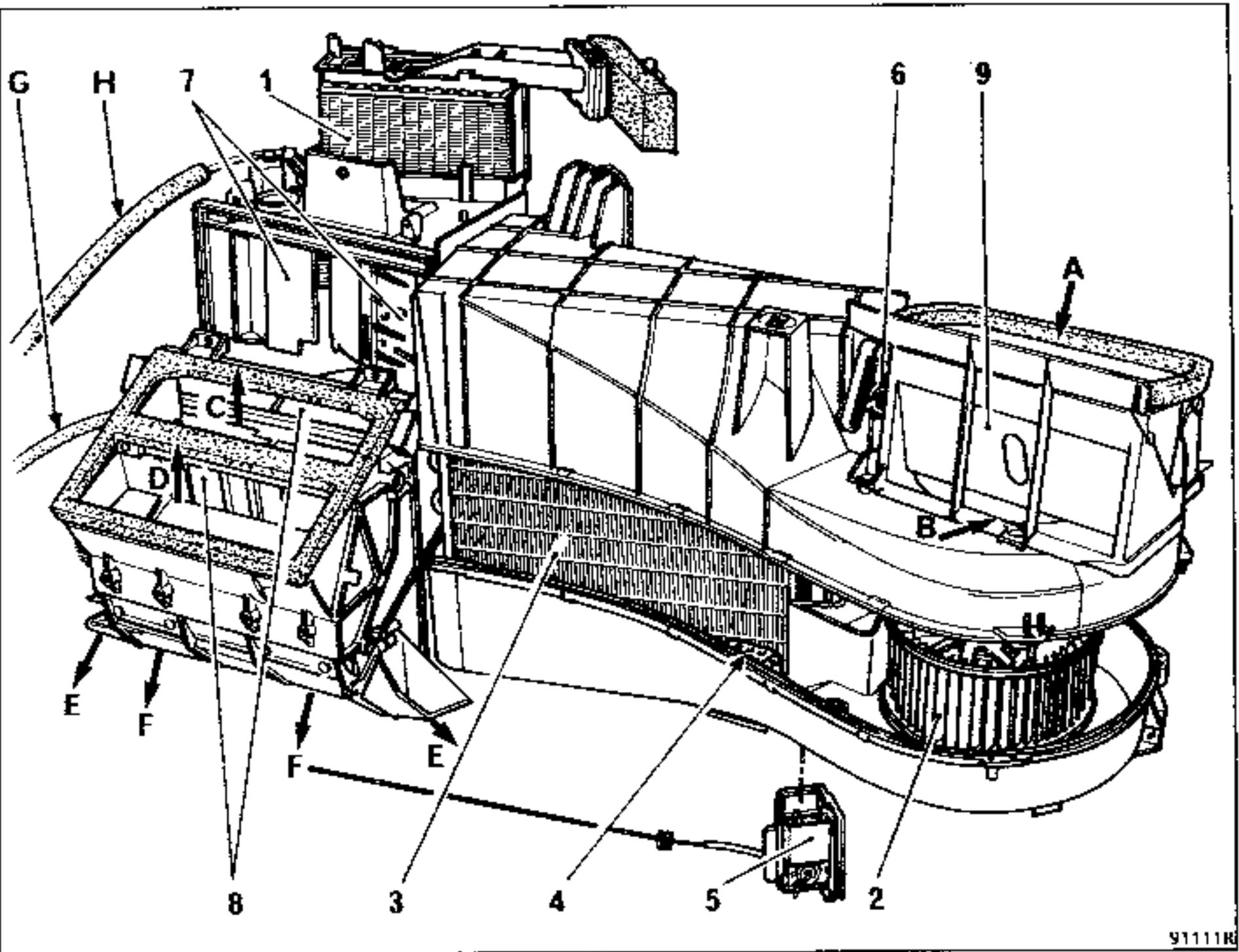
The motor can be reached after the dashboard and air conditioner have been dismantled (see section 83).

If the motor has to be replaced, the new one is supplied with its connector and output drive gear. It is pre-set for fitting to the air conditioner.

On refitting, the marks on the drive gears for the flap and motor must be aligned.







91111R

- 1 Heater radiator
- 2 Blower fan
- 3 Evaporator
- 4 Fan resistors
- 5 Fixed thermostat
- 6 Motor or recirculation flap diaphragm
- 7 Hot air/cold air flaps
- 8 Top/bottom air flaps
- 9 Recirculation flap
- A External air inlet
- B Recirculated air inlet
- C Windscreen demisting outlet
- D Dashboard ventilator outlet
- E Lower ventilator outlets
- F Ventilator outlets to rear seats
- G Air distribution cable
- H Air mixer cable

- A Passenger compartment
- B Engine compartment
- C External air
- D To air mixer unit
- E Scuffle panel
- F External or recirculated air

CONSUMABLES

Compressor oil :

- **ELF RIMA 100** : 135 cm³ ± 15.

Refrigerant fluid :

- Freon **R12** : 950 g ± 50.
- **R134a** : 750 g ± 35.

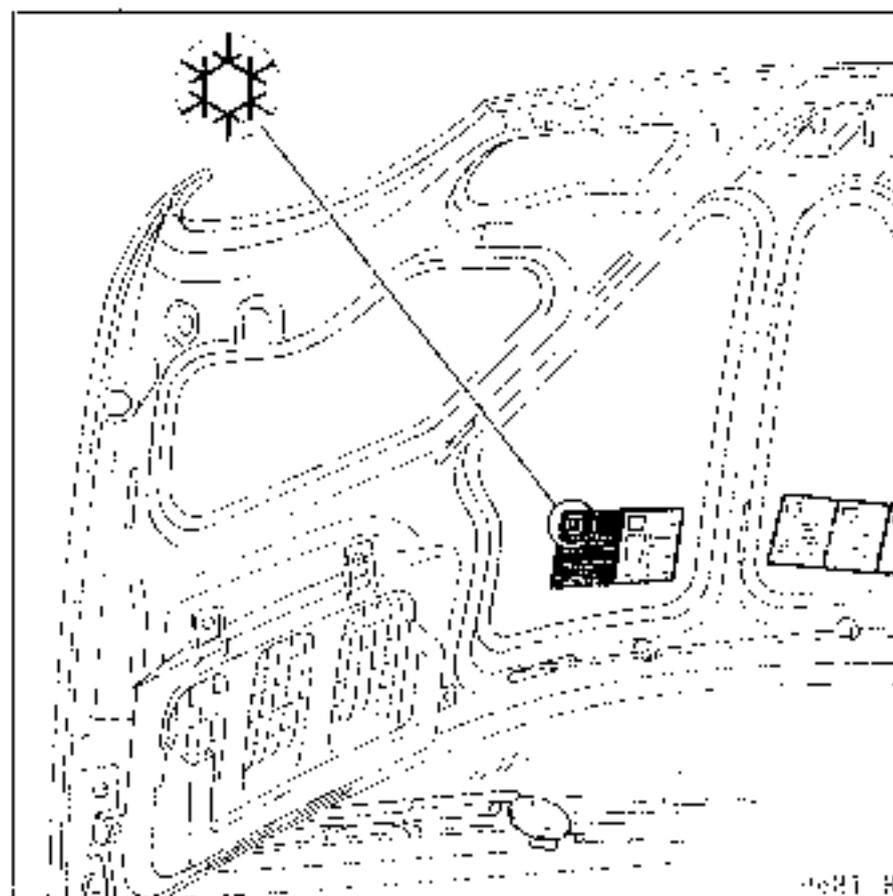
- 1 Compressor
- 2 Condenser
- 3 Refrigerant fluid reservoir
- 4 Three-purpose pressostat
- 5 High pressure bleed screw
- 6 Relief valve
- 7 Relief valve thermostatic regulation
- 8 Evaporator
- 9 Low pressure bleed screw
- 10 Air conditioning fan
- 11 Cooling fan
- 12 Engine radiator
- 13 High pressure fluid
- 14 Low pressure vapour
- 15 High pressure vapour

To contribute towards protecting the environment, **Renault** vehicles now use refrigerant fluid type **R134a** in their air conditioning systems. Refrigerant type **R134a** for use with **SANDEN SP20 (PAG)** is not compatible with refrigerant type **R12** for use with **ELF RIMA 100** type oil. It is therefore forbidden to use one type in place of the other. For servicing and maintenance you must use the refrigerant type and oil recommended for the system it was designed for (**R12** for **R12** and **R134a** for **R134a**).

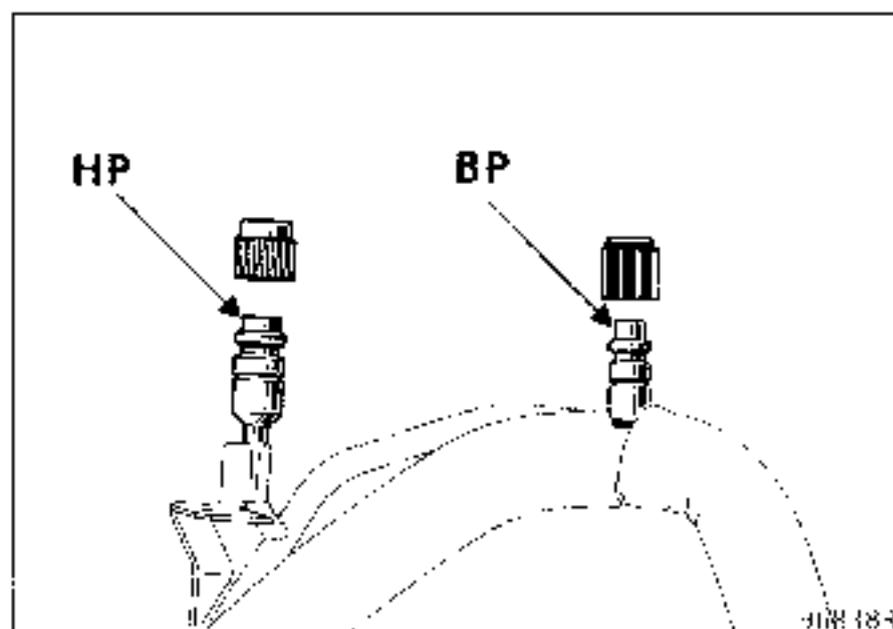
There are two ways of recognising those vehicles equipped with refrigerant type **R134a** :

- a label carrying the symbol  and the inscription **R134a** marked either on the bonnet, on the grille panel or on the front cross member.

Example



- The refill valves are of the "snap" type with a difference in diameter between the high pressure and the low pressure valves



For details on refilling and oil levels, refer to the manual entitled "Air Conditioning - New Refrigerant type R134a".

CONTENTS

Type	Engine	Quantity (g) R134a
X 48	All types	750 ± 35

OIL LEVEL

The quantity of oil for air conditioning circuits R12 and R134a is identical. It is only the type of oil that changes.

When carrying out repair work concerning leakages or if a component has been replaced, oil (special R134a) should be added.

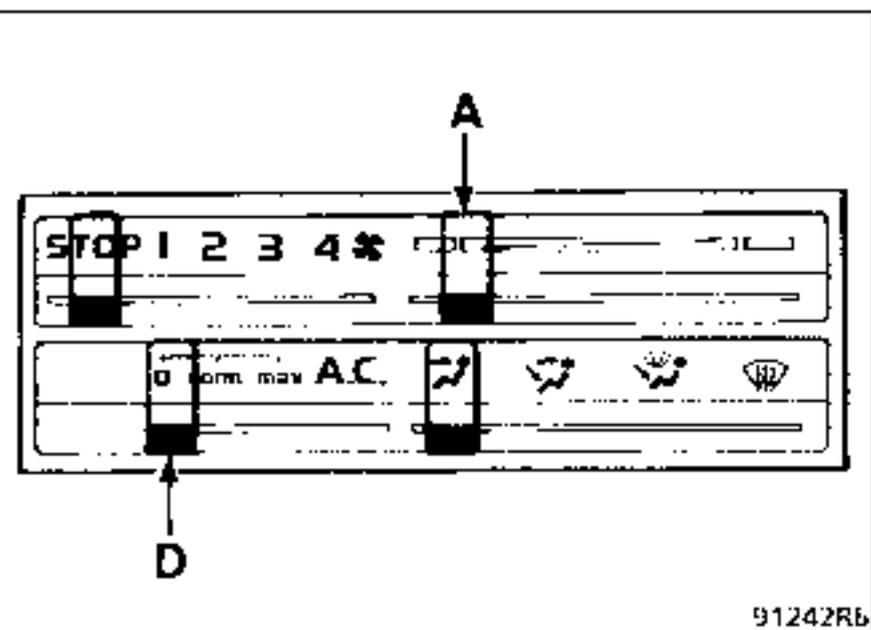
OPERATION ON AC CIRCUIT	QUANTITY OF OIL TO BE ADDED
Draining AC circuit	Measure the amount of oil drained out and add a similar quantity of new oil
Hose split or other rapid leakage	100 ml
Replacing a condenser	30 ml
Replacing an evaporator	30 ml
Replacing the dehydrating bottle	15 ml
Replacing a hose	10 ml

When removing-refitting the compressor without replacing it (for example, when repairing a clutch) after draining the oil from the compressor, refill it with 120 ml.

UP TO THE END OF MODEL YEAR 1989

TEMPERATURE CONTROL KNOB (A)

This control has the same function as described in the "Heating-Ventilation" section when air conditioning control (D) is in position 0.



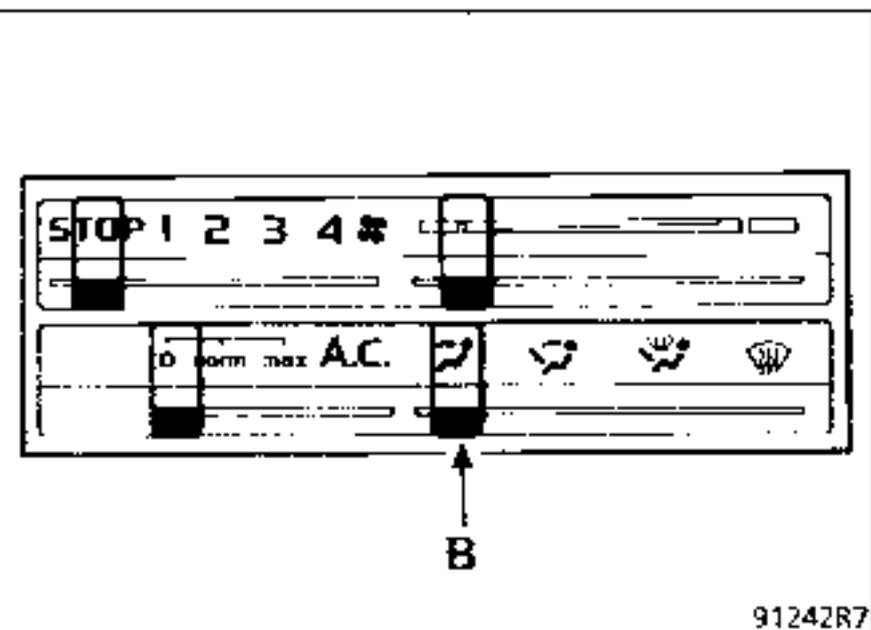
When air conditioning control (D) is in the "AC Norm" or "AC Max" position the air is first cooled and then dried by passing through the evaporator, then a relatively large part of it is reheated by passing through the radiator.

When the slide is on the extreme lefthand setting, the air is not reheated and is therefore at the lowest temperature possible.

Moving the slide to the right enables the air temperature to be adjusted.

AIR DISTRIBUTION KNOB (B)

This control has the same function as described in the "Heating-Ventilation" section.



AIR FLOW CONTROL SLIDE (C)

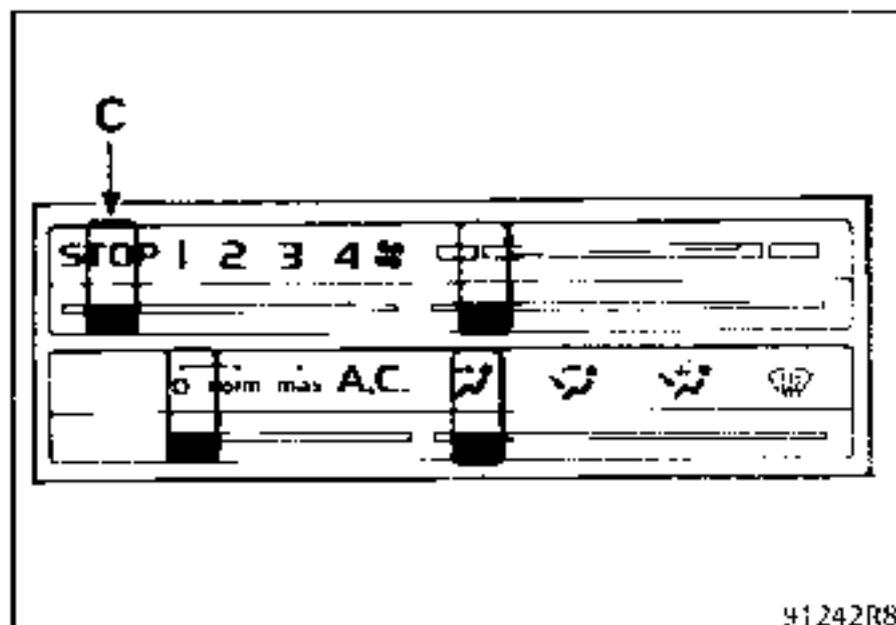
This control has the same function as described in the "Heating-Ventilation" section without air conditioning, except :

- that the 0 setting is replaced by STOP,
- there is an additional setting, 4.

STOP POSITION : The ventilation is not operating and the air entry is shut off by the recirculating flap.

The air conditioning system cannot be activated.

This setting is equivalent to the total stoppage of the installation, irrespective of the position of the other controls.



POSITION 4 : on this setting the system gives maximum performance.

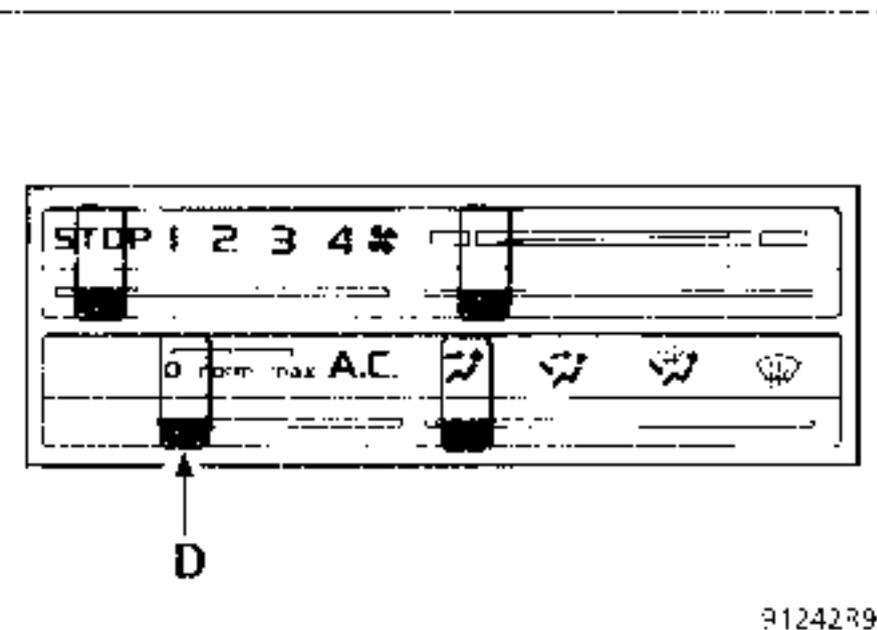
AIR CONDITIONING CONTROL SLIDE (D)

This control switches the air conditioning system on and off

Using it enables :

the temperature of the air inside the passenger compartment to be lowered,

the amount of humidity of the air blown into the passenger compartment to be reduced (aids demisting).



POSITION 0 : the air conditioning system is not operating, heating and ventilation have the same functions as on a vehicle which does not have air conditioning.

POSITION "AC Norm" : the air conditioning is operating. This is its normal setting for use. The cold air is taken from outside the vehicle and is constantly renewed.

POSITION "AC Max" : the air conditioning is operating. The air is taken from inside the passenger compartment and is recirculated without taking in any air from outside. This position enables the temperature inside the passenger compartment to be lowered quickly and to insulate it from the external atmosphere (when travelling in polluted areas, for example).

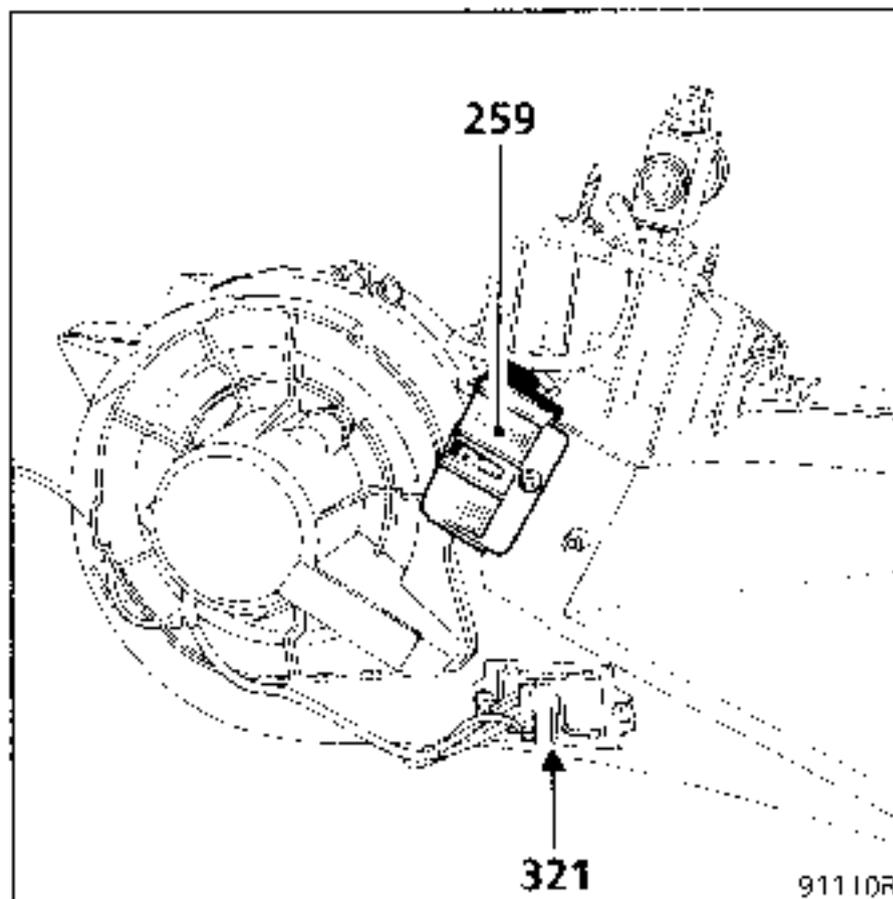
However, if the system is used for a long time on this setting, the vehicle interior will mist up slightly owing to the polluted air inside the passenger compartment (if passengers are smoking, for example).

It is therefore advisable to return to the "AC Norm" position as soon as the vehicle moves out of the polluted area or as soon as the desired temperature is reached.

NOTE : The air conditioning control does not activate the system if air flow control (C) is on **STOP**.

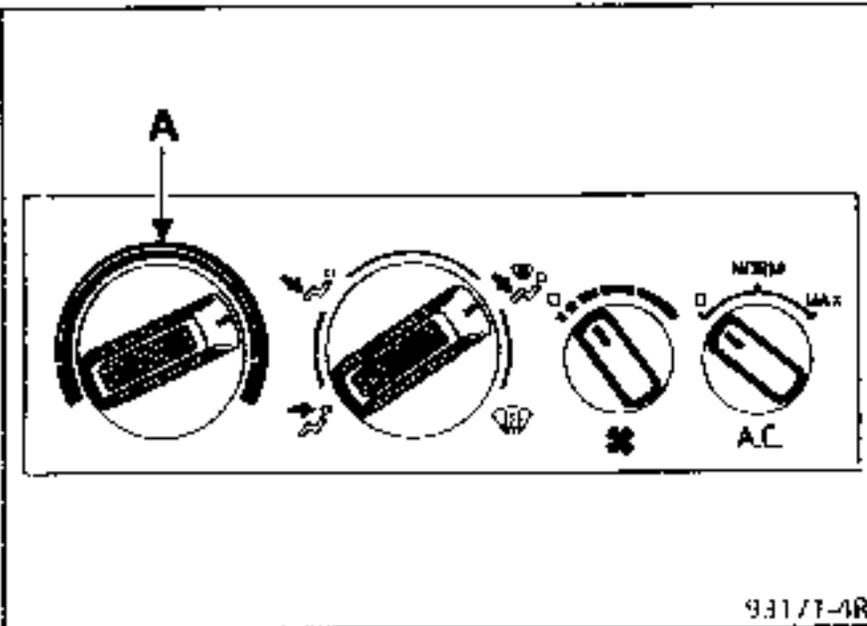
SPECIAL FEATURE OF THE SYSTEM

The temperature of the air leaving the evaporator cannot be adjusted. It is adjusted automatically by a fixed thermostat (259)



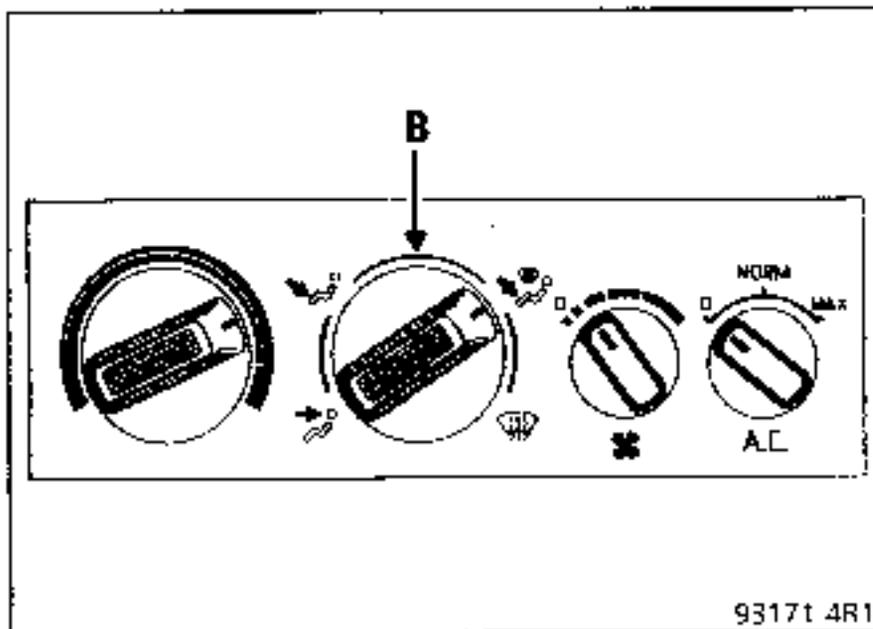
AS FROM MODEL YEAR 1990

TEMPERATURE CONTROL KNOB (A)



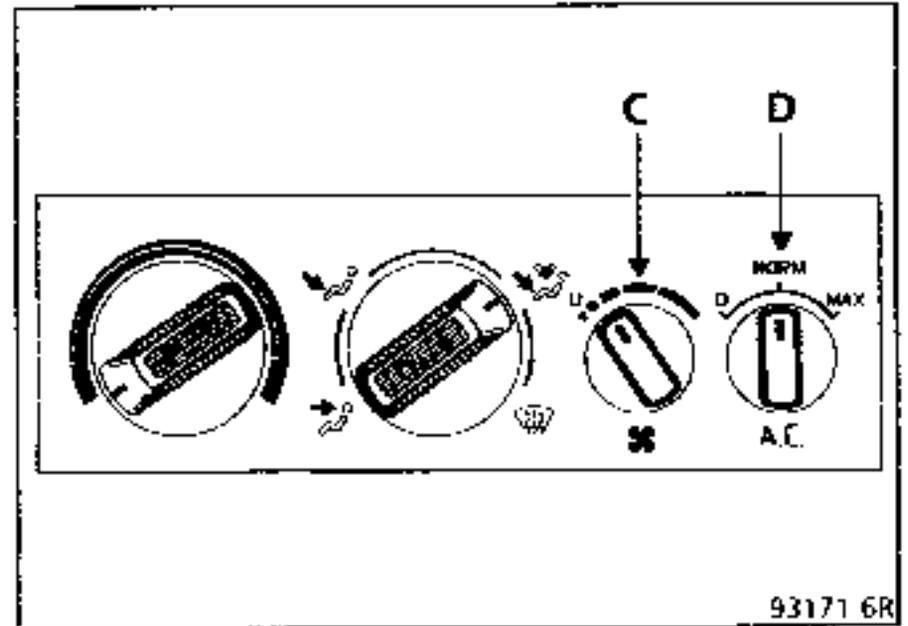
This control has the same function as described in the "Heating-Ventilation" section.

AIR DISTRIBUTION KNOB (B)



This control has the same function as described in the "Heating-Ventilation" section.

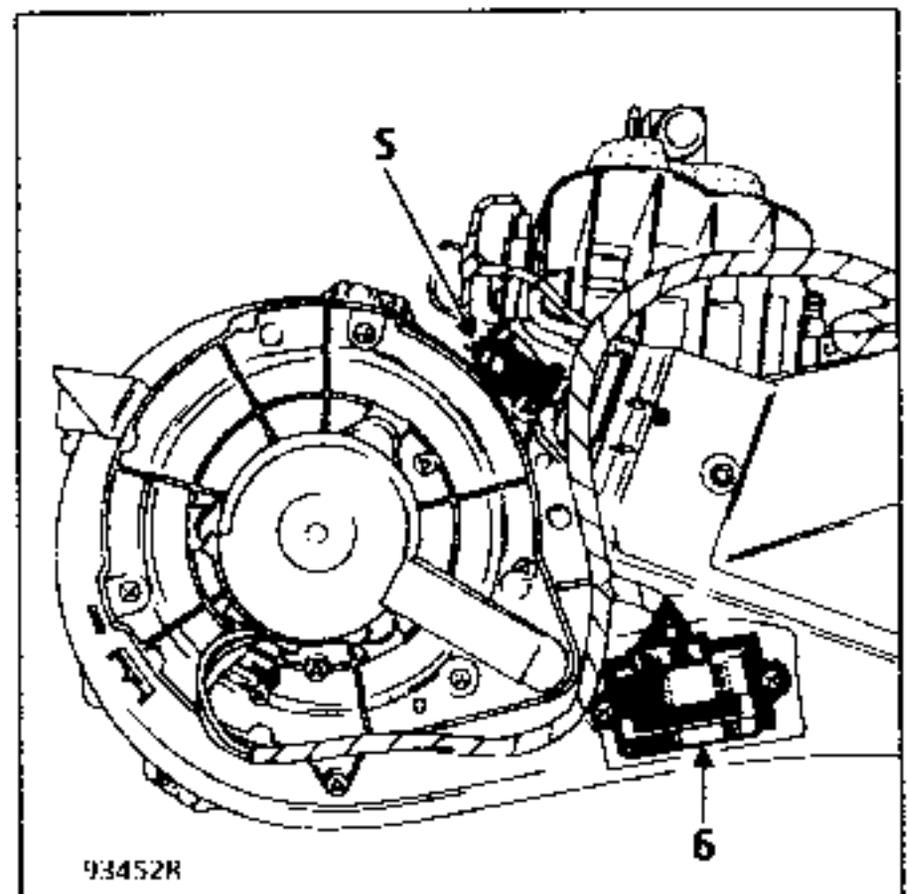
AIR CONDITIONING CONTROL KNOB (D)



This control has the same function as described in the paragraph entitled "Air conditioning control slide".

SPECIAL FEATURE OF THE SYSTEM

The temperature of the air from the evaporator cannot be regulated. It is set automatically by electronic thermostat (6) and sensor (5).



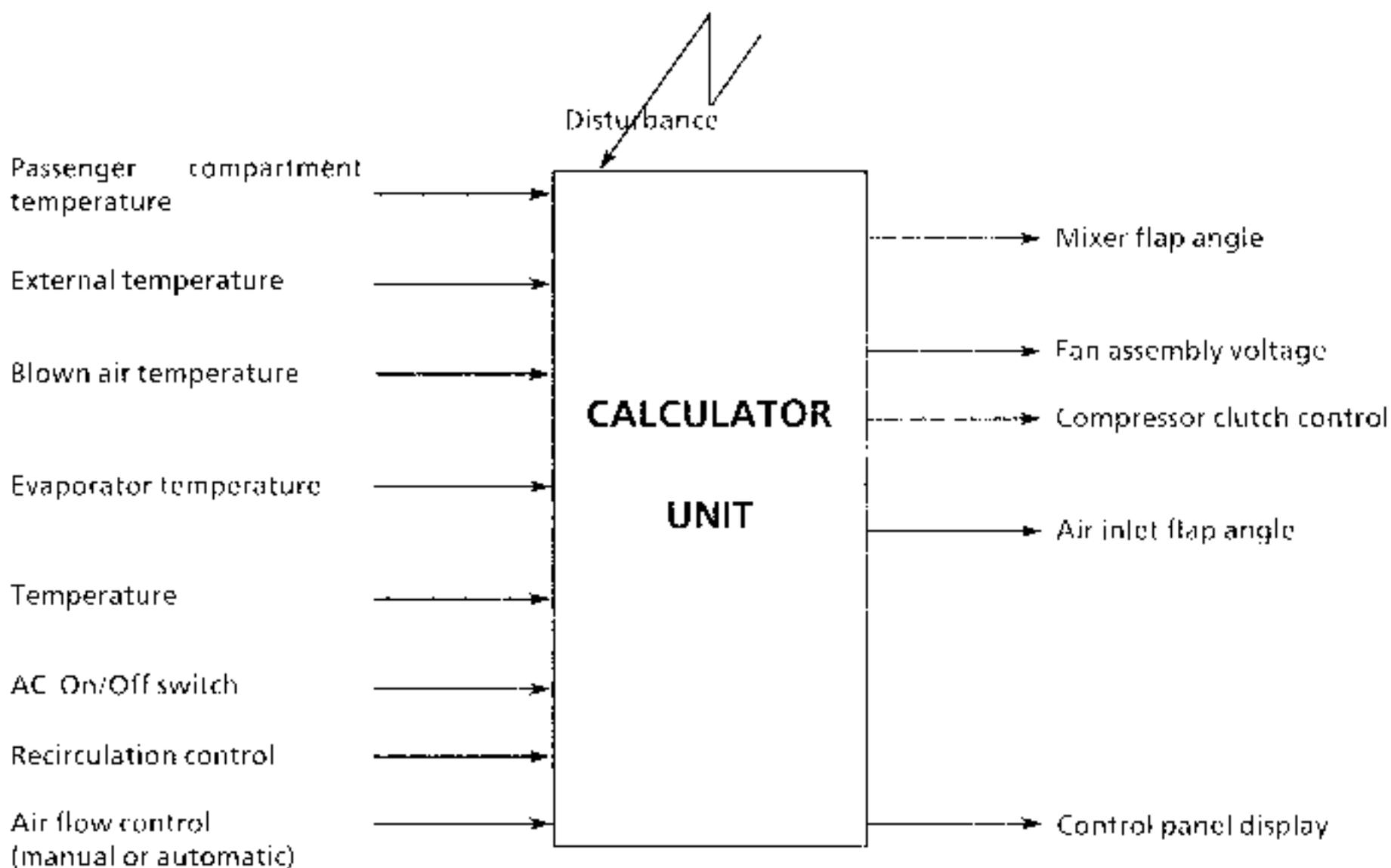
AS FROM MODEL YEAR 1990 - VERSION WITH TEMPERATURE REGULATION AND AIR CONDITIONING

As from model year **1990**, Renault 21 "Phase 2" vehicles may be equipped with a heating system with temperature regulation.

The aim of temperature regulation is to make the temperature inside the vehicle as comfortable as possible for the occupants, taking account of the different conditions which can prevail inside the passenger compartment.

The temperature regulation system is electronically controlled by means of a computer integrated in the control unit

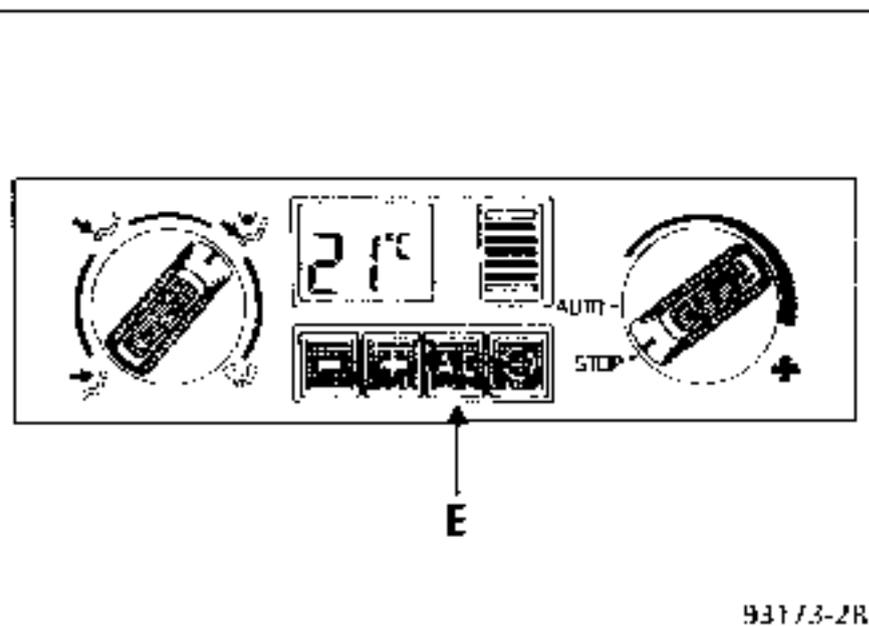
COMPOSITION OF THE SYSTEM



Input parameters

Output variables

ADJUSTING THE TEMPERATURE



The two "-/+ " keys have the same function as the one described in the "regulated heating" section. Only the temperature level is different : 14 °C to 28 °C.

The temperature is not regulated when the level selected is 14 °C.

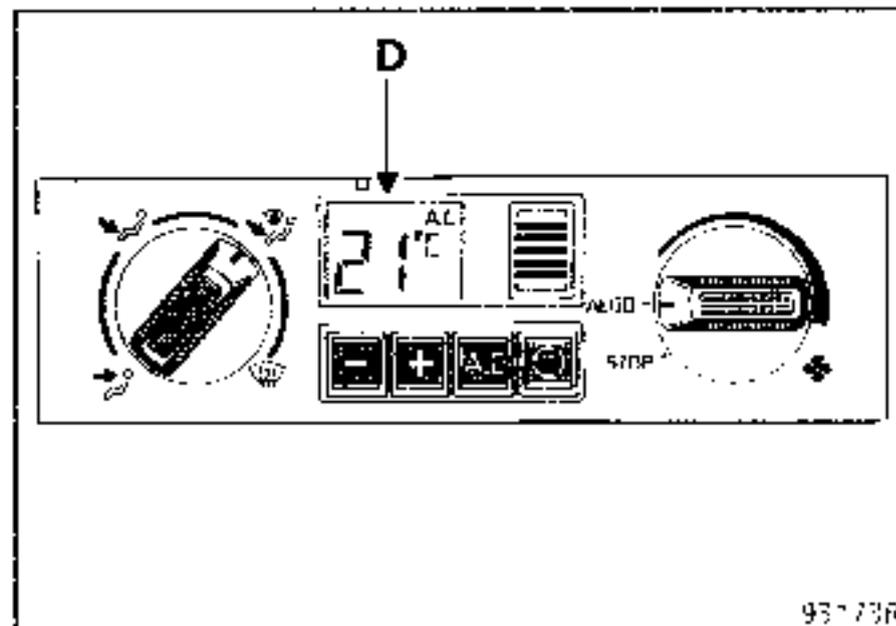
The temperature will be that obtained when the system is on its maximum performance setting.

If the external temperature is higher than the one selected, the air conditioning system will have to be activated in order to regulate the temperature.

If the air conditioning system is not in operation, the message "A-C" flashes on the display. Just press "A-C" (E) to activate the system.

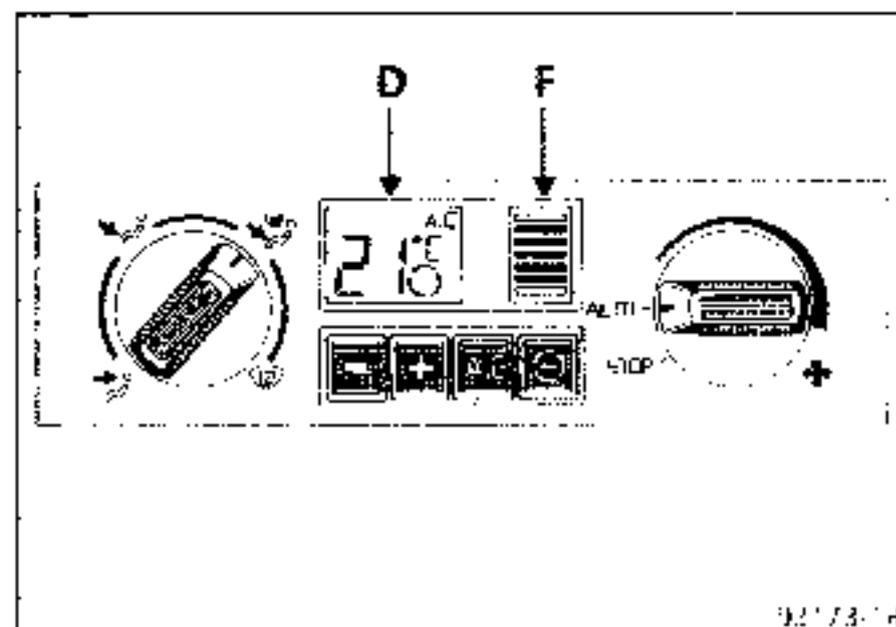
When there is a great difference between the external temperature and the temperature level displayed, in particular when the external temperature is very high, the air **RECIRCULATION** system will have to be activated in order to accelerate the reduction in temperature inside the passenger compartment. The system will return to the "external air" mode if conditions allow when the desired temperature has been reached.

AIR CONDITIONING ON/OFF KNOB



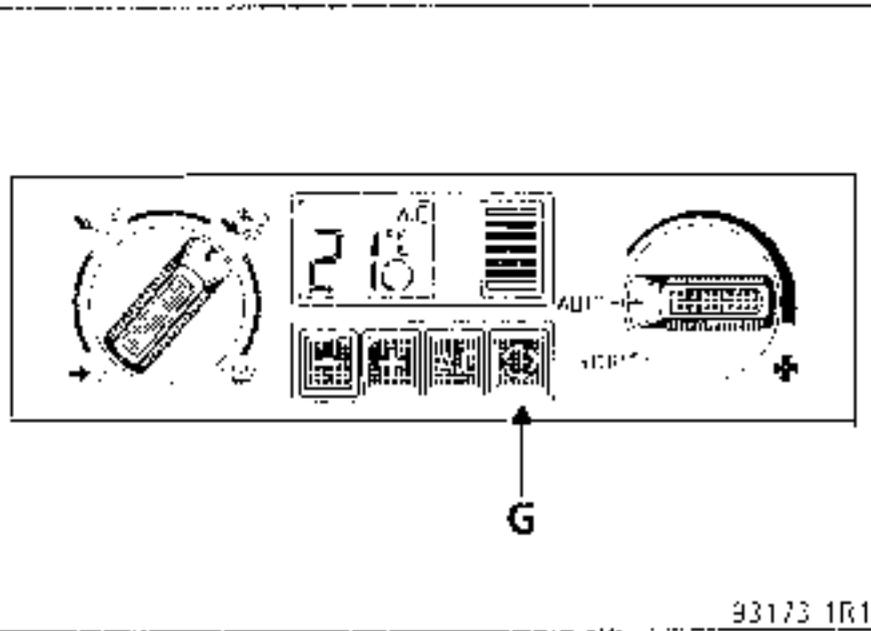
Press the "A-C" (E) key to activate the air conditioning system. The message "A-C" will appear on display (D). Cold air taken from outside the car is constantly renewed.

INTERNAL TEMPERATURE SENSOR (F) AND DISPLAY (D)



The internal temperature display and sensor have the same functions as those described in the "Heating - Ventilation" section.

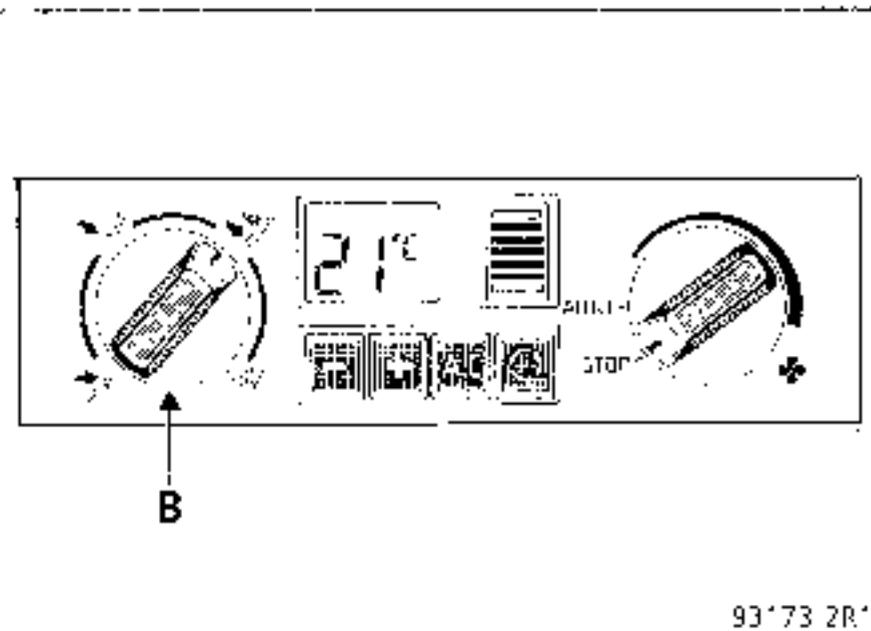
AIR RECIRCULATION CONTROL (G)



Press key (G) to activate the air recirculating system.

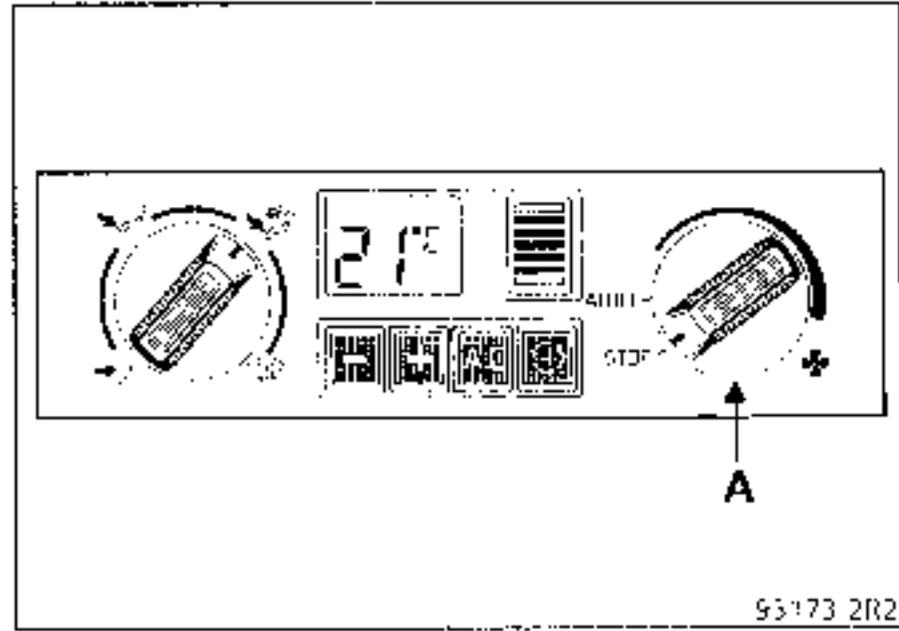
This control has the same function as the one described in the section entitled "Air conditioning control slide".

AIR DISTRIBUTION DIAL (B)



This control has the same functions as those described in the "Heating - Ventilation" section.

AIR FLOW DIAL (A)



This dial has the same function as that described in the "Regulated temperature" section

SPECIAL POINT :

STOP SETTING : This setting enables the fan to be stopped and closes off the system's air intake. In this case, the temperature regulating system is not operative.

SPECIAL OPERATION OF THE L485

Compressor controlled by the engine injection computer.

The computer receives two types of data relating to the heating and ventilation system :

- request to start the air conditioning system,
- authorisation to start the compressor, depending on the temperature conditions and pressure in the air conditioning system.

These two data, and the engine speed, coolant temperature and inlet manifold pressure, are processed by the computer so that it can control the compressor's magnetic clutch (via a relay) and the idling speed.

- When there is a request for the air conditioning to be activated, the computer increases the idling speed from **800 to 1000 rpm**.
- When the computer receives the signal authorising the activation of the compressor, the computer checks that :
 - a) the engine speed is less than **5000 rpm**, the coolant temperature is less than **105 °** and the inlet manifold pressure is less than **1.5 bars**.
 - b) the coolant temperature is less than **115 °C**.

If one or other of the conditions a) and b) is not complied with, the computer cuts off the compressor or will not allow it to start.

THERMOSTAT (all types)

The fixed thermostat prevents the compressor operating if the temperature of the air from the evaporator is less than **+ 4 °C**.

- 6 : Air conditioning fan assembly electronic module
- 7 : Resistor unit controlling module
- 18 : Blown air temperature sensor
- 19 : Electronic thermostat
- 103 : Alternator
- 104 : Ignition switch
- 120 : Injection computer
- 124 : Heater control
- 171 : Air conditioning clutch
- 188 : Cooling fan assembly
- 206 : Air conditioning three purpose pressure switch
- 208 : Integral electronic ignition module
- 209 : Combined lighting/direction indicators switch stalk and horn push
- 224 : Power-assisted steering pressostat
- 225 : Diagnostic plug
- 234 : Fan assembly relay
- 241 : Lighting shunt or rheostat
- 245 : External temperature sensor
- 248 : Fan assembly thermal switch
- 251 : Coolant dual-purpose thermal switch
- 257 : Preheater unit
- 259 : Thermal switch
- 260 : Fuse box
- 262 : Air conditioning cooling fan assembly
- 274 : Air conditioning solenoid valve
- 292 : Lighting rheostat relay
- 298 : Blower device
- 316 : Ignition 4' relay
- 319 : Air conditioning control panel
- 320 : Air conditioning/basic fan motor assembly
- 321 : Air conditioning fan motor assembly resistor
- 322 : Power-assisted steering air conditioning diode
- 323 : Power-assisted steering air conditioning solenoid valve diode
- 334 : Thermal cut out

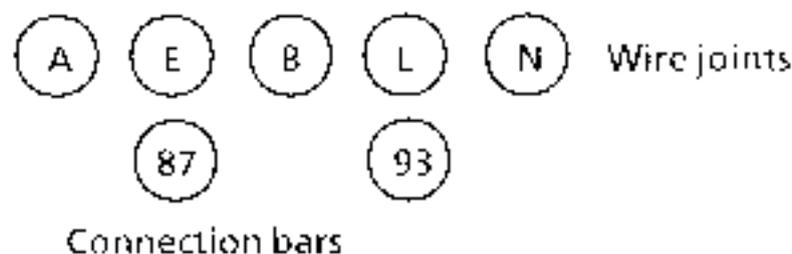
- 335 Fan assembly 1st speed relay
- 336 Fan assembly 2nd speed relay
- 337 Fan assembly 3rd speed relay
- 362 Battery - terminal plate
- 408 Evaporator sensor
- 412 Fast idling solenoid valve
- 417 Air conditioning recirculating relay
- 418 Passenger compartment temperature sensor fan
- 420 Mixer flap
- 474 Air conditioning compressor control relay
- 475 Recirculating motor

LIST OF JUNCTIONS

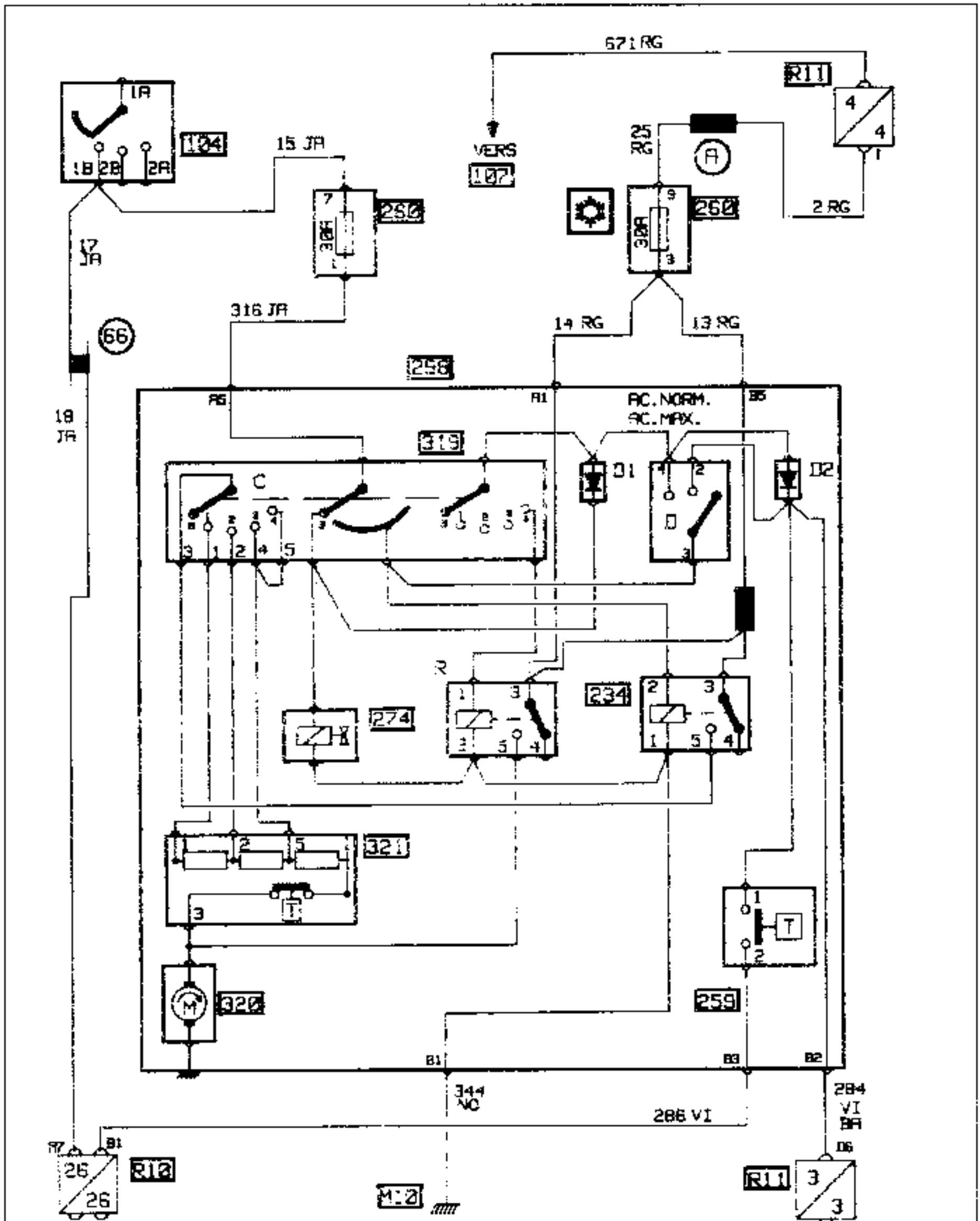
- R5 Dashboard/heater bulkhead
- R10 Dashboard/righthand side member
- R11 Dashboard/lefthand side member
- R17 Heater bulkhead/engine
- R21 Engine/fan assembly
- R28 Engine/lefthand side member
- R58 Fan assembly/righthand side member
- R59 Fan assembly/injection harness
- R63 Lefthand side member/injection harness
- R75 Fan assembly earth/fan assembly
- R99 Dashboard/heating system
- R138 Heater bulkhead/ABS
- R139 Engine/ABS

LIST OF EARTHS

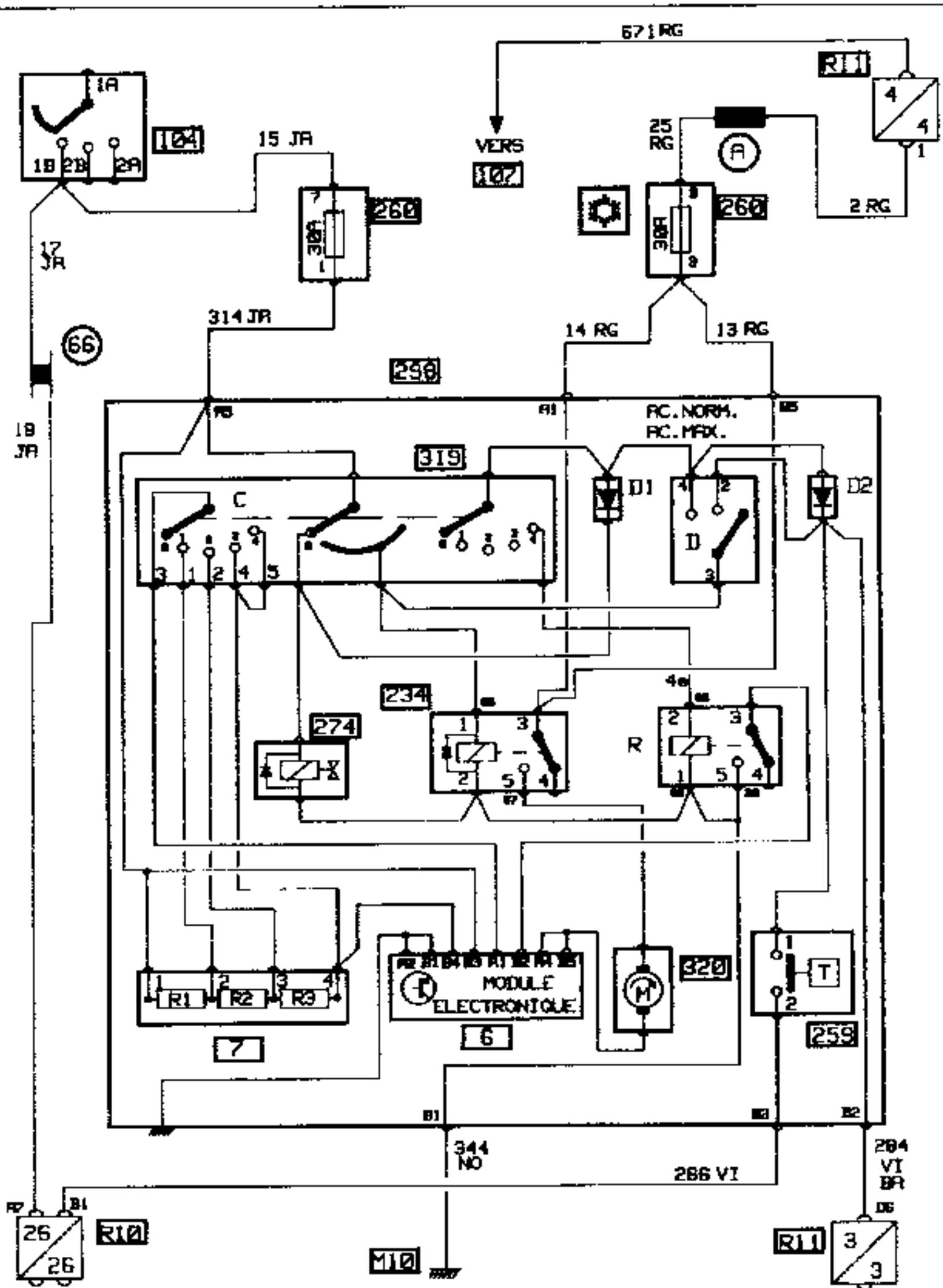
- M4 Bodywork earth
- M9 Front righthand pillar earth
- M10 Front lefthand pillar earth
- M16 Engine/bodywork earth



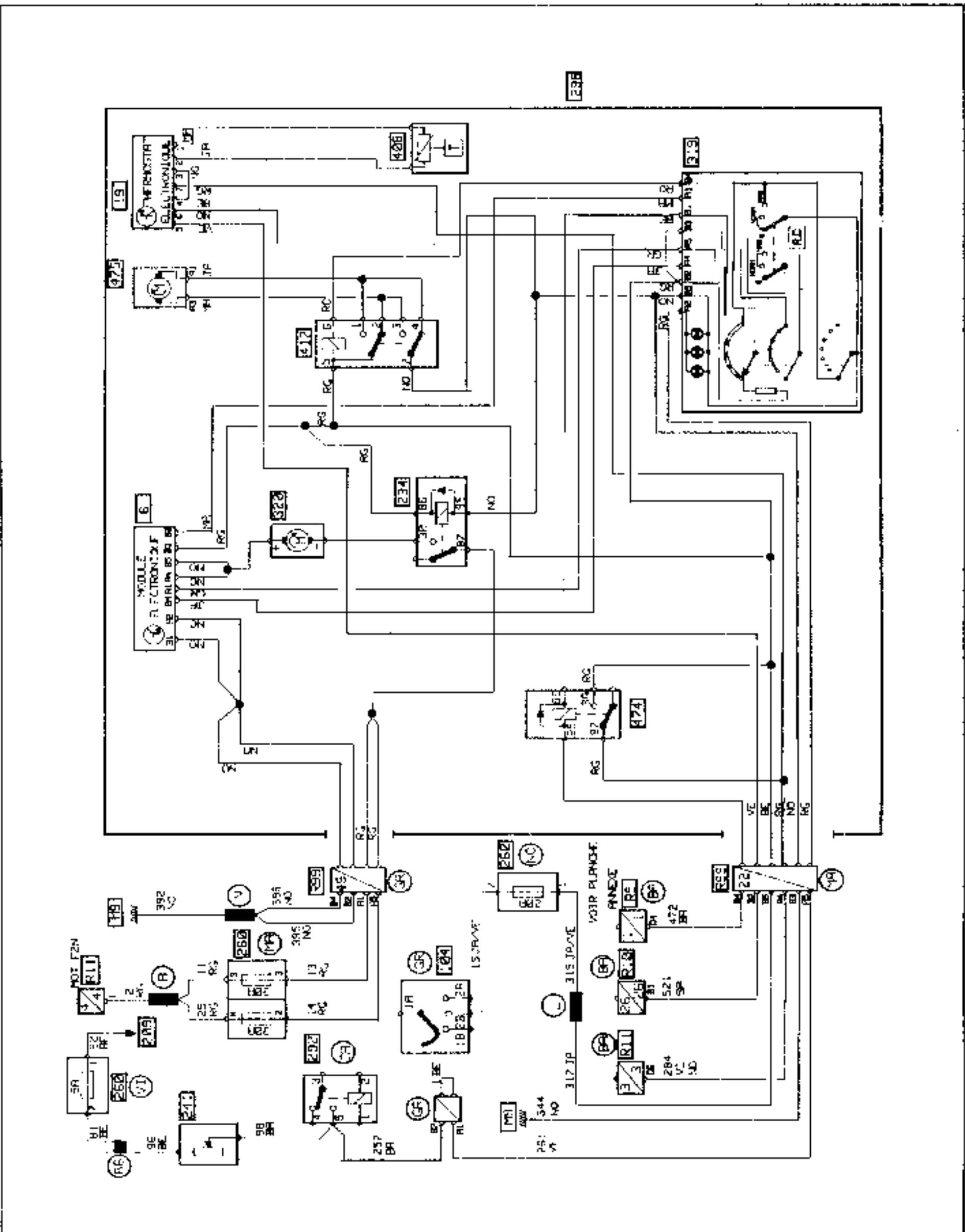
WIRING DIAGRAM - Passenger compartment end - ALL TYPES - 1987



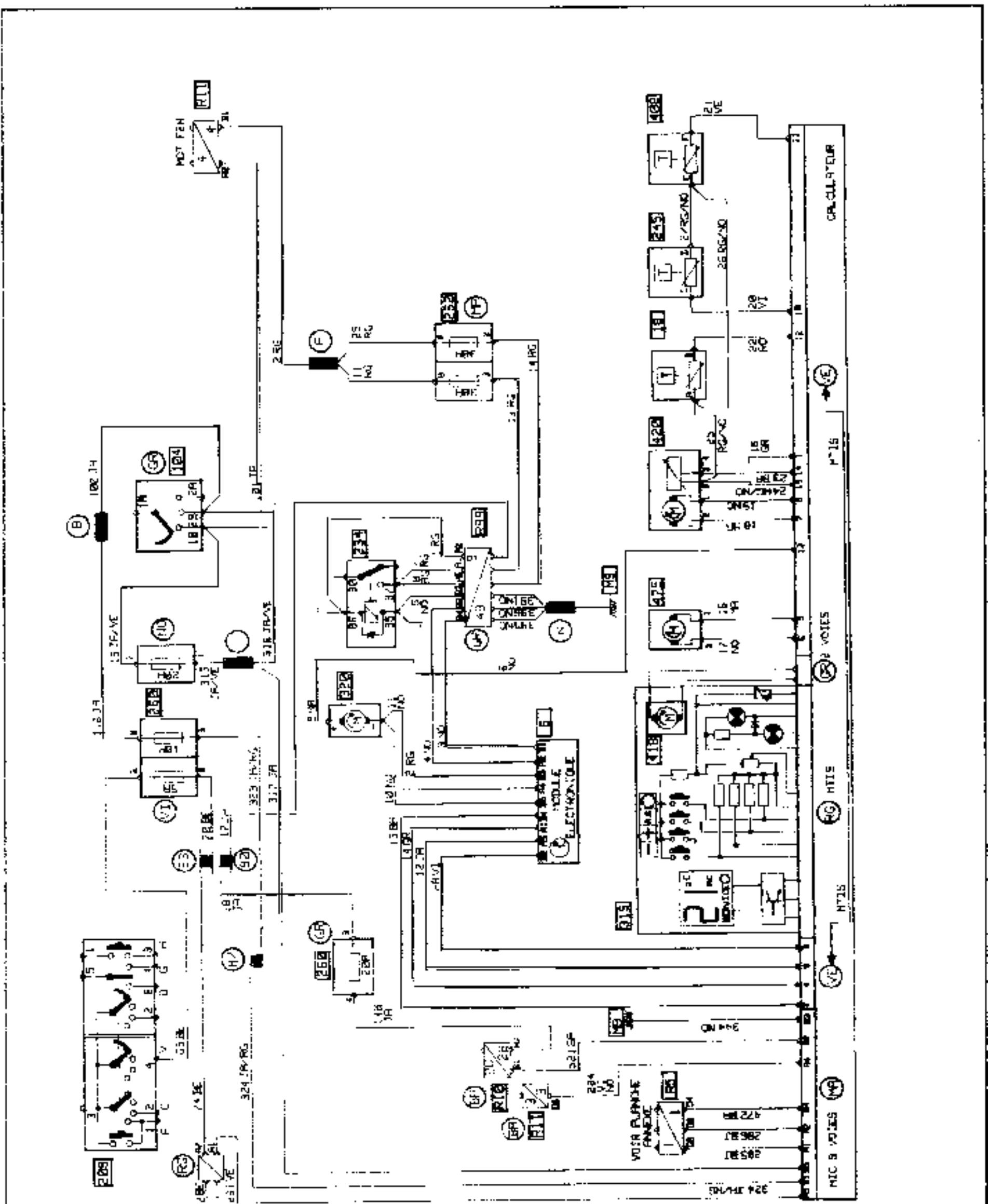
WIRING DIAGRAM - Passenger compartment end - ALL TYPES - 1989



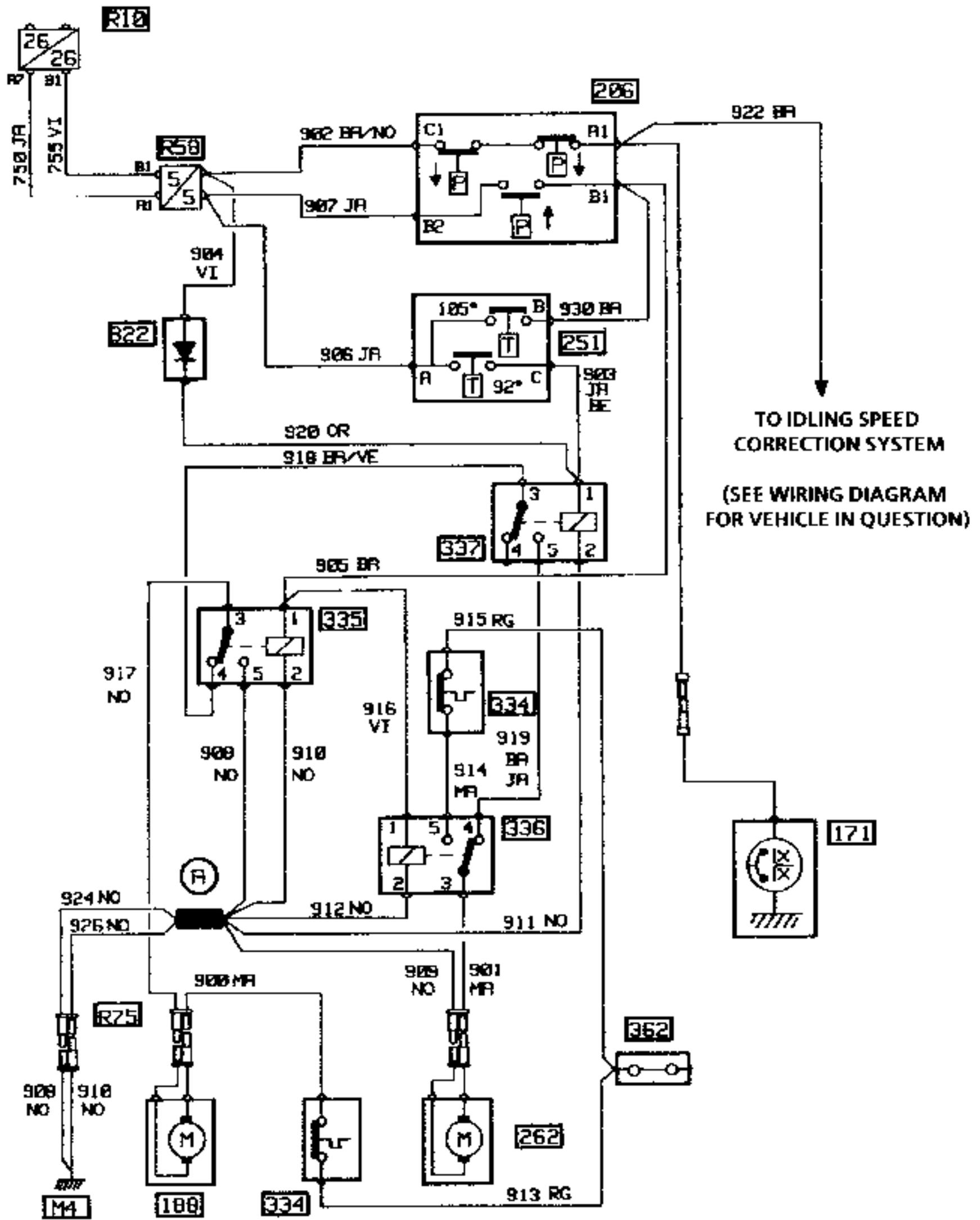
WIRING DIAGRAM - Passenger compartment end - ALL TYPES - 1990 - DAI



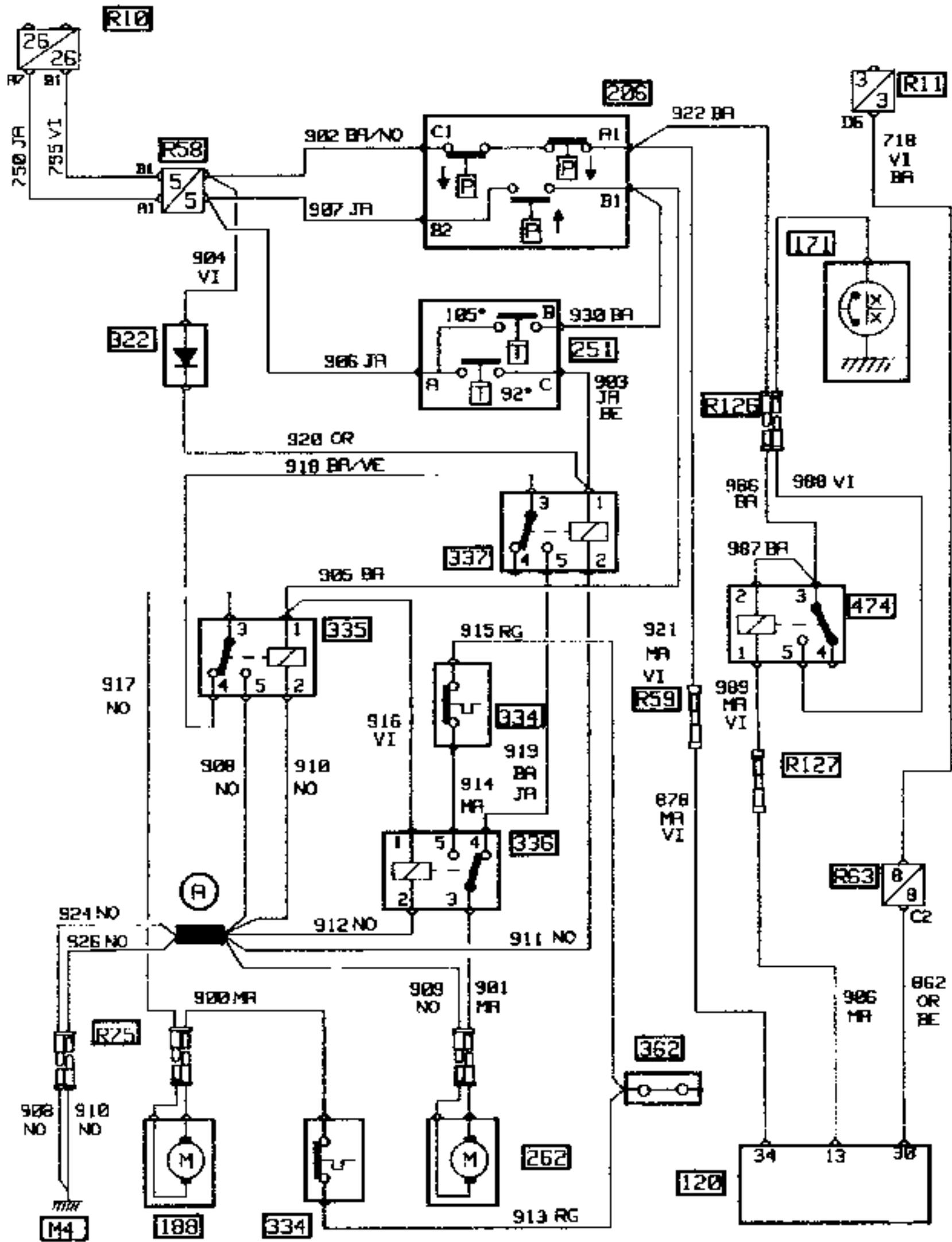
WIRING DIAGRAM - Passenger compartment end - VERSION WITH REGULATED TEMPERATURE - 1990 model

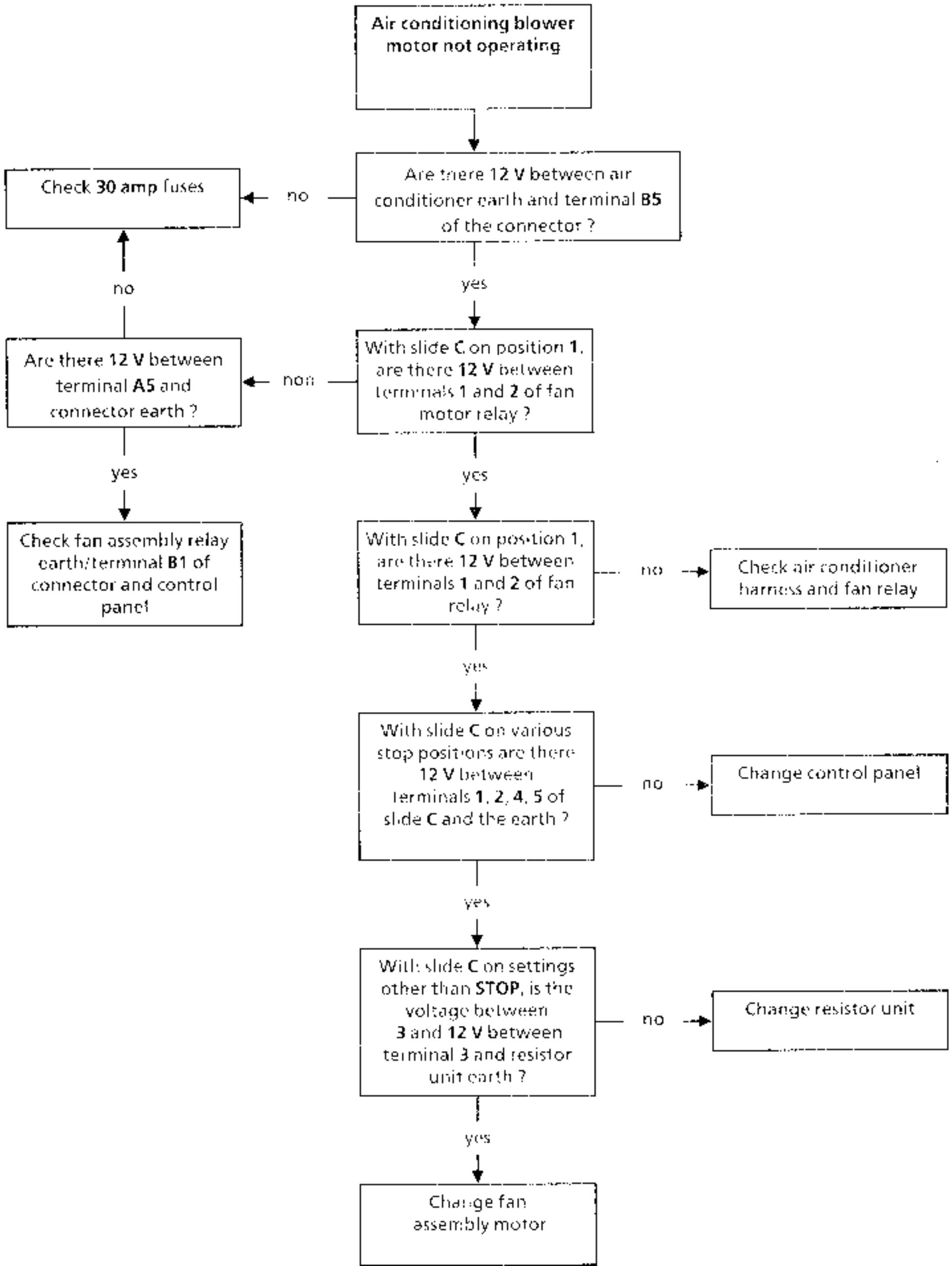


WIRING DIAGRAM - Engine end - X482 - X483 - X488 - X489 - 1987 - 1988 - 1989 models



WIRING DIAGRAM - Engine end - 1485 - 1988 - 1989 models

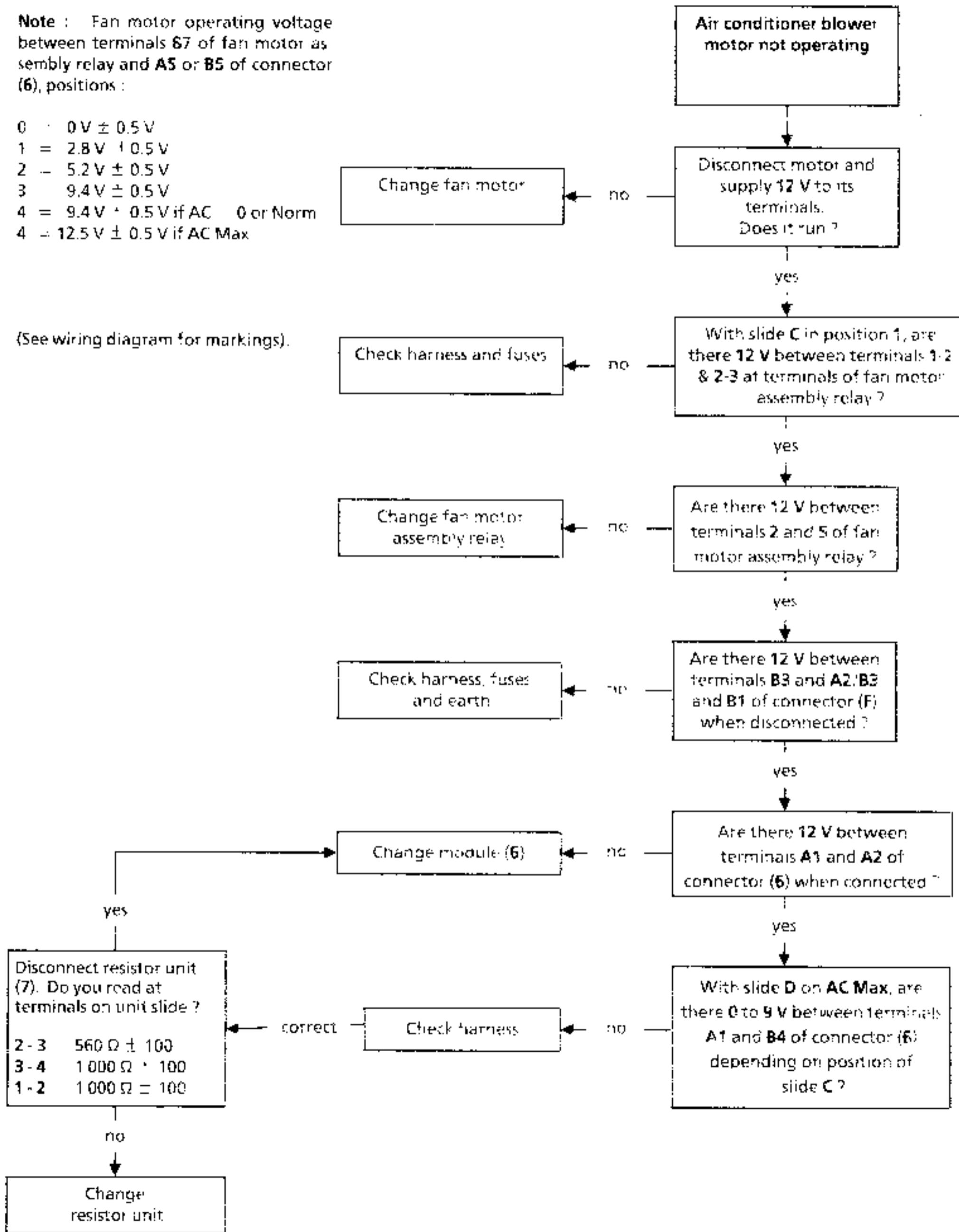


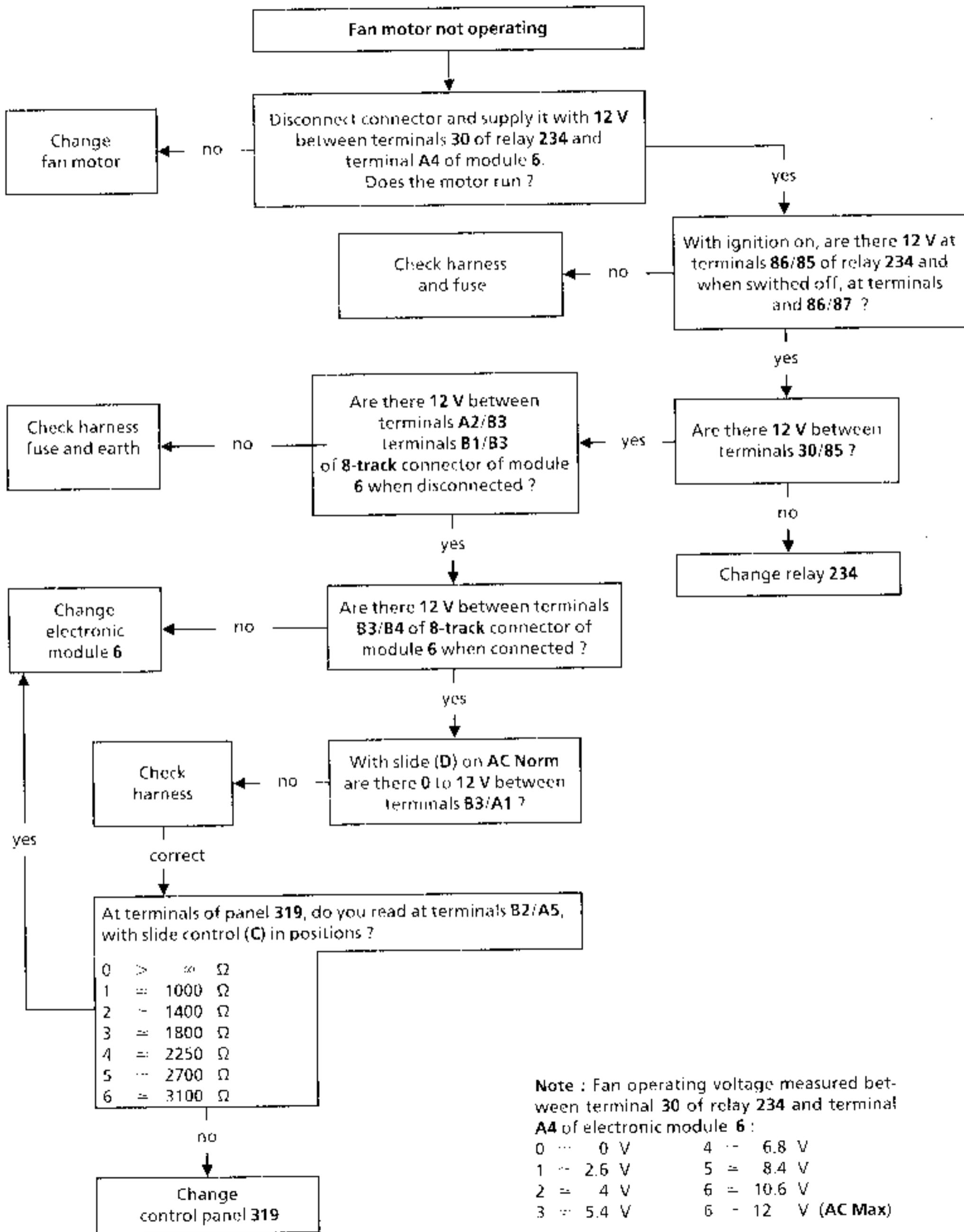


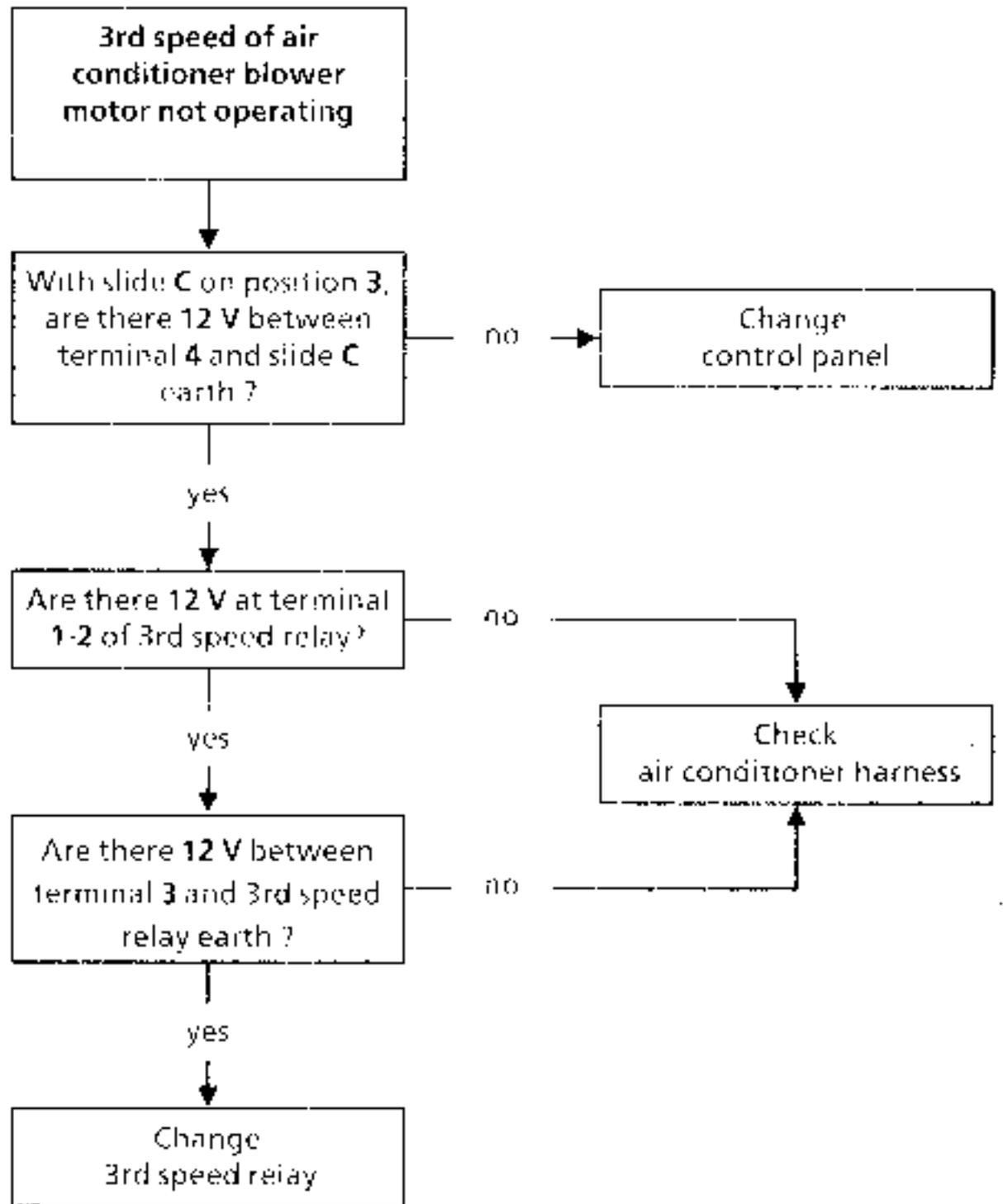
Note : Fan motor operating voltage between terminals **S7** of fan motor assembly relay and **A5** or **B5** of connector **(6)**, positions :

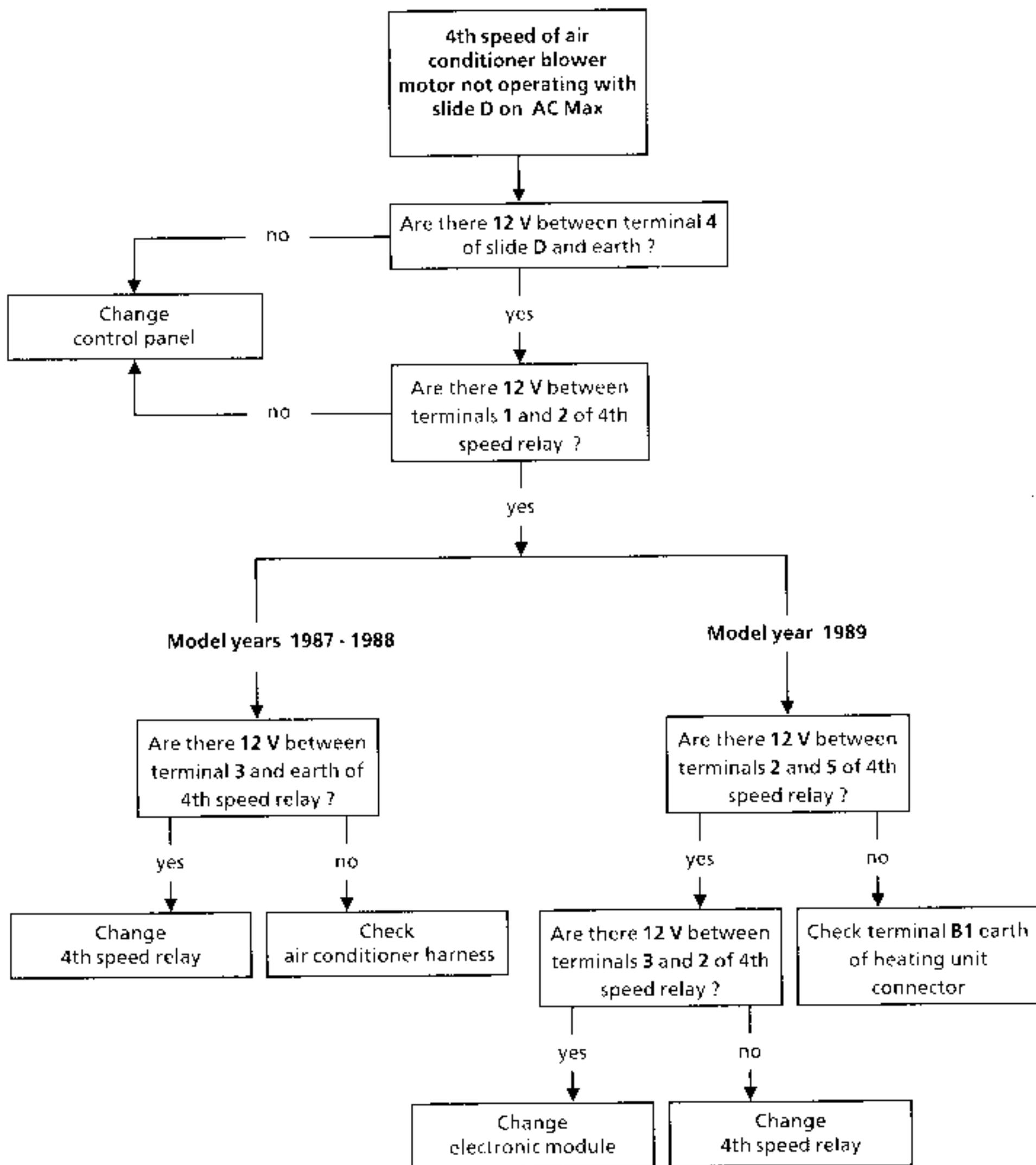
- 0 = $0V \pm 0.5V$
- 1 = $2.8V \pm 0.5V$
- 2 = $5.2V \pm 0.5V$
- 3 = $9.4V \pm 0.5V$
- 4 = $9.4V \pm 0.5V$ if AC 0 or Norm
- 4 = $12.5V \pm 0.5V$ if AC Max

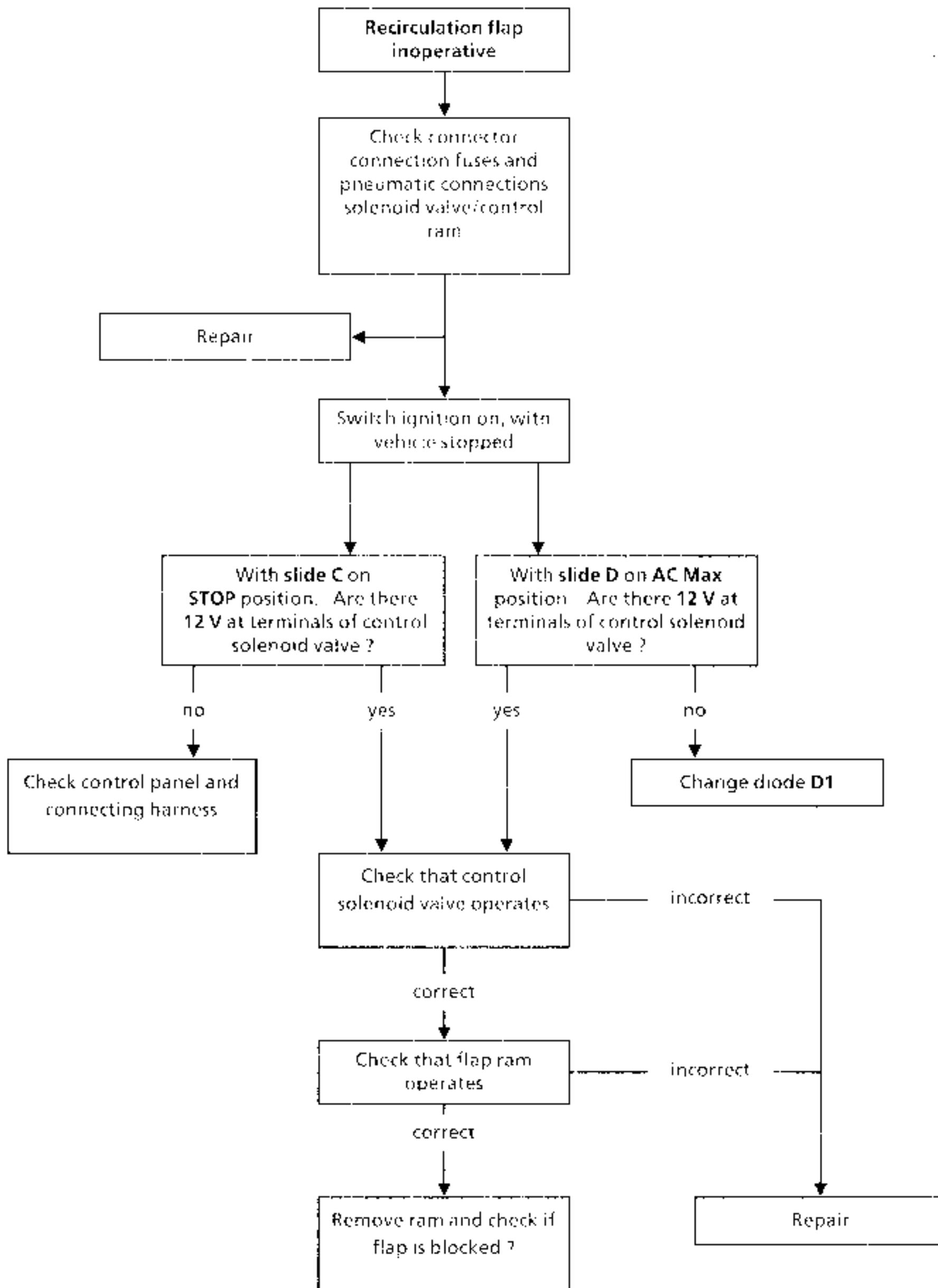
(See wiring diagram for markings).

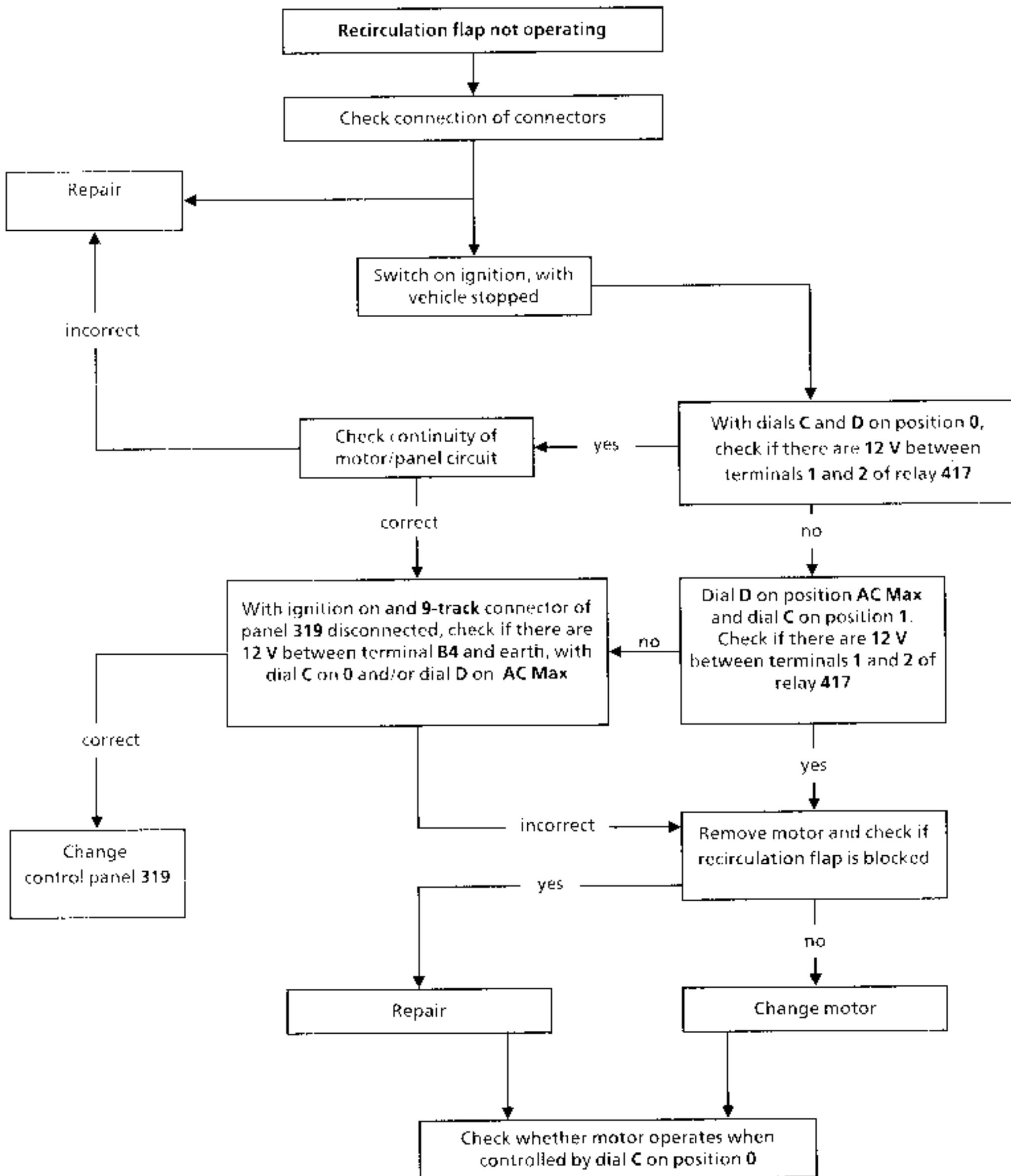




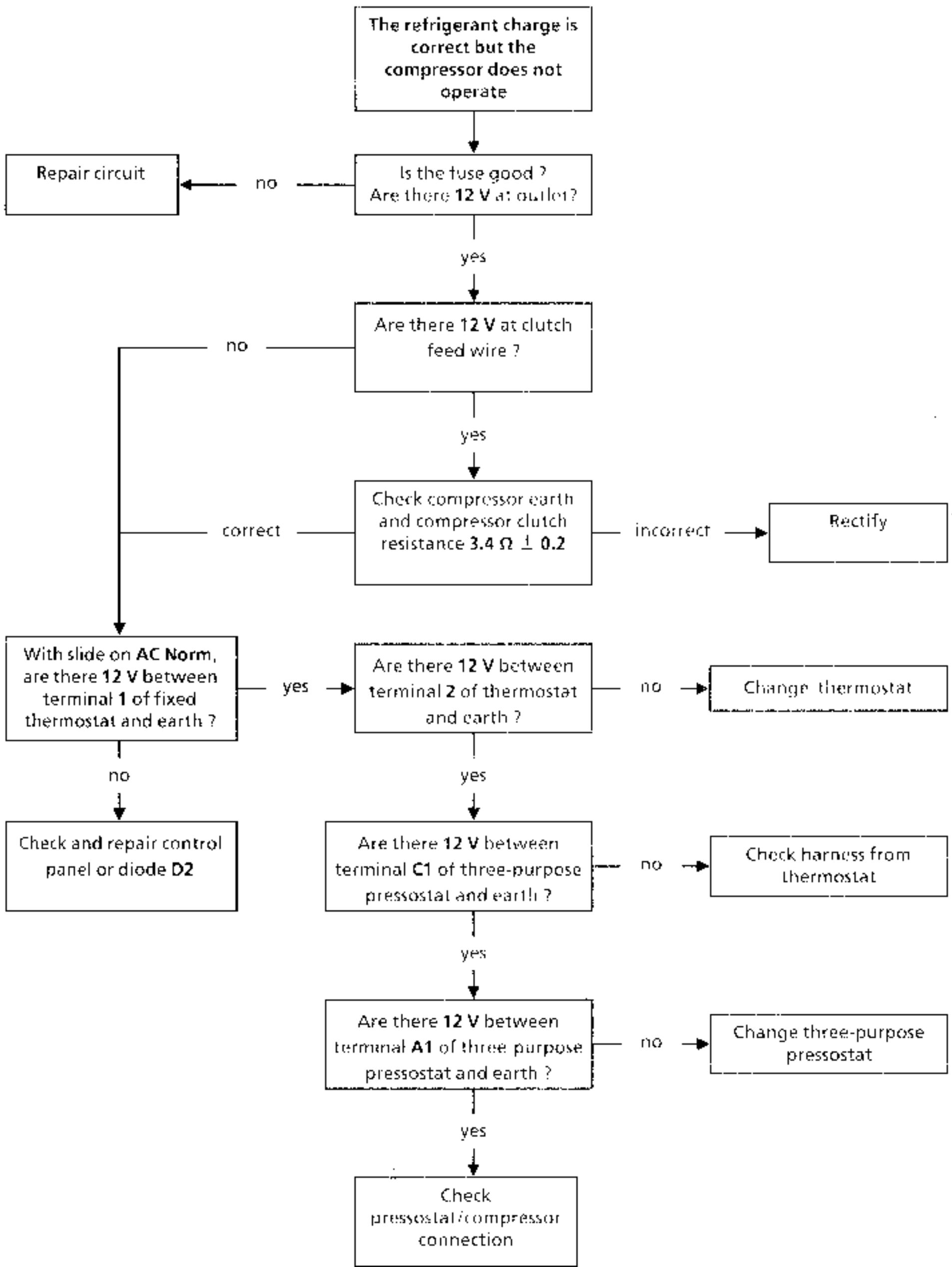




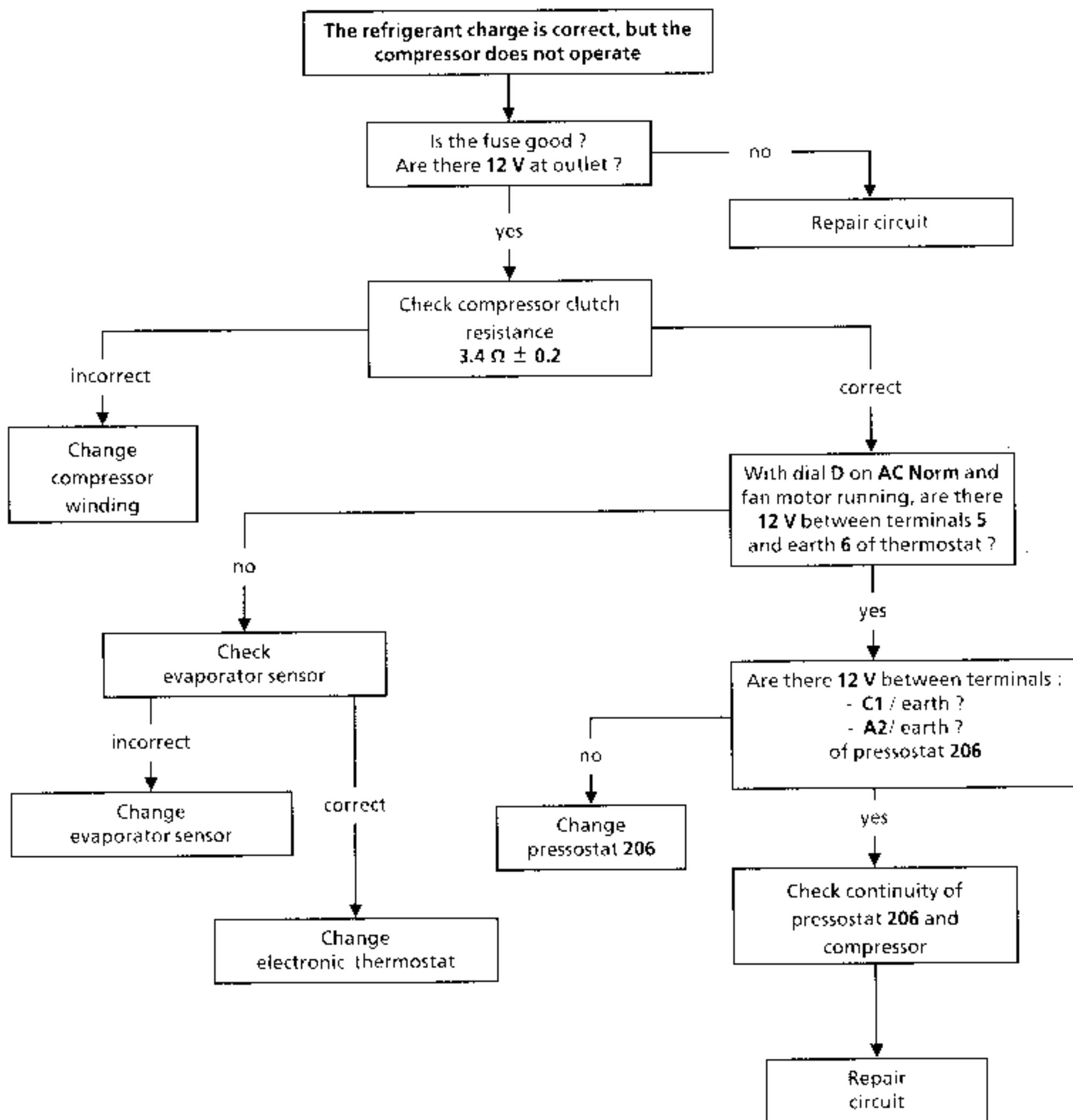


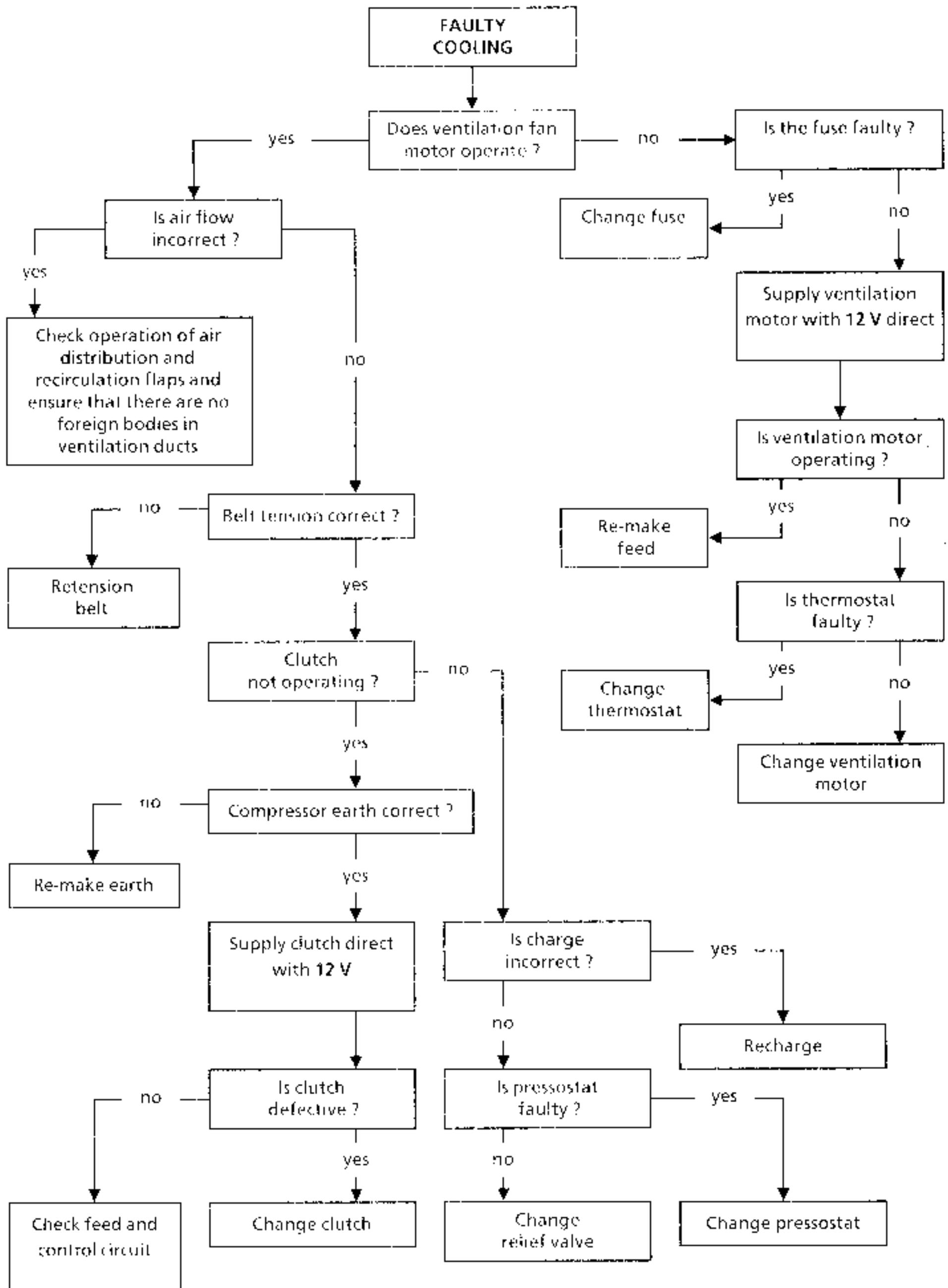


The air conditioning system can only be checked if the workshop temperature is greater than + 4 °C.



NOTE : The air conditioning system can only be checked if the workshop temperature is greater than + 4 °C.





GENERAL

The computer integrated in the control unit has a system for self-testing the peripheral units of the air conditioning system with temperature regulation.

If an incident occurs on one of the units, a warning is triggered and the "SERVICE" warning light on the instrument panel illuminates.

At the same time, it instructs the system to operate in **defect mode**, which enables the driver to reach the nearest workshop without major damage being caused to the system.

The incident which caused the warning light to illuminate can be displayed using the diagnostic plug, the **XR 25** test box and the appropriate cassette.

When an incident has occurred it is stored in the computer's "**non-volatile memory**" when the ignition has been switched off. This memory can be consulted at any time using the **XR 25** test box and the appropriate cassette.

If one of the peripheral units of the temperature regulating system breaks down, the computer illuminates the "SERVICE" warning light and activates the various defect modes for the system, which can differ according to which components are defective.

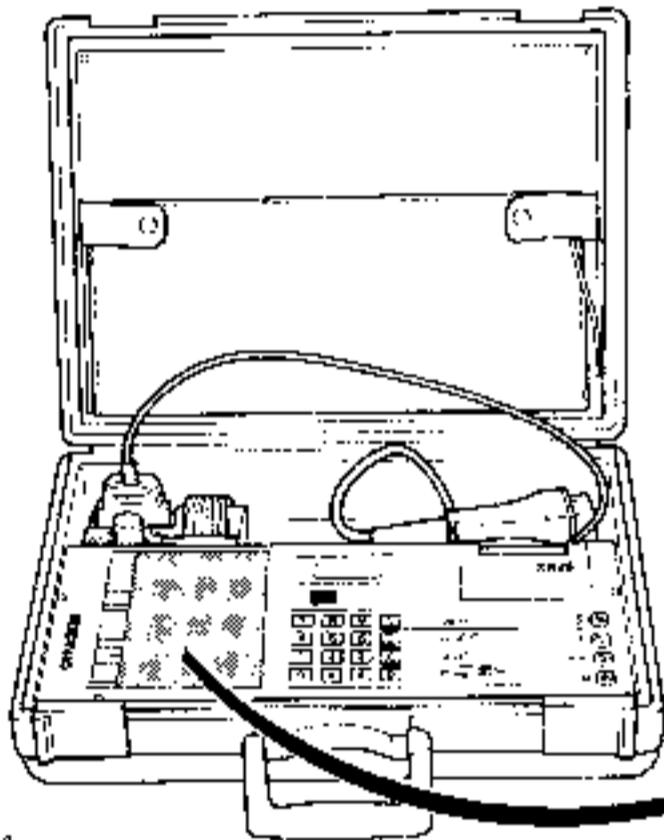
DEFECT MODES IN THE EVENT OF AN INCIDENT

Incident detected	Warning light illuminated	Corresponding defect mode
Internal temperature sensor	"SERVICE"	<ul style="list-style-type: none"> - Value imposed : 21 °C - Fan voltage imposed : minimum
External temperature sensor	"SERVICE"	<ul style="list-style-type: none"> - Value imposed : external temperature stored when incident occurred - Air inlet flap on external air position
Evaporator temperature sensor	"SERVICE"	<ul style="list-style-type: none"> - AC control on stop
Blown air temperature sensor	"SERVICE"	<ul style="list-style-type: none"> - Value imposed : external temperature stored when incident occurred
Fan assembly control potentiometer	"SERVICE"	<ul style="list-style-type: none"> - AUTO instruction for the air flow operating mode
Mixer flap copying potentiometer	"SERVICE"	<ul style="list-style-type: none"> - Extreme hot or extreme cold depending on external temperature - Air inlet in recirculation mode or external air mode depending on external temperature
Mixer motor	"SERVICE"	<ul style="list-style-type: none"> - Value imposed : external temperature stored when incident occurred - Air inlet flap on external air position
Recirculation motor	"SERVICE"	<ul style="list-style-type: none"> - Stop motor
Fan motor	"SERVICE"	<ul style="list-style-type: none"> - Stop motor, stop AC control
AC clutch current supply line	"SERVICE"	<ul style="list-style-type: none"> - Stop AC control

The **XR 25** test box is essential for fault-finding the air conditioning system with temperature regulation, irrespective of the origins of the incident.

It has a microprocessor and provides access to all the data supplied by the various sensors and enables the diagnostic message sent by the computer to be read.

It therefore enables the "non-volatile" memory in the computer to be erased after each operation on the air conditioning system with temperature regulation.



FICHE B9 C	
1	CODE PRESENT <input type="checkbox"/> B
2	M <input type="checkbox"/> + APC FAIBLE <input type="checkbox"/> LANTERNES ALLUMÉES <input type="checkbox"/> B
3	B <input type="checkbox"/> - CONTROLE DES COMMANDES STOP <input type="checkbox"/> B
4	B <input type="checkbox"/> + <input type="checkbox"/> + AC <input type="checkbox"/> AUTO <input type="checkbox"/> B
5	H <input type="checkbox"/> AC <input type="checkbox"/> AUTO STOP <input type="checkbox"/> MDR <input type="checkbox"/> B
6	B <input type="checkbox"/> <input type="checkbox"/> (S'ALLUME SOUS L'ACTION DES COMMANDES)
7	CO <input type="checkbox"/> DEF AUT TEMPERATURE INTERIEURE <input type="checkbox"/> CC
8	CO <input type="checkbox"/> DEF AUT TEMPERATURE EXTERIEURE <input type="checkbox"/> CC
9	CO <input type="checkbox"/> DEF AUT TEMPERATURE EVAPORATEUR <input type="checkbox"/> CC
10	CO <input type="checkbox"/> DEF AUT TEMPERATURE AIR SOUFFLE <input type="checkbox"/> CC
CLIMATISATION REGULEE CODE : D 0 7 (S8) (EFFACEMENT MEMOIRE : G 0 - +) (FIN DE DIAGNOSTIC : G 1 3 - +)	
11	M <input type="checkbox"/> GMV (POT) V MIXAGE <input type="checkbox"/> M
12	CO <input type="checkbox"/> MOTEUR GMV <input type="checkbox"/> CC
13	CO <input type="checkbox"/> MOTEUR TURBINE <input type="checkbox"/> CC
14	CO <input type="checkbox"/> MOTEUR MIXAGE <input type="checkbox"/> CC
15	CO <input type="checkbox"/> MOTEUR RECYCLAGE <input type="checkbox"/> CC
16	CO <input type="checkbox"/> LIGNE COM. EMB. AC <input type="checkbox"/> CC
17	RECYCLAGE FORCE (!) <input type="checkbox"/> B
18	POSITION VOLET (!) <input type="checkbox"/> B
19	<input type="checkbox"/> COMMANDE DE L'AC (!) <input type="checkbox"/> REGULATION REFRIGERANTE (!) <input type="checkbox"/> B
20	DEMANDE MEMORISATION XR25 (D) <input type="checkbox"/> B
(1) VOIR CONDITIONS D'ESSAIS DANS M R	

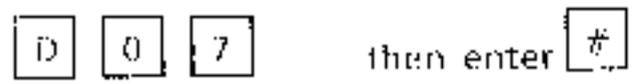
TOUCHES #	TEMPERATURES (°C):
01	EXTERIEURE
02	INTERIEURE
03	EVAPORATEUR
04	AIR SOUFFLE
05	POT DE RECOPIE VOLET MIXAGE (1%)
06	POT COMMANDE VITESSE GMV (1%)
07	TENSION COMMANDE SUR GMV (VOLTS)

9265651

21620*

USING THE XR 25 WITH CASSETTE N° 8

- Connect the XR 25 to the diagnostic socket.
- Move selector to **S8**.
- Switch on the ignition
- Enter the special temperature regulation code followed by two figures for accessing the various data emitted by the computer.



IMPORTANT : Fault-finding the temperature regulating system using the XR 25 test box slows down its operation to approximately one third its normal speed.

0 1

EXTERNAL TEMPERATURE : value given in degrees celsius

20

All versions with regulated temperature

0 2

INTERNAL TEMPERATURE : value given in degrees celsius

25

All versions with regulated temperature

0 3

EVAPORATOR TEMPERATURE : value given in degrees celsius

18

Only on versions with air conditioning and regulated temperature

0 4

BLOWN AIR TEMPERATURE : value given in degrees celsius

22

All versions with regulated temperature

0 5

MIXER FLAP COPPING POTENTIOMETER

0

Value given as %
All versions with regulated temperature
0 % is the extreme cold setting

100

100 % is the extreme hot setting

0 6

FAN MOTOR SPEED CONTROL POTENTIOMETER

50

Value given as %
All versions with regulated temperature

0 6

CONTROL VOLTAGE APPLIED TO FAN MOTOR

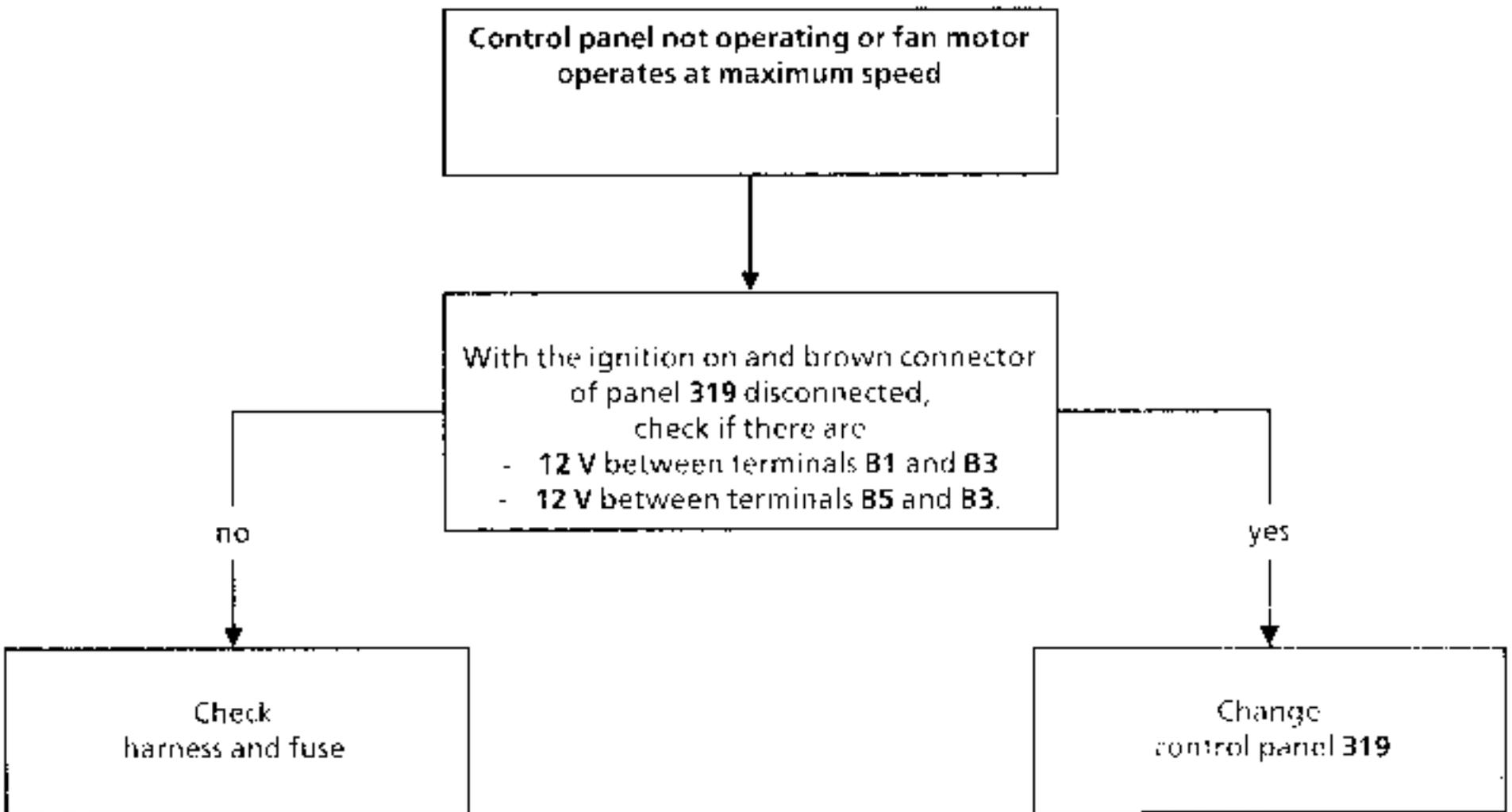
12.8

Value given as %
All versions with regulated temperature

Shows where the bargraph can illuminate

		Fiche 89 S			
<input type="checkbox"/>	<input type="checkbox"/>	1		CODE PRESENT	B
<input type="checkbox"/>	<input type="checkbox"/>	2	M	+ APC FAIBLE	LANTERNES ALLUMÉES B
<input type="checkbox"/>	<input type="checkbox"/>	3	B	-	CONTROLE DES COMMANDES STOP B
<input type="checkbox"/>	<input type="checkbox"/>	4	B	+	AUTO B
<input type="checkbox"/>	<input type="checkbox"/>	5	B	AC	MINI B
<input type="checkbox"/>	<input type="checkbox"/>	6	B	(S'ALLUME SOUS L'ACTION DES COMMANDES)	
<input type="checkbox"/>	<input type="checkbox"/>	7	CO	DEFAULT TEMPERATURE INTERIEURE	CC
<input type="checkbox"/>	<input type="checkbox"/>	8	CO	DEFAULT TEMPERATURE EXTERIEURE	CC
<input type="checkbox"/>	<input type="checkbox"/>	9	CO	DEFAULT TEMPERATURE EVAPORATEUR	CC
<input type="checkbox"/>	<input type="checkbox"/>	10	CO	DEFAULT TEMPERATURE AIR SOUFFLE	CC
CLIMATISATION REGULEE CODE : D07 (S8) (EFFACEMENT MEMOIRE : GO ^{**}) (FIN DE DIAGNOSTIC : G 13 [*])					
<input type="checkbox"/>	<input type="checkbox"/>	11	M	GMV ←(POT)→ VOLET MIXAGE	M
<input type="checkbox"/>	<input type="checkbox"/>	12	CO	MOTEUR GMV	CC
<input type="checkbox"/>	<input type="checkbox"/>	13	CO	MOTEUR TURBINE	CC
<input type="checkbox"/>	<input type="checkbox"/>	14	CO	MOTEUR MIXAGE	CC
<input type="checkbox"/>	<input type="checkbox"/>	15	CO	MOTEUR RECYCLAGE	CC
<input type="checkbox"/>	<input type="checkbox"/>	16	CO	LIGNE COM. EMB. AC	CC
<input type="checkbox"/>	<input type="checkbox"/>	17		RECYCLAGE FORCE (!)	B
<input type="checkbox"/>	<input type="checkbox"/>	18		POSITION VOLET (!)	B
<input type="checkbox"/>	<input type="checkbox"/>	19		COMMANDE DE L'AC (!)	REGULATION REFRIGERANTE (!)
<input type="checkbox"/>	<input type="checkbox"/>	20		DEMANDE MEMORISATION XR 25 (0)	
(!) VOIR CONDITIONS D'ESSAIS DANS MR					

- TOUCHES #
- TEMPERATURES (°C)
- 01 EXTERIEURE
 - 02 INTERIEURE
 - 03 EVAPORATEUR
 - 04 AIR SOUFFLE
 - 05 POT DE RECOPIE
VOLET DE MIXAGE (%)
 - 06 POT COMMANDE
VITESSE GMV (%)
 - 07 TENSION COMMANDE
SUR GMV (VOLTS)



Control panel
operating abnormally

Illumination of the bargraph tested by pressing on
the control panel keys

KEY DEPRESSED	RIGHTHAND SIDE OF BARGRAPH ILLUMINATES
-	3 illuminated
+	4 illuminated
AC	5 illuminated
	6 illuminated
KEY DEPRESSED	LEFTHAND SIDE OF BARGRAPH ILLUMINATES
STOP	3 illuminated
AUTO	4 illuminated
MANUAL	5 illuminated

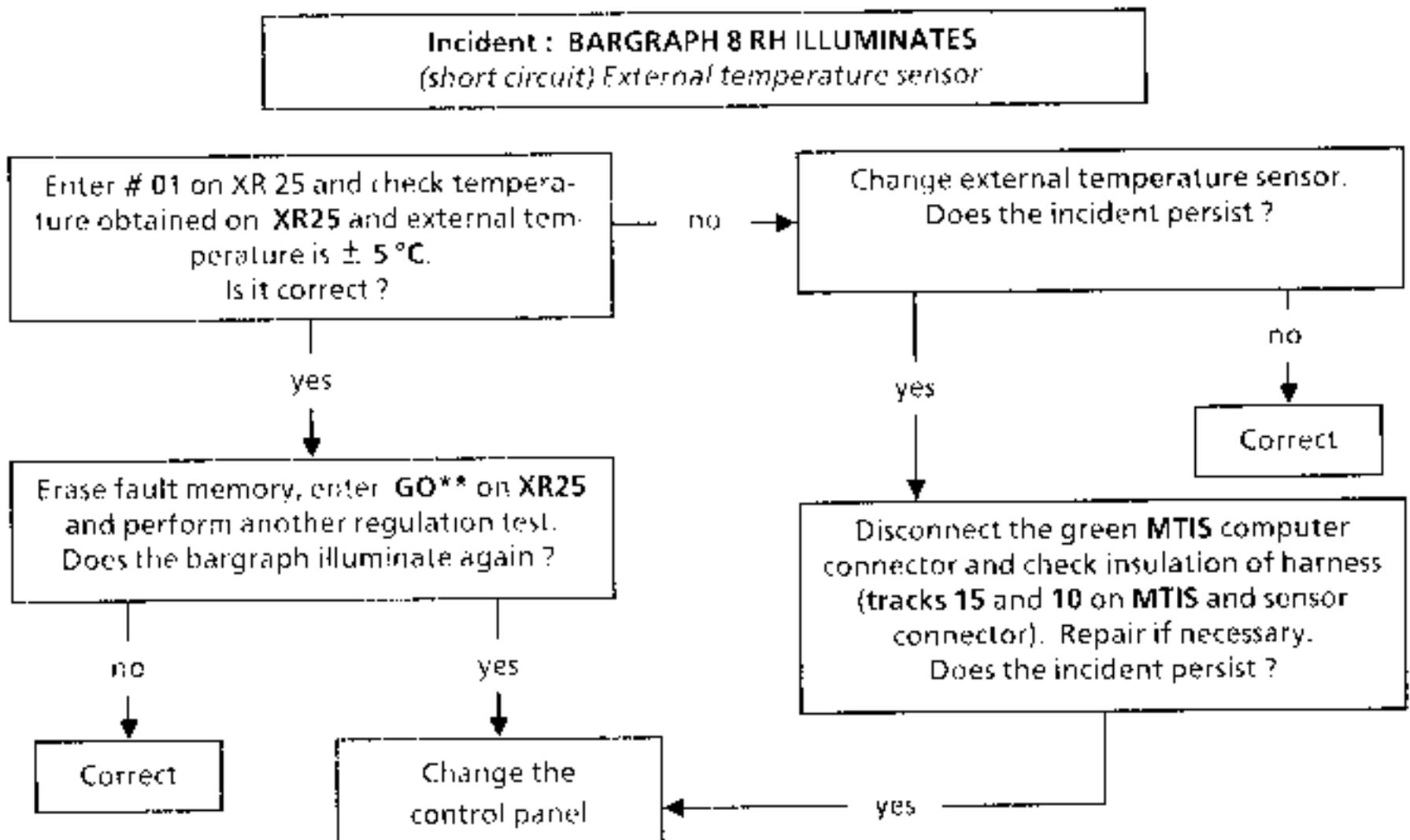
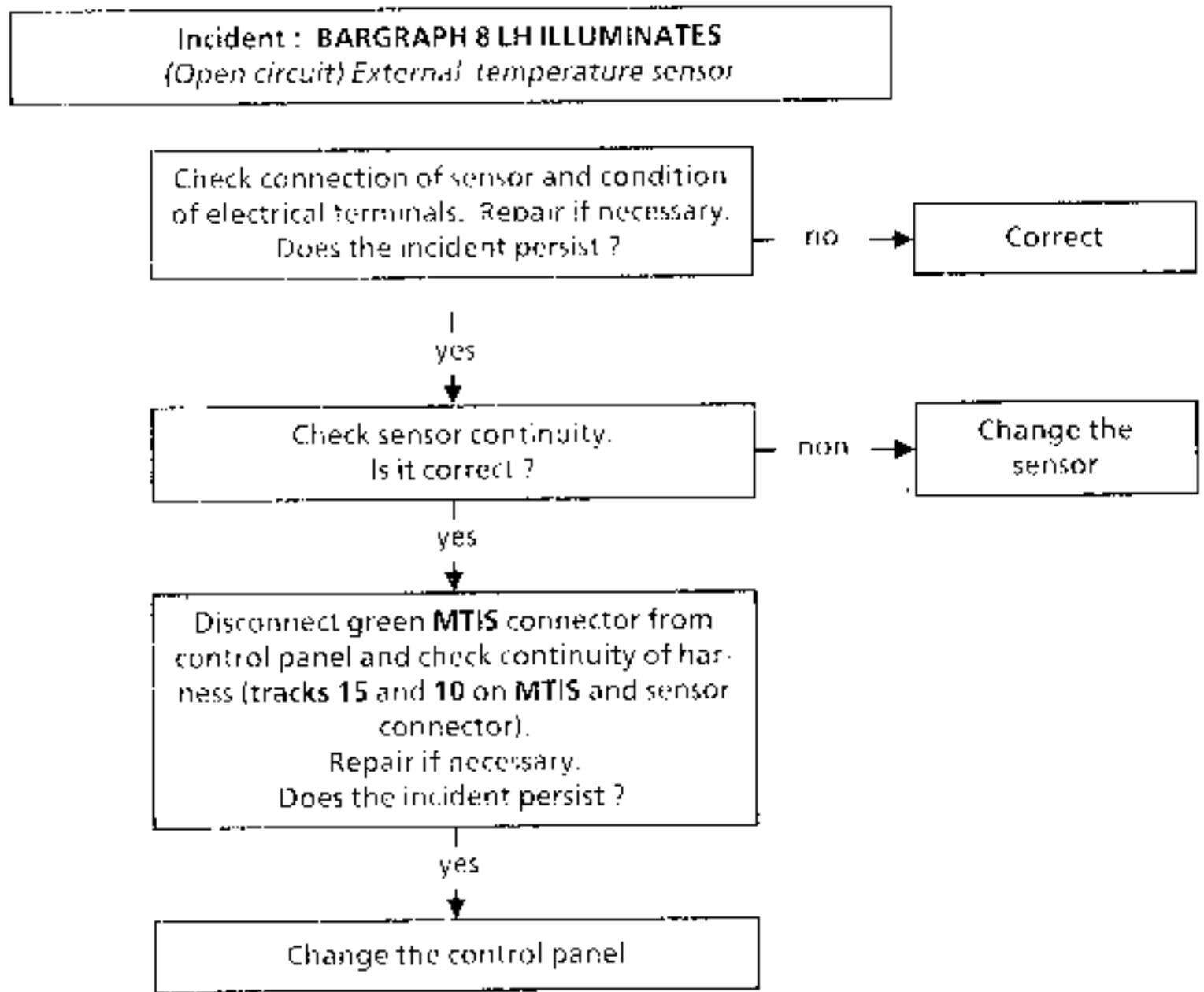
One or more bargraphs not illuminating or
extinguishing

Change the control panel

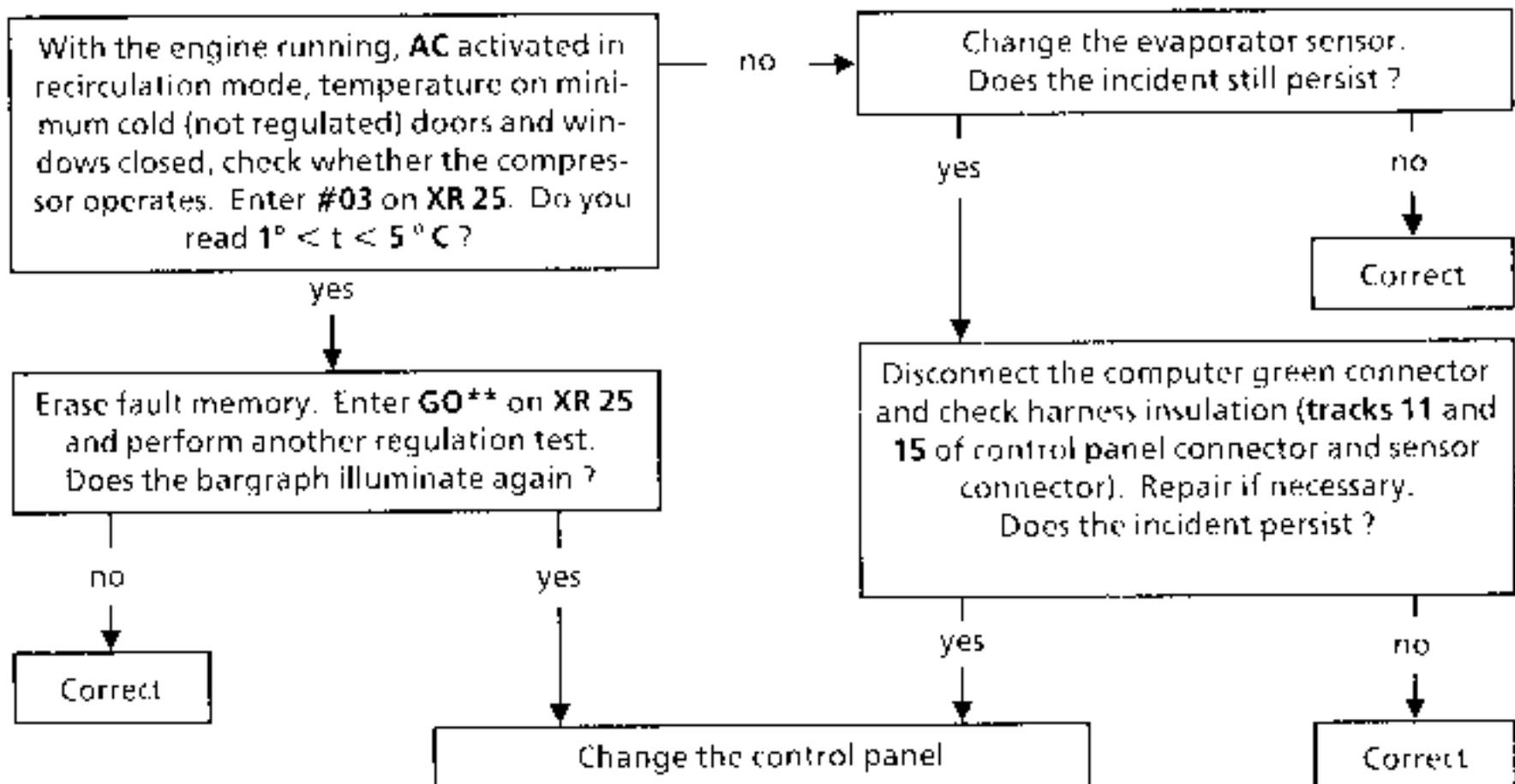
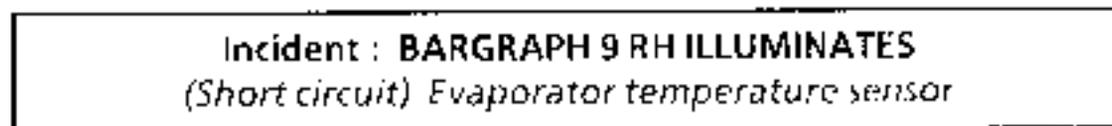
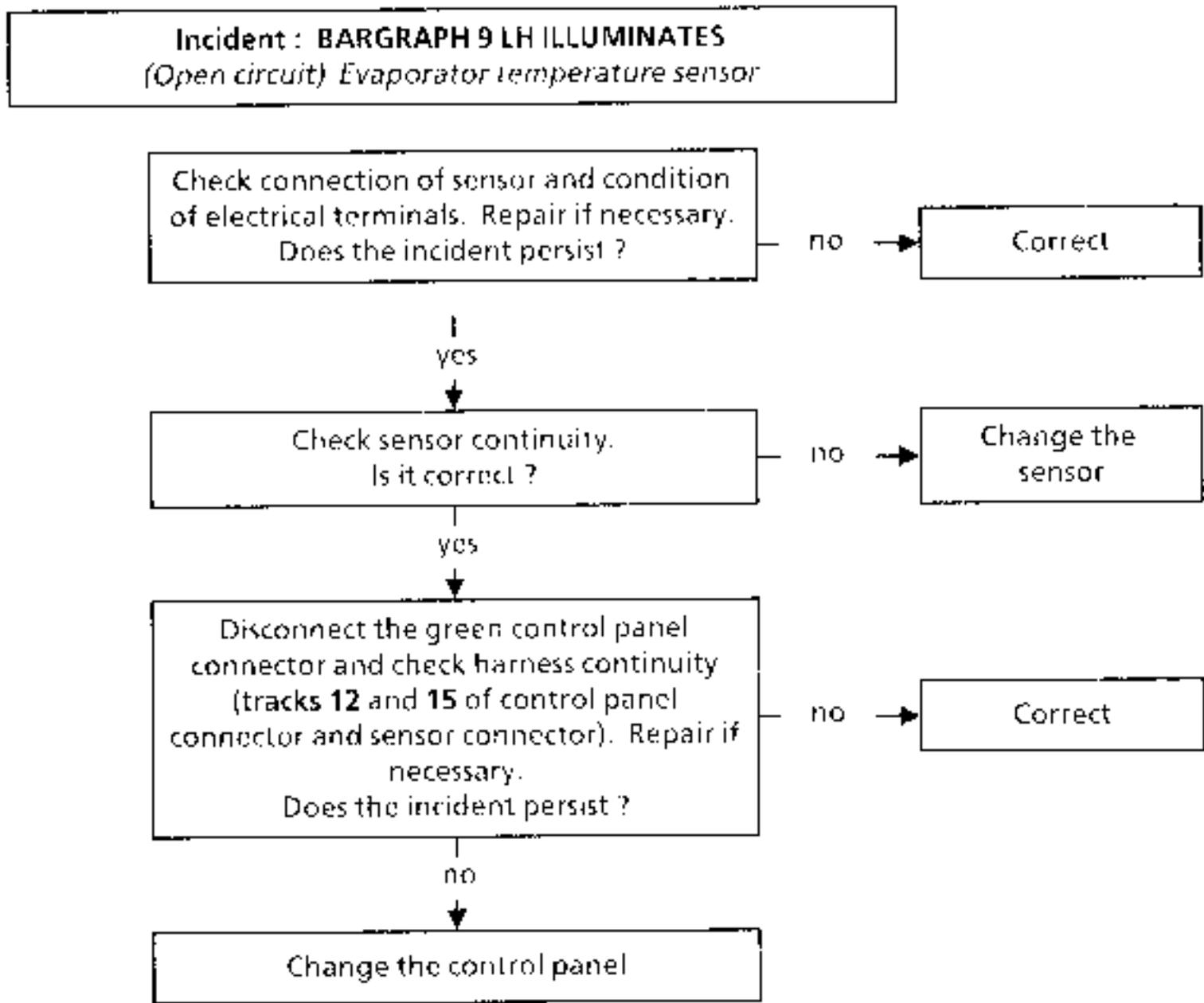
Incident : **BARGRAPH 7 LH or BARGRAPH 7 RH ILLUMINATES**
Internal temperature sensor

Change the
control panel (*)

* In the case where a bargraph is flashing, erase the fault memory using **GO**** and perform another test before changing the control panel.

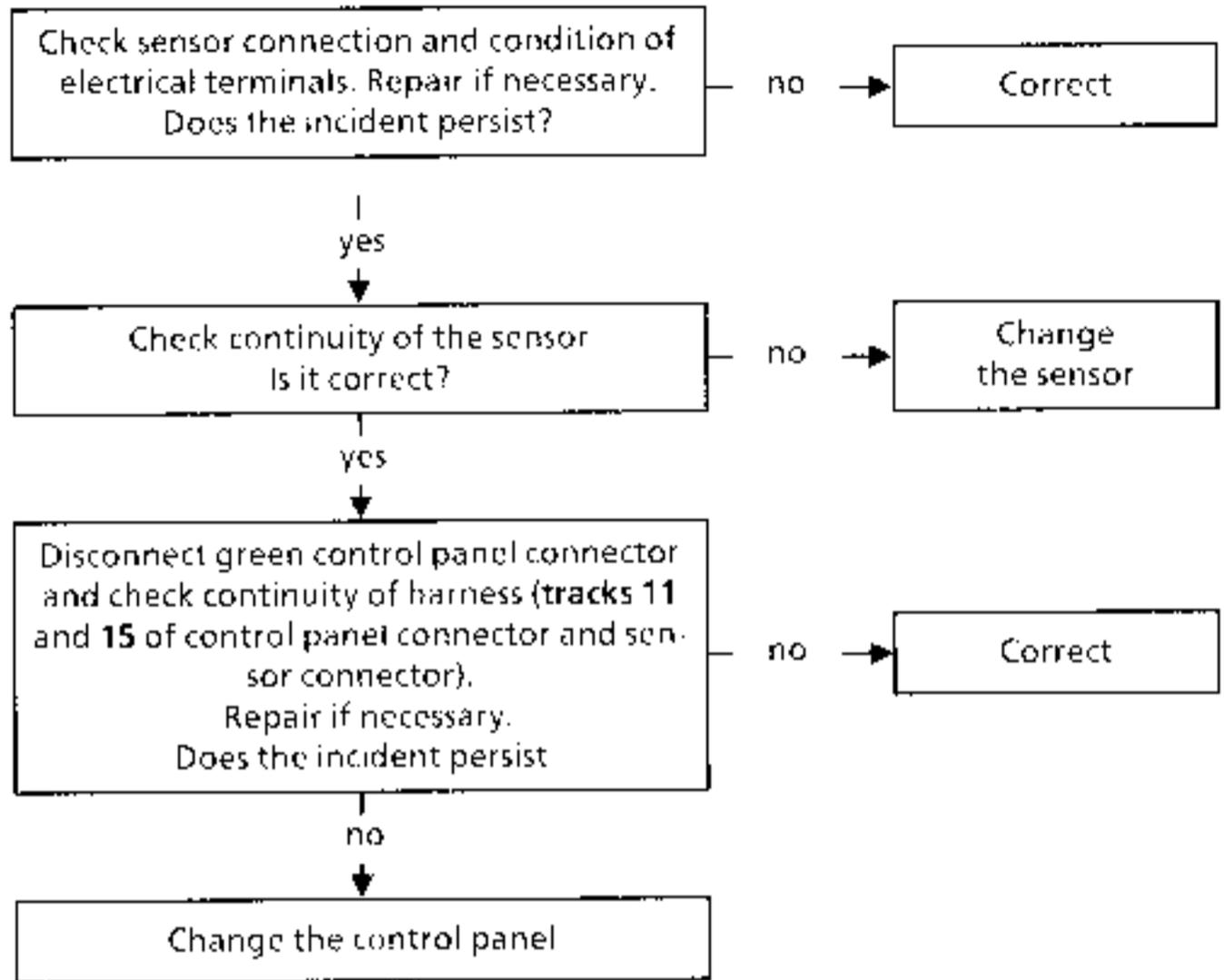


Note : In the case where a bargraph is flashing, erase the fault memory using **GO**** and perform another test.

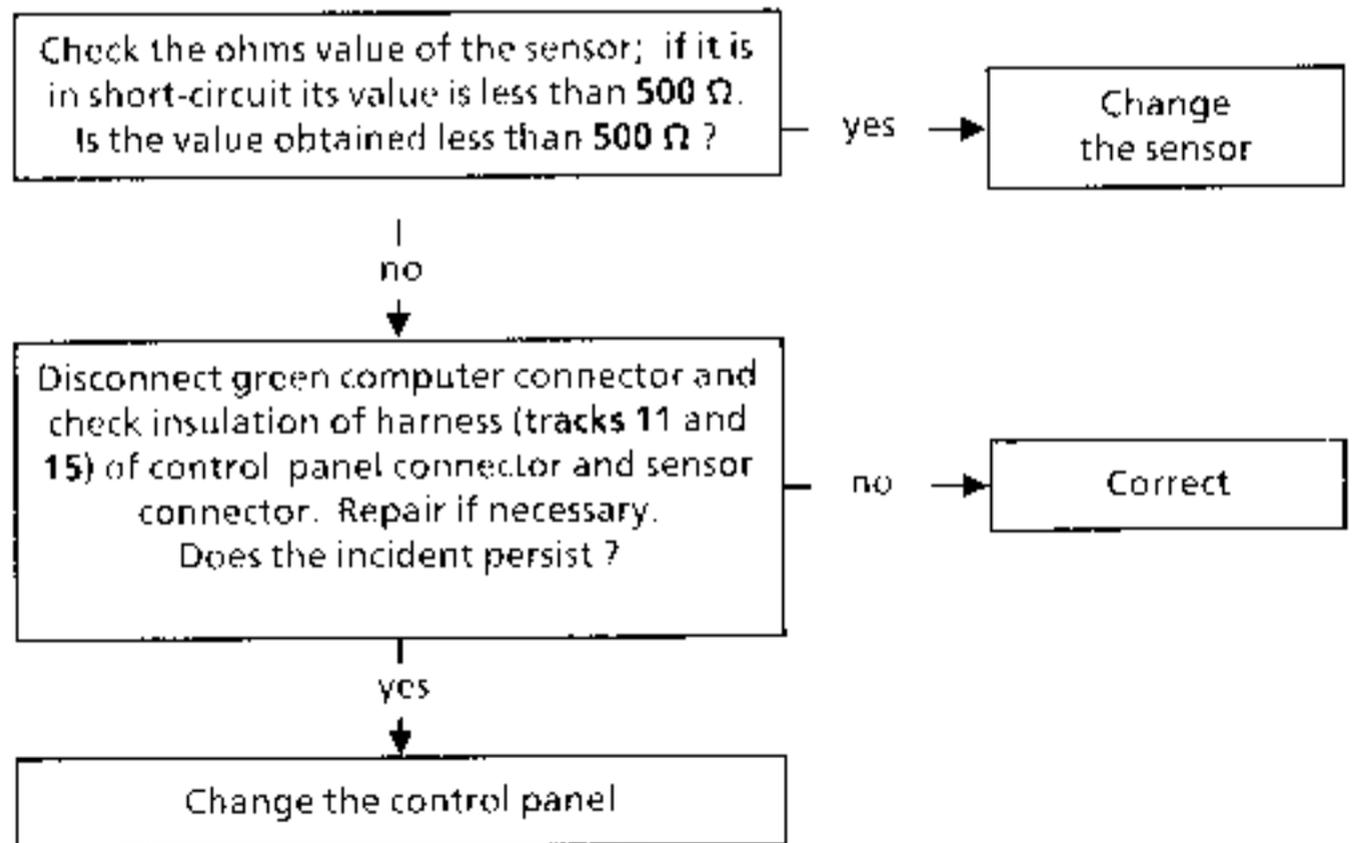


Note : In the case where a bargraph is flashing, erase the fault memory using **GO**** and perform another test.

Incident : BARGRAPH 10 LH ILLUMINATES
(Open circuit) Blown air temperature sensor at heater radiator outlet



Incident : BARGRAPH 10 RH ILLUMINATES
(Short circuit) Air temperature sensor at heater radiator outlet



Note : In the case where a bargraph is flashing, erase the fault memory using **GO**** and perform another test.

Incident : BARGRAPH 11 LH ILLUMINATES
Mixer flap potentiometer control potentiometer

Change
the heater control panel (*)

* In the case where a bargraph is flashing, erase the fault memory using **GO**** and perform another test before changing the control panel.

Incident : BARGRAPH 11 RH ILLUMINATES
Mixer flap recopying potentiometer

On the **XR25**, enter # **05** and vary the temperature using key **"-/+"** (between minimum and maximum)
Does the value vary from **-10** to **110** ?

yes

Erase the computer fault memory using **GO**** and perform another regulation test

no

Disconnect brown connector (**420**) from the mixer flap motor and check the ohms value of the potentiometer between tracks **4** and **5**
Does resistance **R = 3.2 KΩ** ?

no

Change
the mixer flap motor

yes

Check voltage between terminals **3** and **5** of mixer flap brown connector
Are there between **4** and **5 volts** ?

no

Check continuity of harness between connector (tracks **3** and **5**) and computer (tracks **14** and **15**).
Repair if necessary.
Does the incident still persist ?

yes

yes

Change
heater control panel

no

Correct

Check continuity of harness between mixer flap brown connector and computer.
Repair if necessary.
Does the incident still persist ?

yes

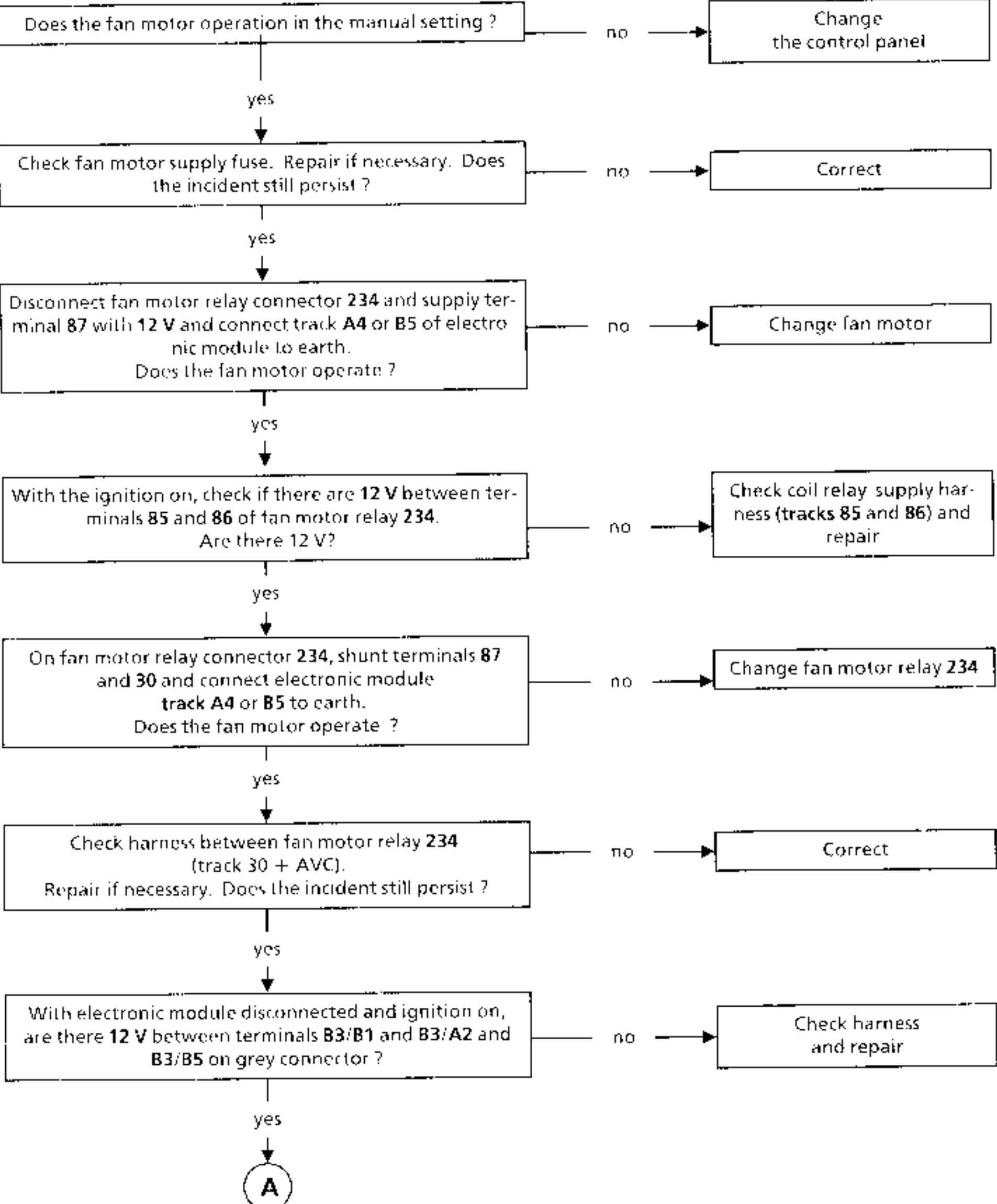
Change
heater control panel

no

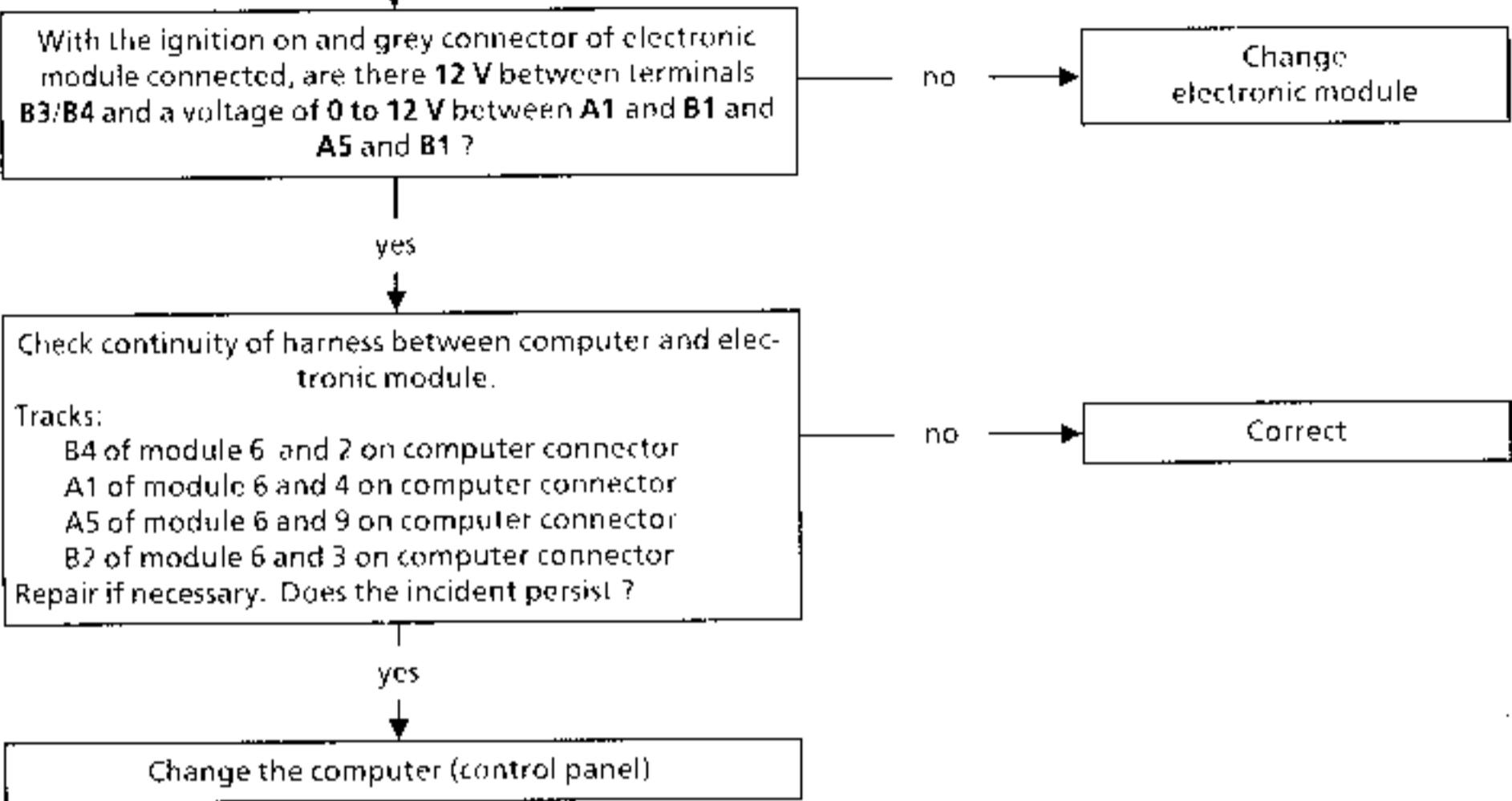
Correct

Note : in the case where a bargraph is flashing, erase the fault memory using **GO**** and perform another test.

Incident : BARGRAPH 12 LH OR RH ILLUMINATES
Fan motor

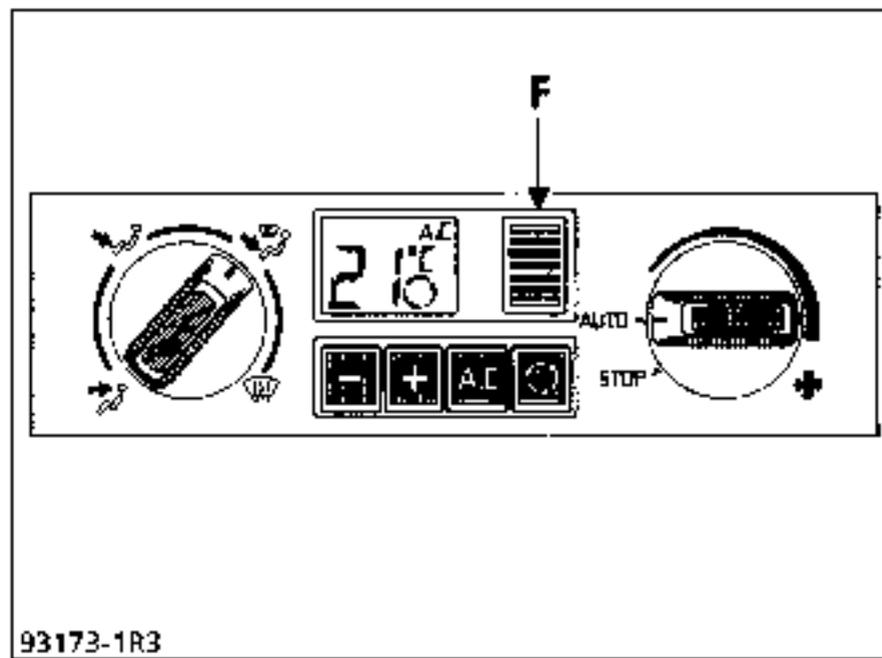


A



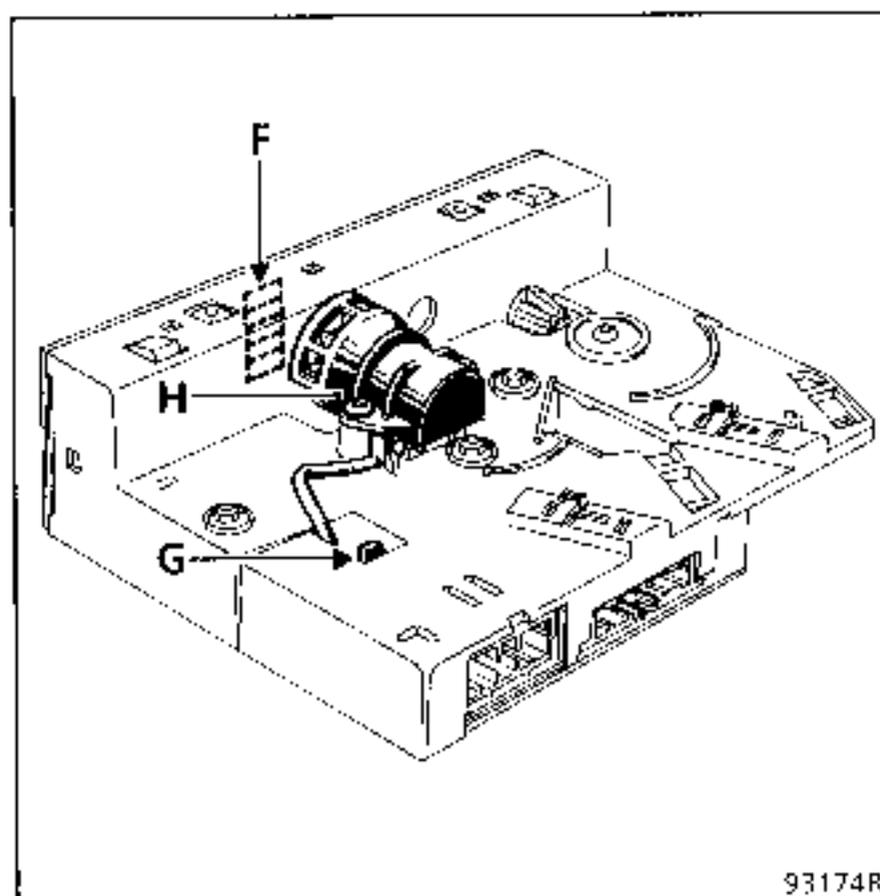
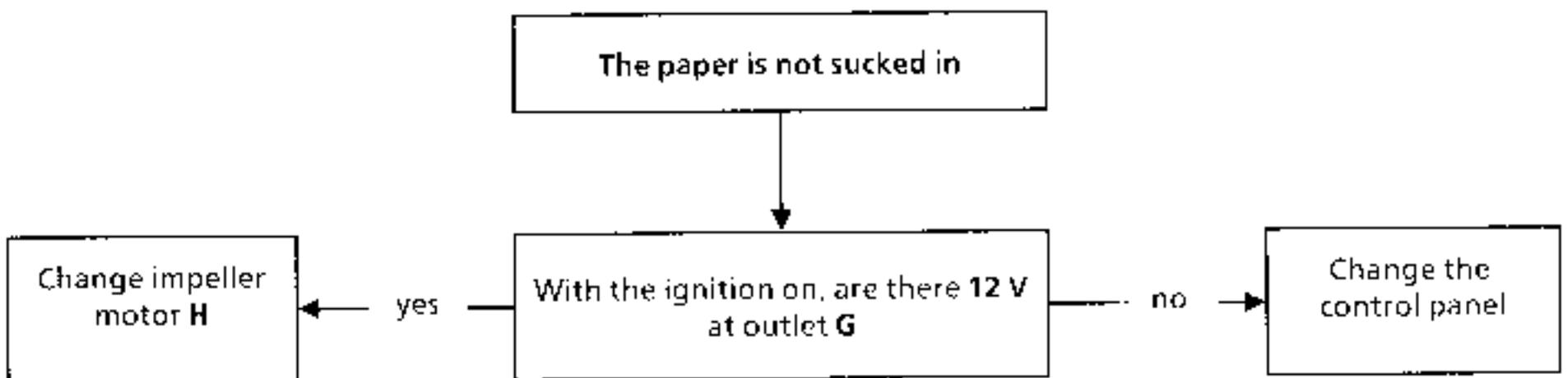
Note : In the case of a bargraph flashing, erase the fault memory using **GD**** and perform another test.

Incident : BARGRAPH 13 LH OR RH ILLUMINATES : (Impeller motor)



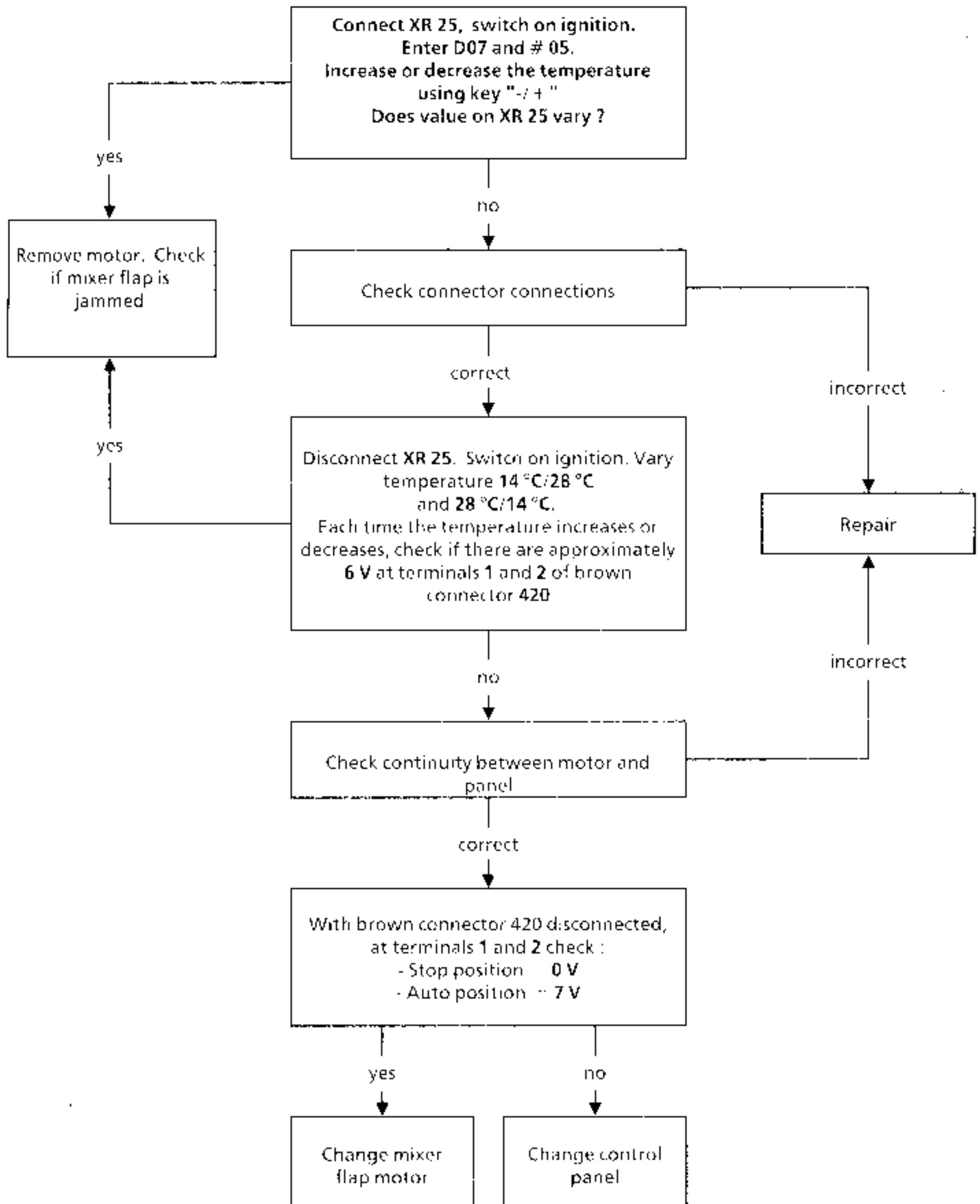
Checking the passenger compartment temperature sensor

With the ignition on, use a small piece of paper (such as a pocket handkerchief) placed in front of the temperature sensor to check that it is sucked in.



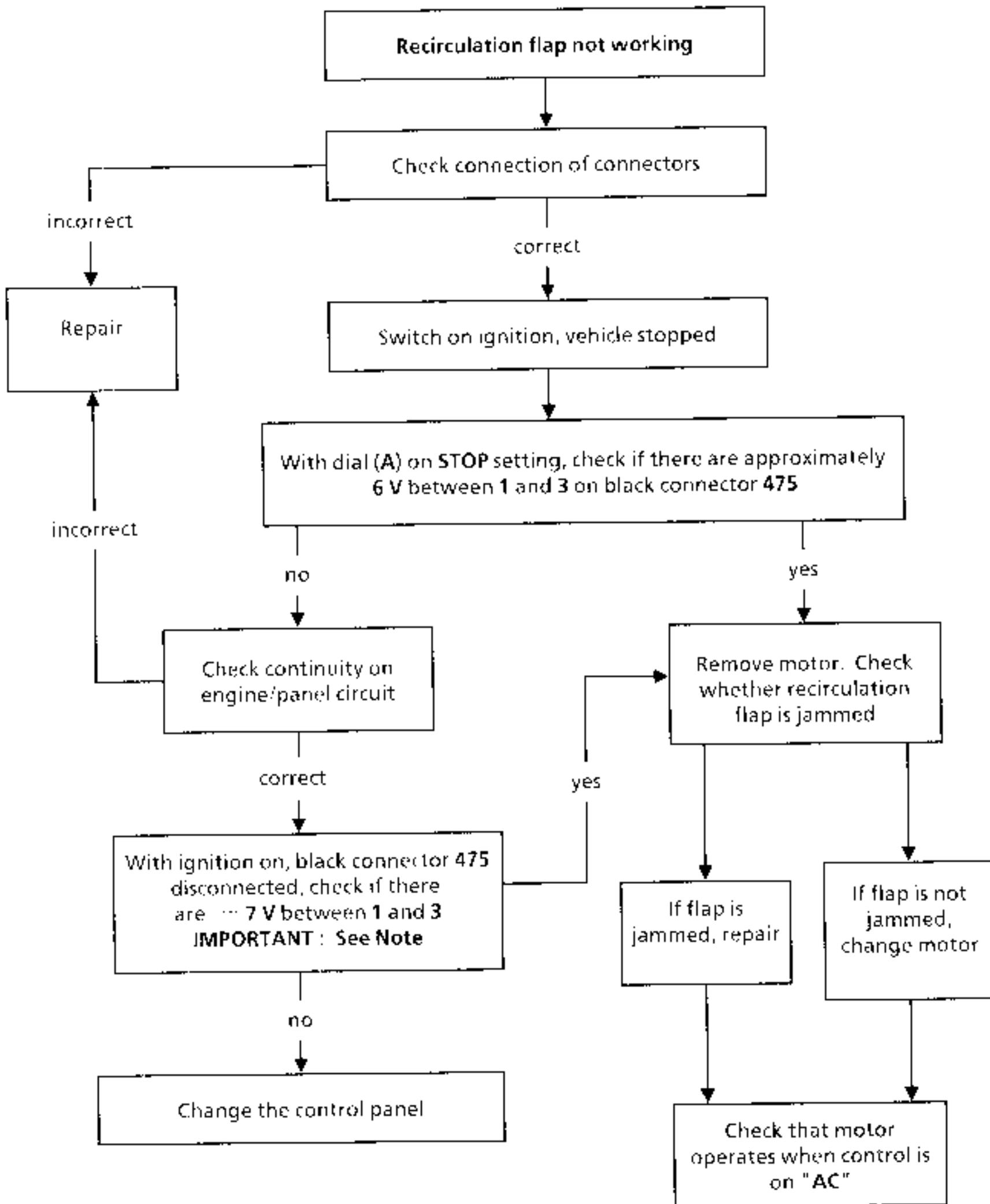
Note : In the case of a bargraph flashing, erase the fault memory using GO** and perform another test.

Incident : BARGRAPH 14 LH OR RH ILLUMINATES : (Mixer flap motor)

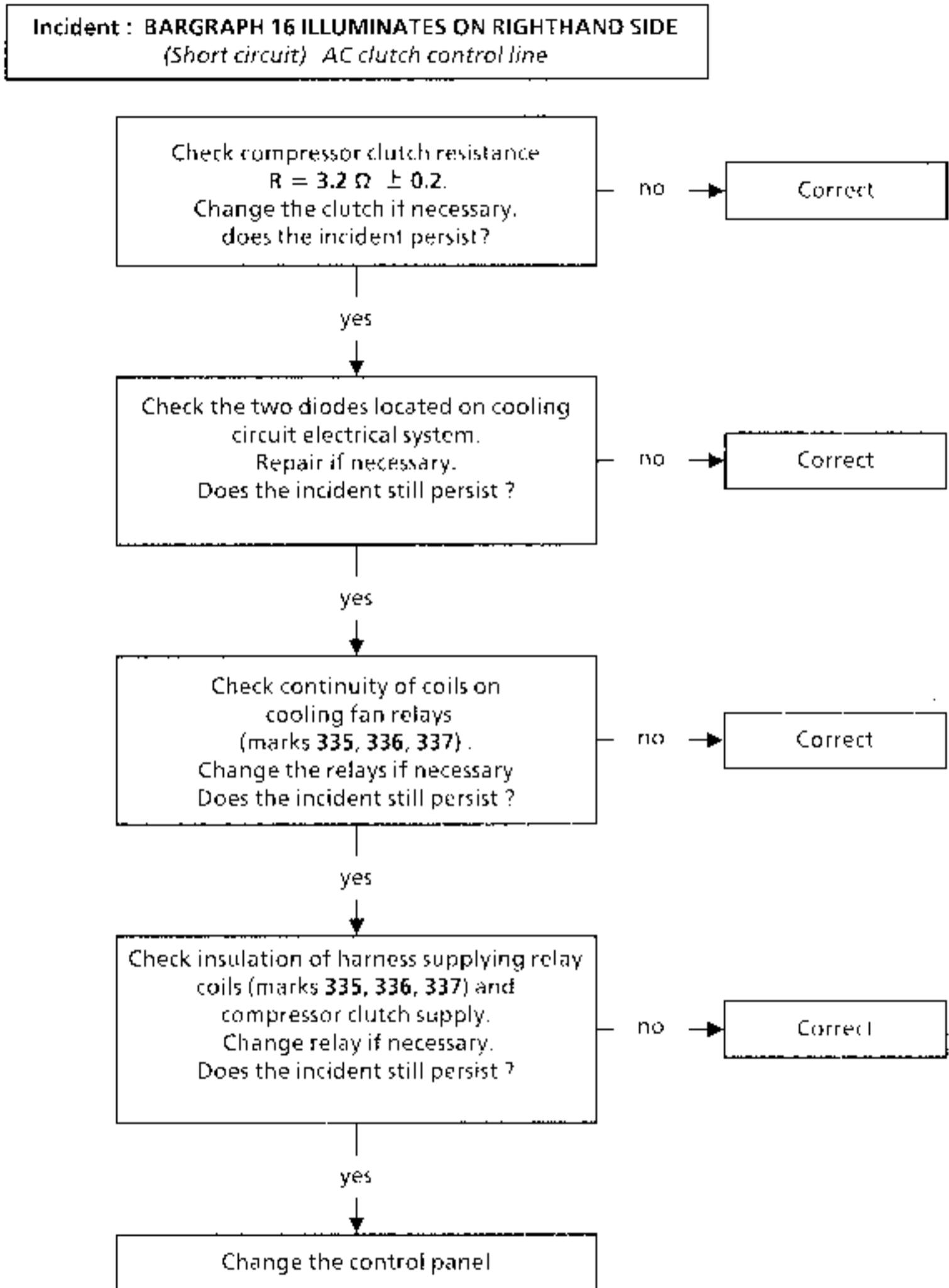


Note : In the case of a bargraph flashing, erase the fault memory using GO** and perform another test.

Incident : BARGRAPH 15 LH OR RH ILLUMINATES : (Recirculating motor)

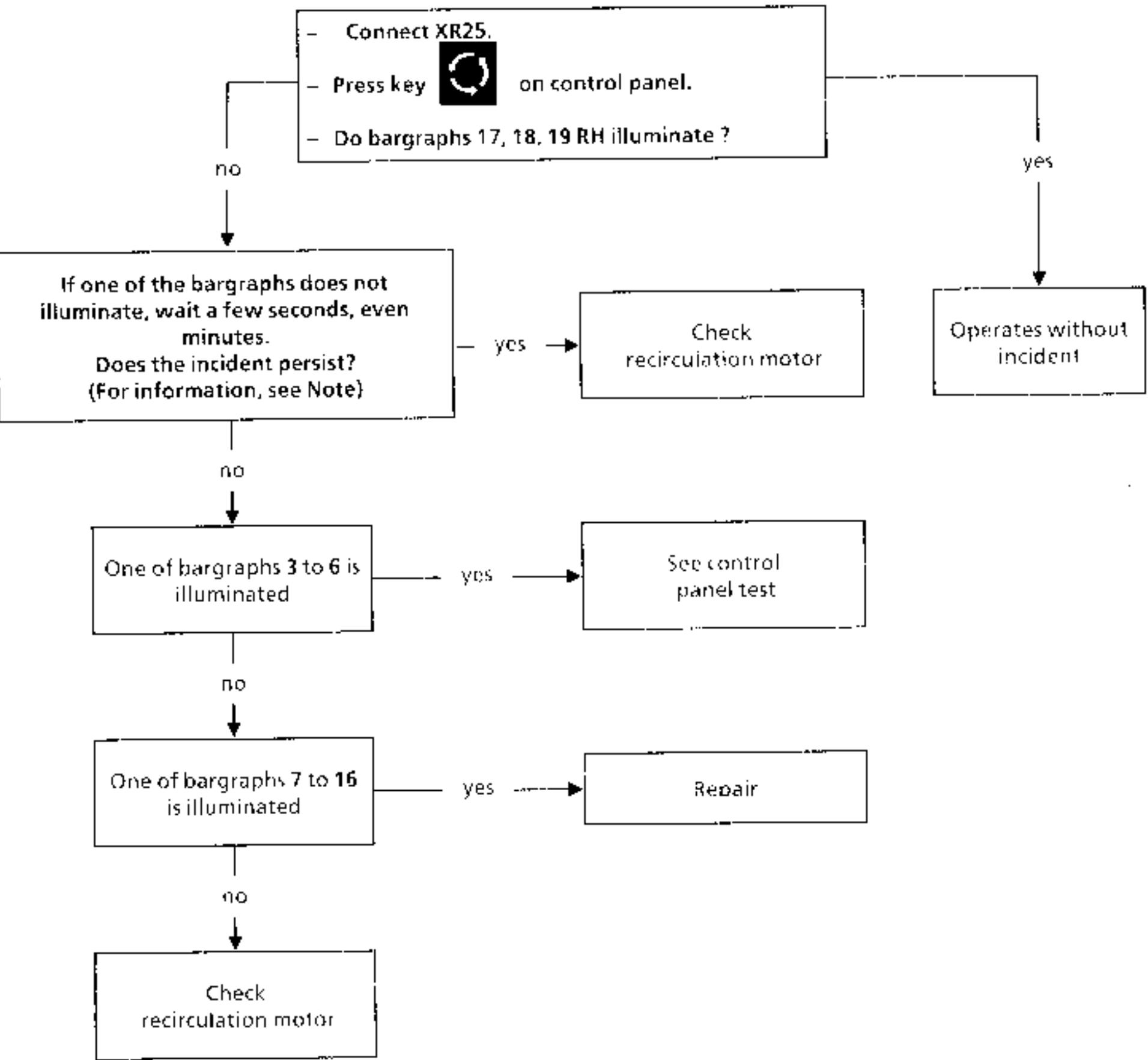


- Note :**
- This operation must only be performed if the **SERVICE** warning light is off. If the light is on, disconnect the battery and then reconnect it. The operator then has approximately **8 seconds** to perform the operation before the **SERVICE** warning light comes on again,
 - In the case of a bargraph flashing, erase the fault memory using **GO**** and perform another test.



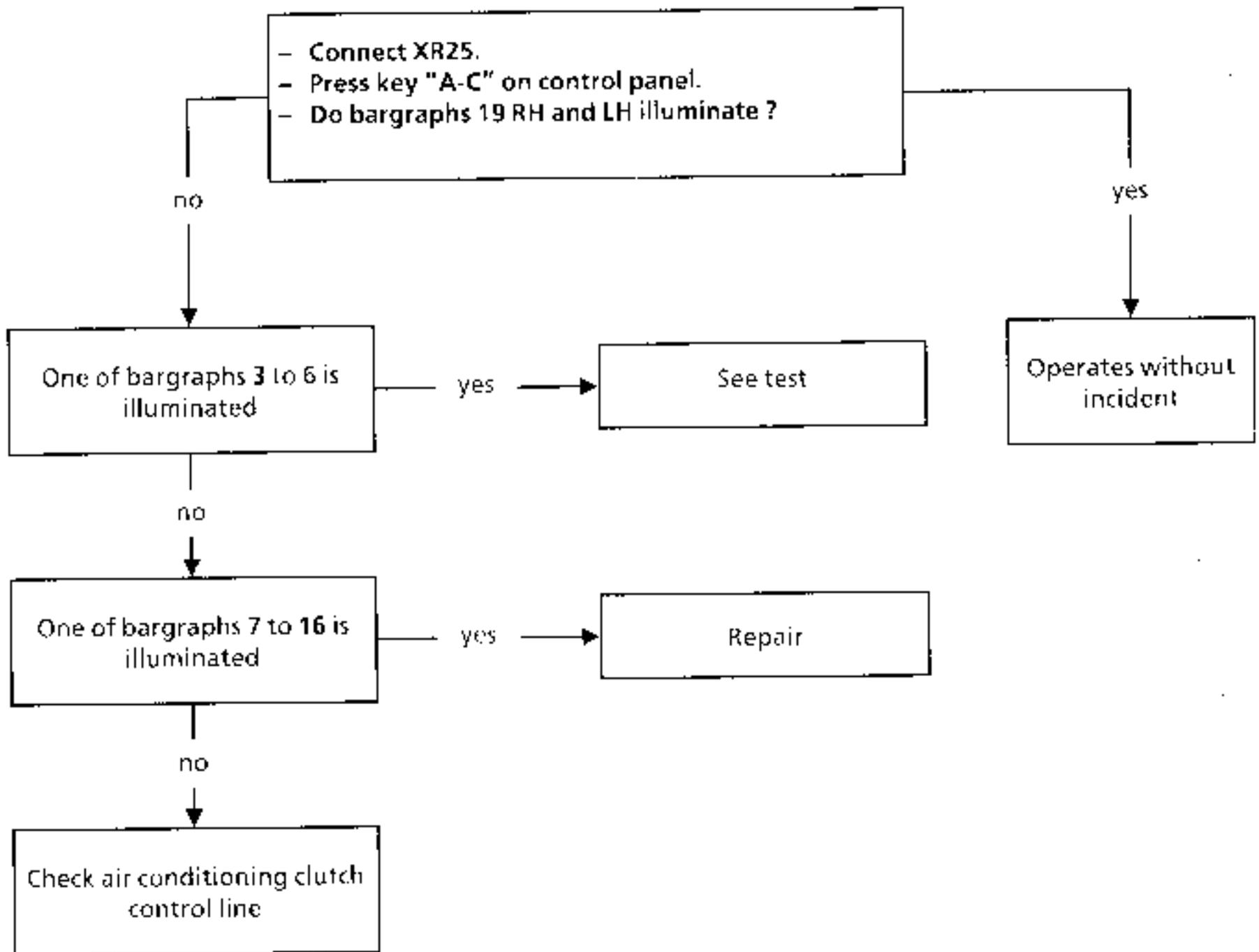
Note :
- fault-finding is only available for short-circuits on the **AC** clutch, cooling circuit relays and diodes, for diesel-engined vehicles, if the compressor still does not operate and bargraph **16** is not illuminated, refer to fault-finding **section 13 "pre-heater unit"**.

Checking activation of the air recirculation system (Bargraphs 17, 18, 19 RH)



Note : After starting the temperature regulation system in cold weather, the system's computer may block the recirculation data for a few seconds. Only bargraph 17 will be illuminated. In addition, when there is a very large difference between the "external temperature and the temperature displayed", in particular when the external temperature is very high, the regulating temperature system requires the automatic recirculation system to be activated. Bargraphs 18 and 19 righthand side will illuminate

Checking activation of the air conditioning system (Bargraph 19)



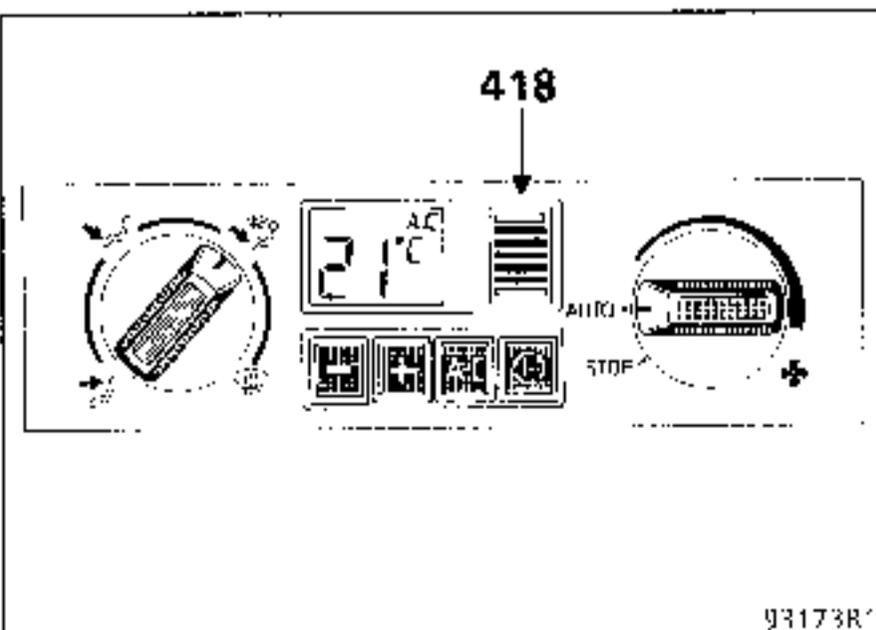
Checking blown air, external and internal temperature sensors

DEGREES CELSIUS	THERMAL RESISTANCE(Ω)
10	49000 to 60000
-5	37300 to 45700
0	29000 to 35500
5	22500 to 27500
10	18000 to 21600
15	14000 to 17000
20	11300 to 13800
25	9000 to 11000
30	7300 to 8500
35	5800 to 7000
40	4700 to 5600
45	4000 to 4500

These values are given as an example and have no relevance to fault-finding as their thermal range is too great.

Internal temperature sensor (418)

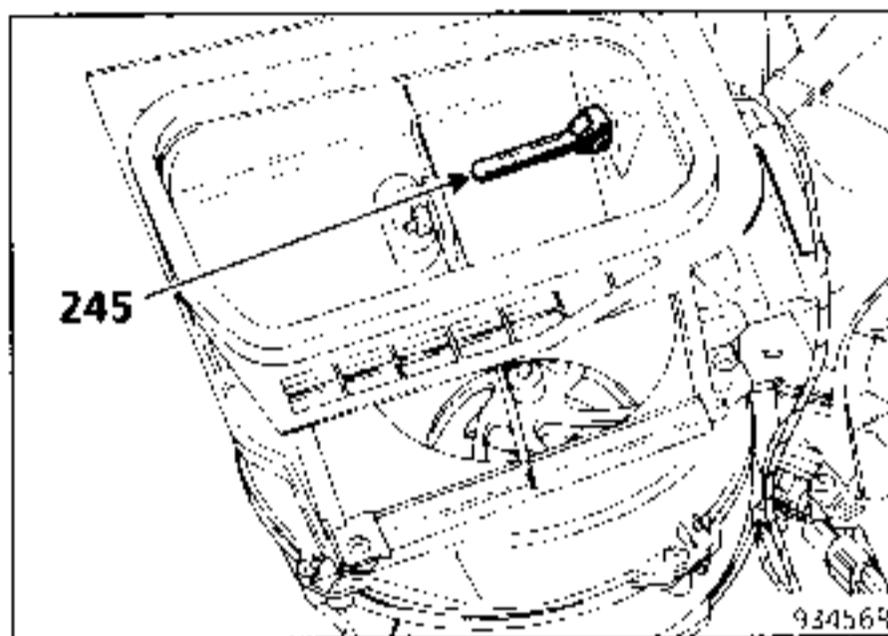
This is a thermistor with a negative temperature coefficient, integrated in the control panel printed circuit. If the sensor is faulty, the control panel will have to be replaced.



External temperature sensor (245)

This is a thermistor with a negative temperature coefficient located in the air conditioner air intake.

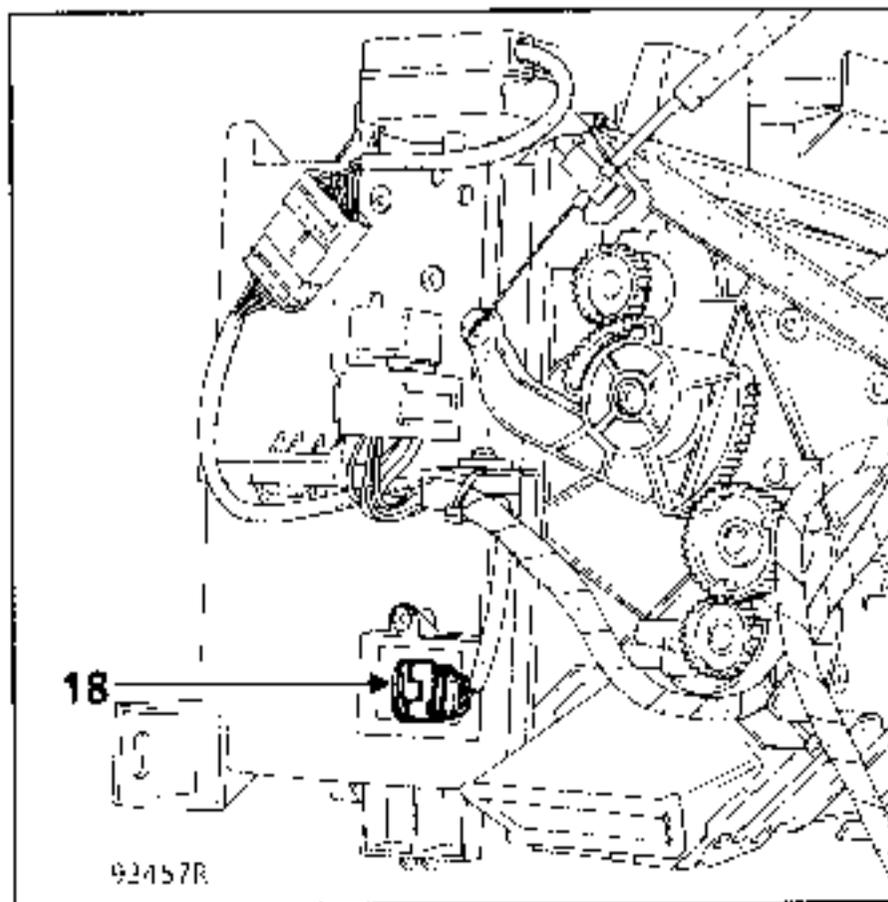
It is interchangeable and can be reached through the air intake duct at the water box end.



Blown air temperature sensor (18)

This is a thermistor with a negative temperature coefficient located downstream of the radiator.

It can be reached directly from inside the vehicle at the pedal assembly end and is located on the air conditioning heater device.



Checking the evaporator temperature sensor (408)

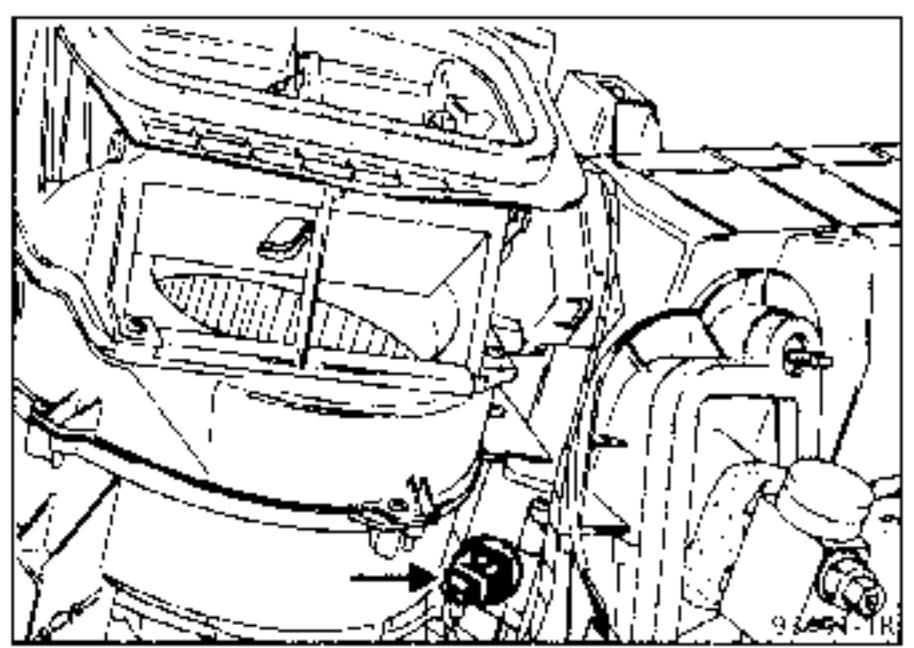
DEGREES CELSIUS	THERMAL RESISTANCE (Ω)
- 10	24300 to 30500
- 5	19000 to 23300
0	14700 to 18000
5	11400 to 14000
10	9000 to 11000
15	7100 to 8700
20	5600 to 6900
25	4500 to 5500
30	3600 to 4400
35	3000 to 3500
40	2400 to 2900
45	2000 to 2300

These values are given as an example.

Evaporator temperature sensor

This is a thermistor with a negative temperature coefficient, located in the evaporator.

It can be reached directly on the air conditioning heater device when the glove box and air conditioner soundproofing have been dismantled.



MIXER MOTOR (420)

the mixer flap is assisted by an electric motor with a potentiometer for checking the position of the flap.

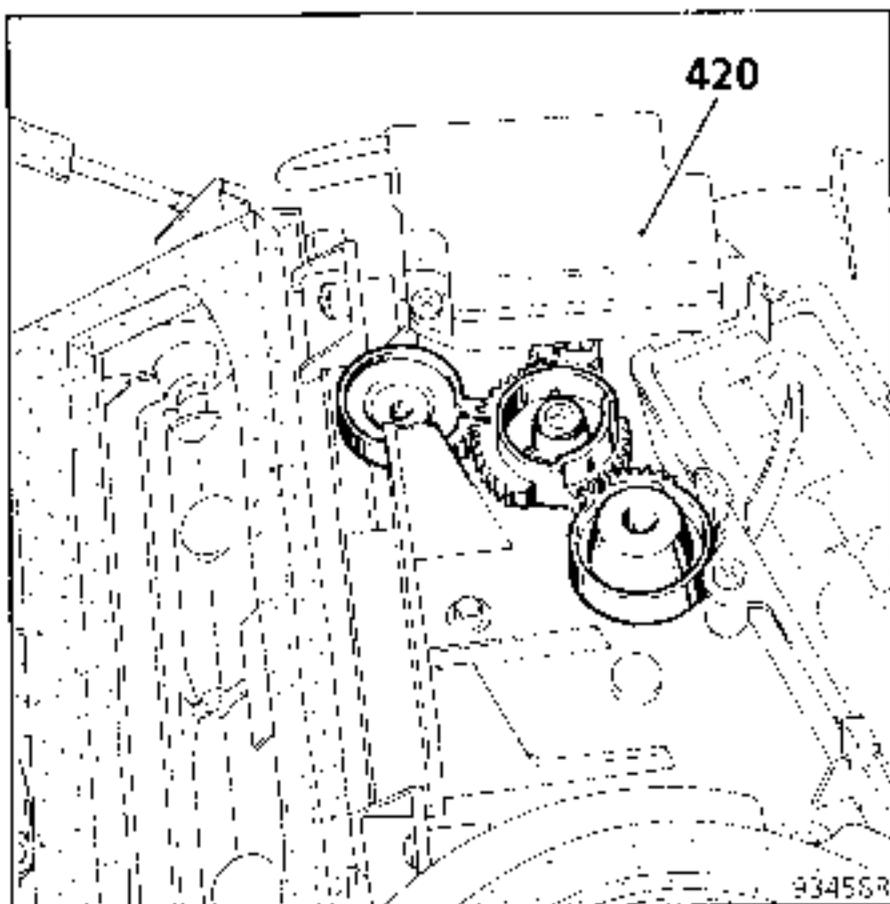
The motor is permanently supplied with approximately **7 volts** power in the extreme **HOT** or **COLD** settings.

In the intermediate setting, the voltage is **0 volts**.

The motor can be reached after the dashboard and the air conditioner have been dismantled.

If the motor has to be replaced, it is supplied with its connector and output drive gear. It is pre-set for fitting to the air conditioner

On refitting, the marks on the drive gears for the flap and motor **must be aligned**.

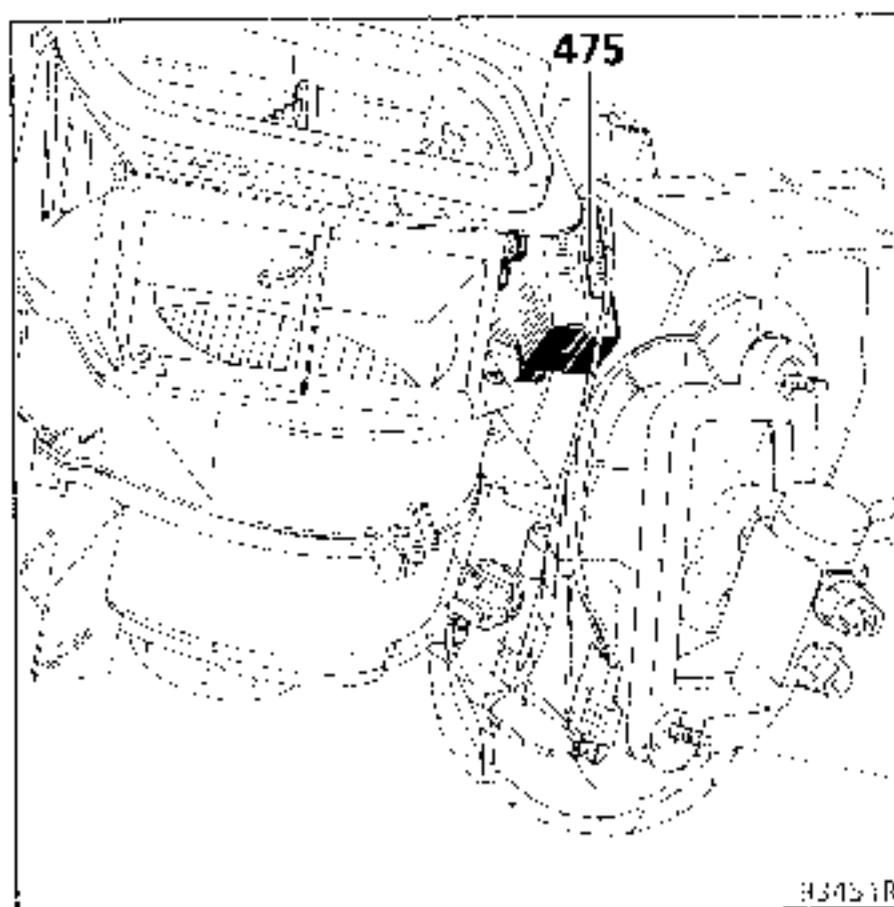


RECIRCULATING MOTOR (475)

The flap is moved by an electric motor which is always supplied with power and only stops in the extreme end setting.

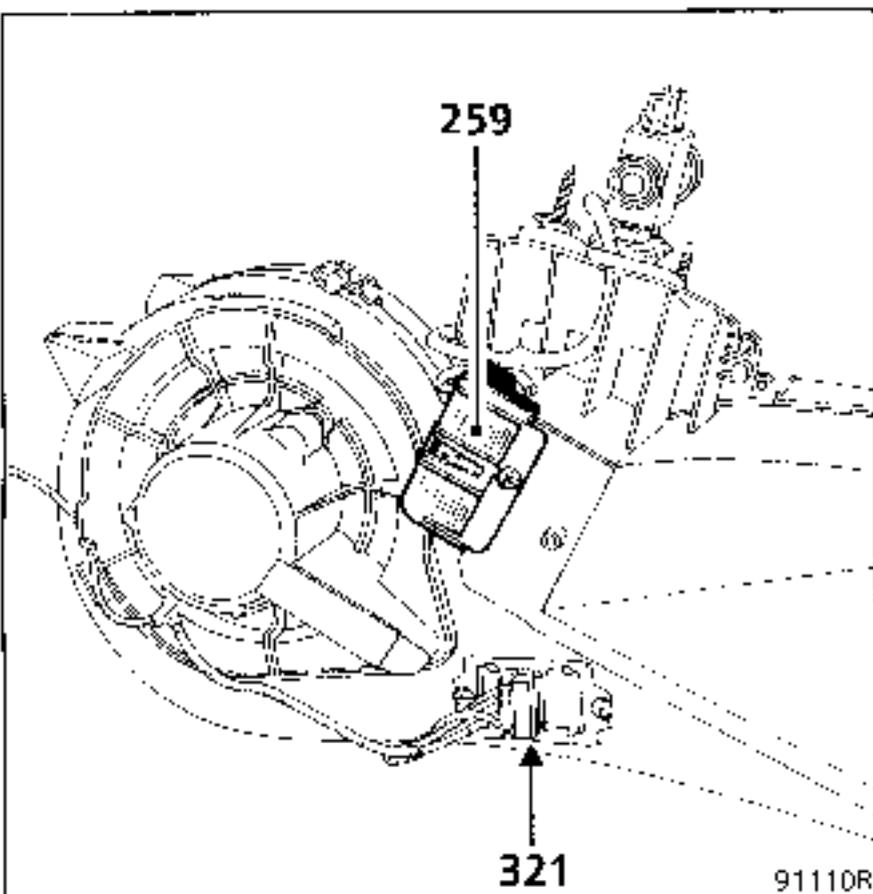
The recirculating motor can only be reached when the dashboard and air conditioner have been removed.

If the motor is replaced, the new one is equipped with a connector and lever.



FIXED THERMOSTAT

Fixed thermostat (259) is located under the air conditioning assembly, near the fan.



Remove the engine anti-noise shield under the dashboard.

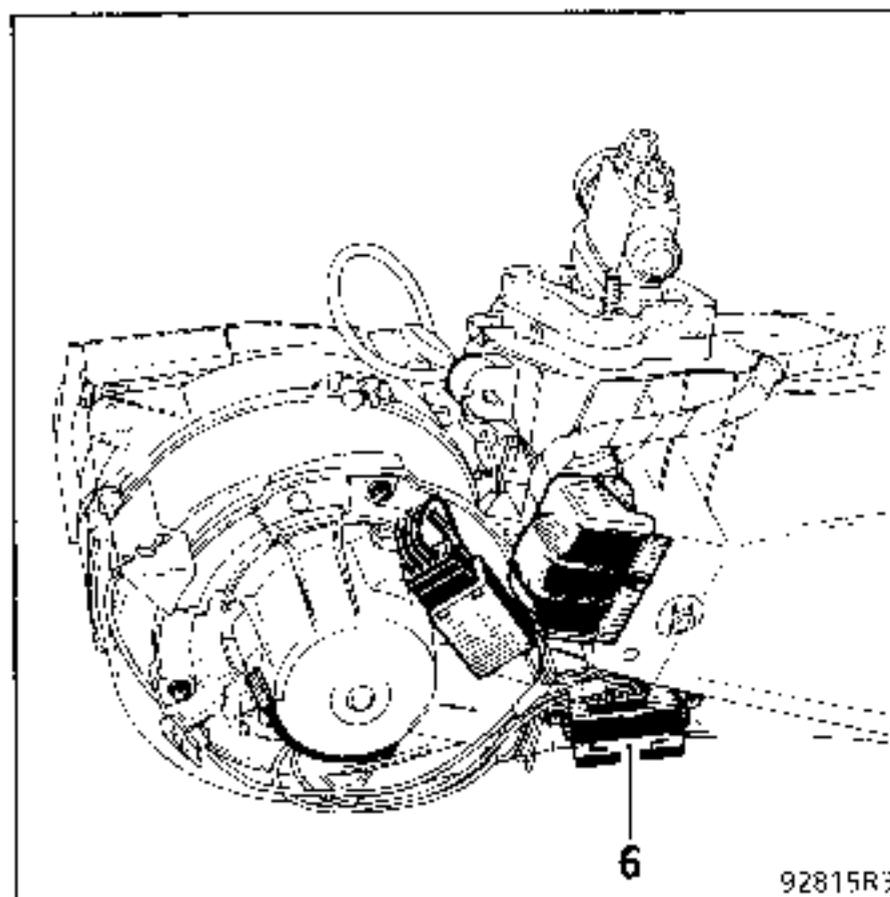
Remove the thermostat mounting screw.

Take out the thermostat, disengaging the thermostatic tube.

SPEED VARIATION DEVICE (6) OR FAN MOTOR RESISTORS (321)

These components are located under the air conditioning assembly, near the fan motor.

They are removed and refitted according to the method described on page 61-39.

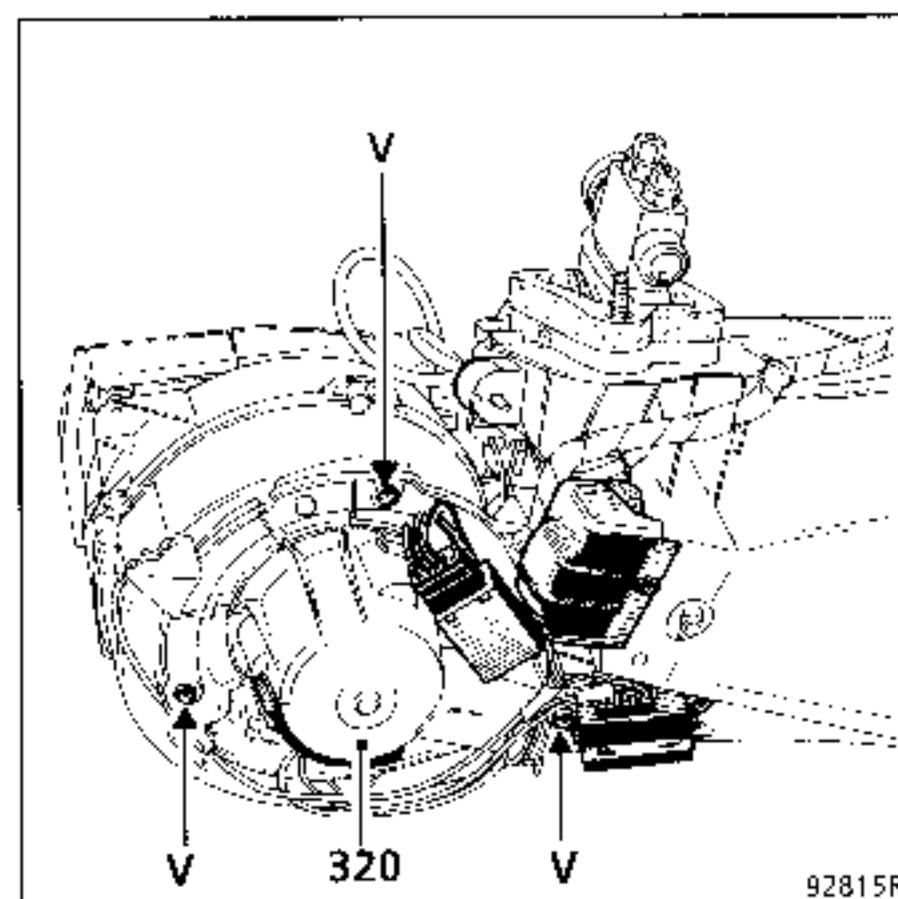


FAN MOTOR (320)

Fan motor (320) is reached through the passenger compartment.

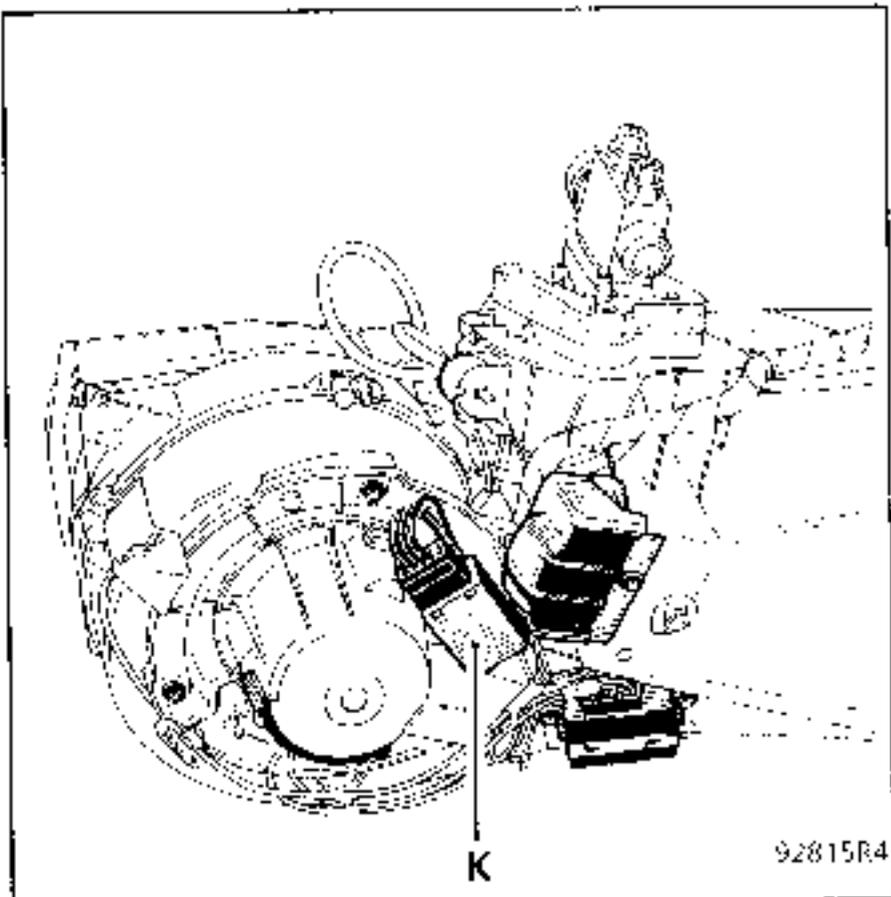
It is mounted on the air conditioner by means of three bolts (V).

It is removed when the righthand glove box and anti-noise shield have been removed.

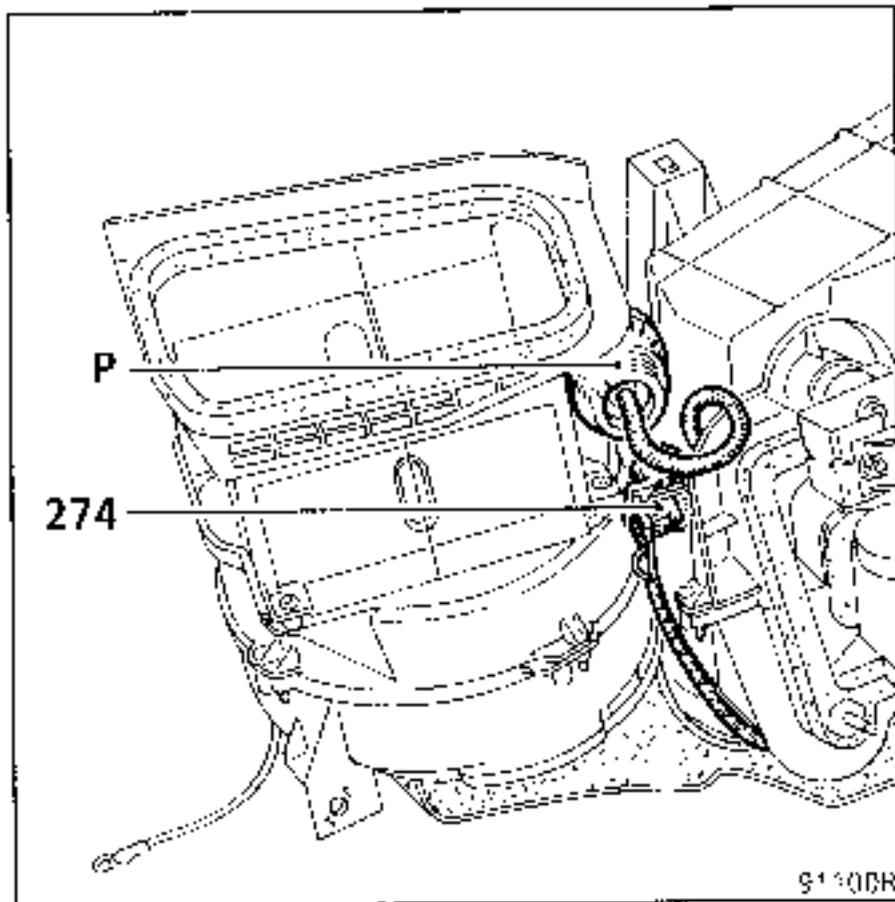


LOCATION OF THE CONTROL UNITS

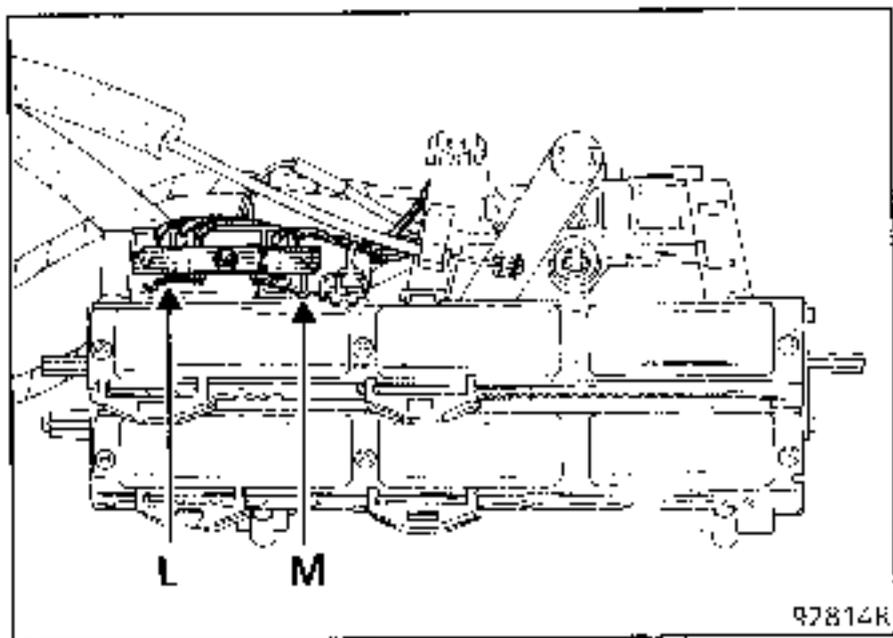
The third speed relay (K) is located under the air conditioning fan, near the fixed thermostat.



Solenoid valve (274) controlling the recirculating flap diaphragm is on the righthand side of the evaporator, near diaphragm (P).



The micro-switches for controlling fan assembly relay (L) and fan assembly 4th speed relay (M) are under the control panel.



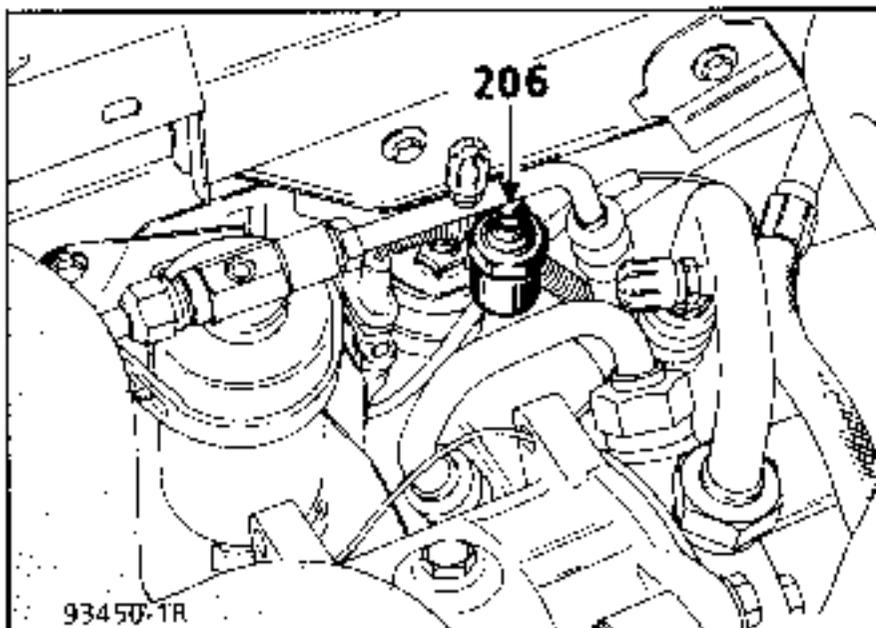
THREE-PURPOSE PRESSOSTATS (206)

The three-purpose pressostat for protecting the refrigerating system has the three following functions :

- low pressure (2 bars),
- high pressure (27 bars),
- cooling fan motor (19 bars).

The low and high pressure pressostats are mounted in series between A1 and C1 on the connector (see "Engine harness" wiring diagram).

The pressure for triggering the cooling fan motor is fed between B1 and B2 (see "Engine harness" wiring diagram).



All operations on the pressostat can be performed without the refrigerant circuit having to be drained as they are mounted on a **SKRADER** valve.

The compressors fitted to the **Renault 21** are of the **SANKYO** alternating axial type,

- type **SD 709-709** for the **J engine**,
- type **SD 510** for the **F engine**.

During model years **88** and **89** the **SD 709** compressors have been fitted as standard to all versions.

It is possible to check the compressor oil level.

For compressors with **5 pistons** :

- use a locally manufactured dipstick,

For compressors with **7 pistons** :

- level measured using a charging station when adding oil,
- when removing the compressor, drain the oil completely and refill with the recommended quantity.

NOTE : To contribute towards the environment the latest series of X48 vehicles are equipped with air conditioning system which use refrigerant fluid type R134a. See "**General**" section and the "**New Refrigerant R134a Air Conditioning**" workshop manual for its use.

For all other information concerning the maintenance of the compressors, consult the "**Air Conditioning**" workshop manual.

REMOVAL - REFITTING

Bleed the refrigerant circuit.

Disconnect the hoses and blank off the apertures at the compressor and hose ends.

Disconnect the electrical feed from the compressor.

If necessary, remove the compressor mounting strengtheners.

Slacken the drive belt.

Remove the compressor mounting bolts and the compressor itself.

NOTE : When refitting circuits operating with **R12** type refrigerant, the threaded unions are to be greased with **ELF RIMA 100** compressor oil.

On reassembly, check the compressor drive belt tension (see section 11).

REMOVAL - REFITTING

Disconnect the battery.

Drain refrigerant fluid circuits and the engine cooling circuit.

Disconnect engine coolant hoses from the radiator (C).

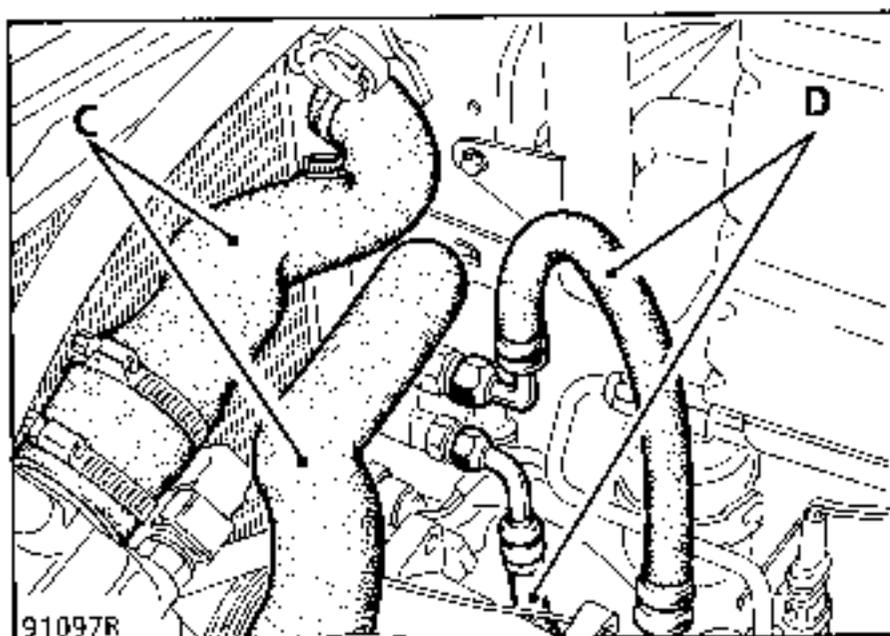
Disconnect the refrigerant fluid hoses from the condenser (D) (take care, the ends are very fragile).

Blank off the disconnected hoses and the ends of the condenser.

Disconnect the electrical connections for the fan motors.

Remove the upper cross member.

Take out the radiator condenser assembly.



On refitting, proceed in the reverse order to removal.

Top up the engine coolant (see "Engine" section) and top up the refrigerant fluid (see "Air Conditioning" workshop manual).

REMOVAL - REFITTING

The evaporator is located in the passenger compartment under the dashboard.

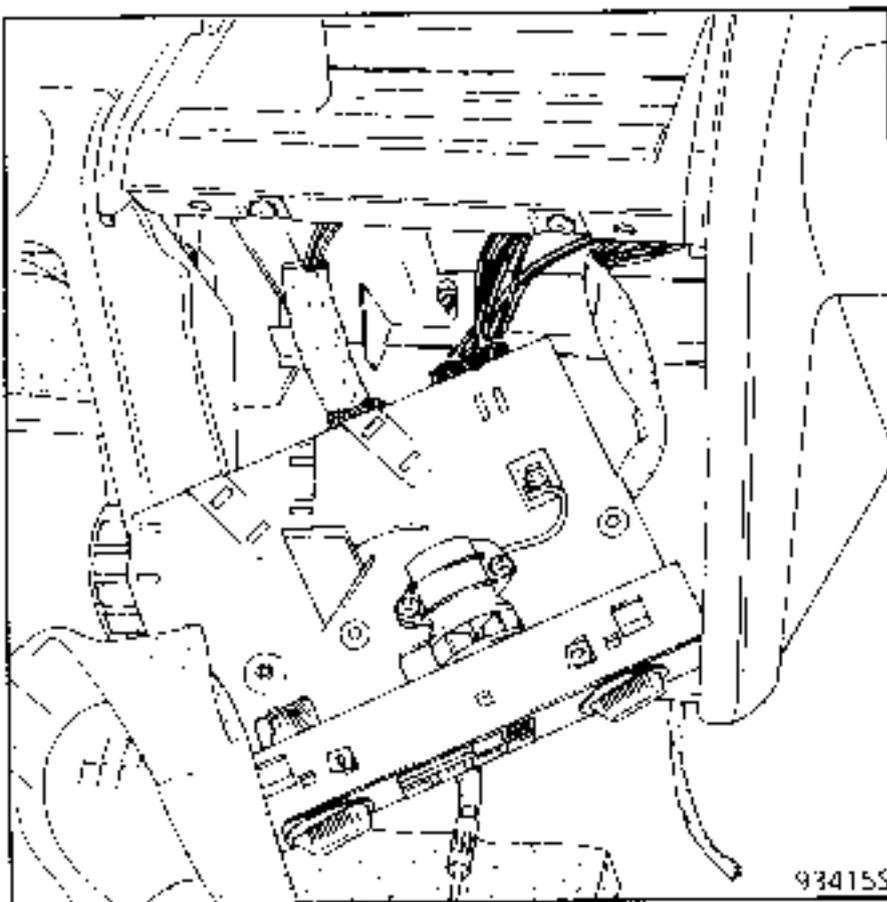
The evaporator can only be removed when the air conditioning assembly has been removed.

Disconnect the battery.

Remove the console and dashboard (see **MR 291** - "Electrical" section).

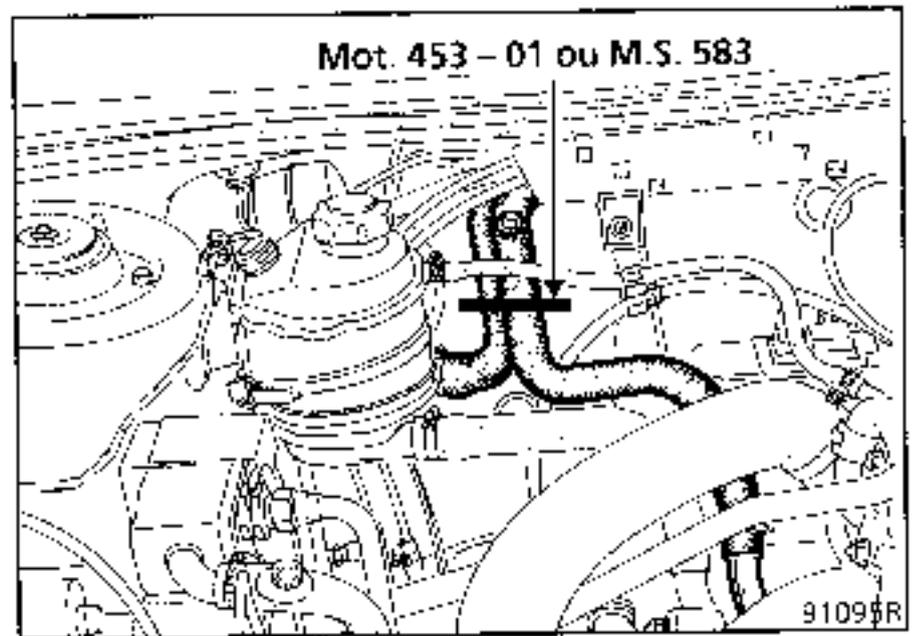
Leave the cable-controlled assembly coupled to the blower device.

Disconnect the block connectors.

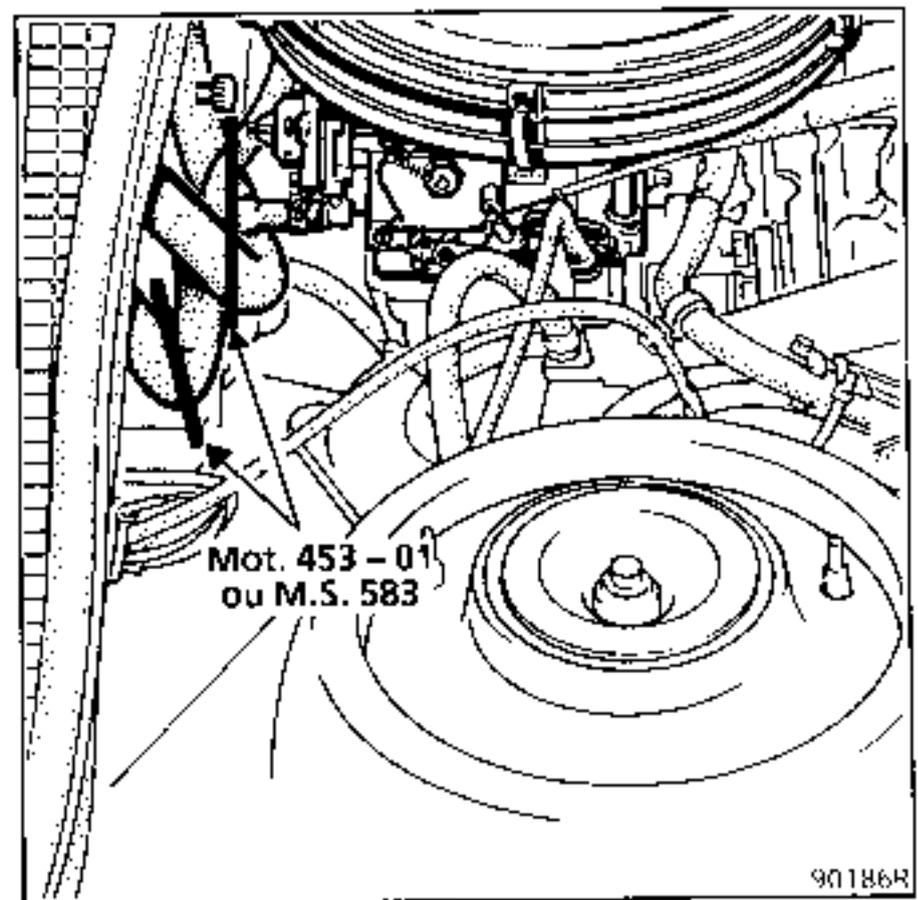


Fit clamps to the heater system coolant hoses (using tool **Mot. 453-01** or **M.S. 583**).

IN-LINE ENGINE



TRANSVERSE ENGINE



REMOVAL - REFITTING (continued)

Disconnect the following hoses :

- radiator coolant hose,
- relief valve refrigerant hose,
- vacuum chamber low pressure hose (thin hose).

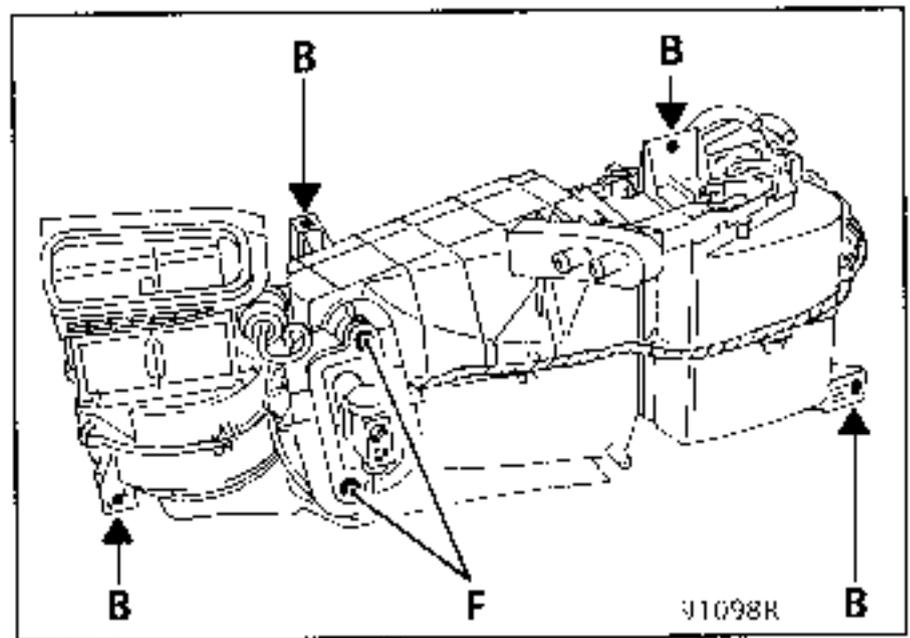
Blank off the apertures in the refrigerant and relief valve hoses.

Remove the expansion bottle and low pressure chamber.

Remove the two nuts (F) securing the relief valve on the bulkhead.

Remove the four bolts (B) securing the air conditioner to the bulkhead.

Remove the air conditioning assembly, by freeing it at the rear.

REFITTING

Proceed in the reverse order to removal.

Ensure that the air conditioner is perfectly leak-tight when mounted on the bulkhead.

Top up the engine coolant (see "Engine" section).

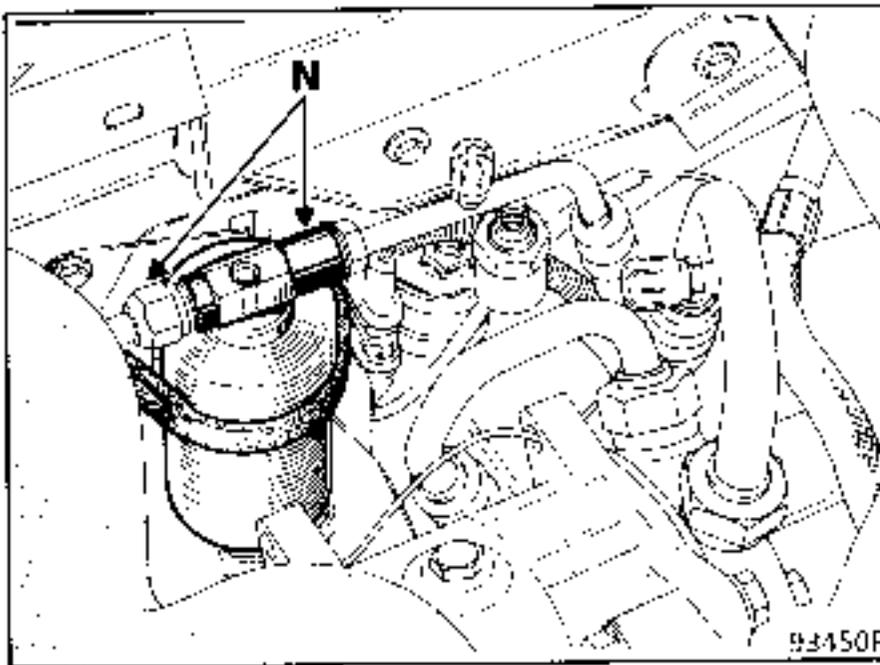
Fill the refrigerant fluid system (see "Air Conditioning" manual).

REPLACING

Drain the refrigerant circuit using the charging unit (see method described in the "Air Conditioning" manual).

Disconnect connection hoses (N).

Fit plugs to the apertures.



On reassembly, oil the threads using compressor oil and ensure that the seals are in good condition.

LOCATION OF COMPONENTS

- 171 Air conditioning clutch
- 188 Cooling fan motor assembly
- 248 Fan motor thermal switch
- 262 Air conditioning cooling fan assembly
- 322 Air conditioning diode
- 334 Thermal cut-out
- 335 Fan motor 1st speed relay
- 336 Fan motor 2nd speed relay
- 337 Fan motor 3rd speed relay
- 362 Battery + terminal plate

- M4 Bodywork earth
- R21 Engine/fan motor assembly
- R58 Fan motor assembly/righthand side member
- R75 Fan motor assembly earth/fan motor assembly

